



**Fenelon Waste Disposal Site**  
**2023 Annual Monitoring Report**

Prepared for:  
City of Kawartha Lakes

Prepared by:  
Azimuth Environmental  
Consulting, Inc.

May 2024

AEC 24-010



Environmental Assessments & Approvals

May 28, 2024

AEC 24-010

City of Kawartha Lakes  
Waste Management Department  
322 Kent St. W.  
Lindsay, ON  
K9V 4T7

Attention: Ms. Kayla Pantaleo  
Regulatory Compliance Officer

**Re: 2023 Annual Monitoring Report  
Fenelon Waste Disposal Site**

Dear Kayla:

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to provide the 2023 Annual Monitoring Report (AMR) for the Fenelon Waste Disposal Site (Site). The data and interpretation included provides a summary of the 2023 monitoring data with comparison to the historical data and accurate assessment of the current state of the landfill Site. This report has been prepared in compliance with the existing Environmental Compliance Approval (ECA) and applicable Provincial standards. This assessment also interprets the longer-term trends at the Site such that an appropriate monitoring program assesses the current state of the landfill.

The environmental setting at the Fenelon Landfill Site is well understood based on almost 30 years of performance monitoring. The data trends over this monitoring period have yielded a relatively consistent geochemical signature such that it is reasonable to infer that the Site reflects a near steady state condition. This is supported by the general consistency between the 2023 data with the historic data set for the majority of monitoring locations.

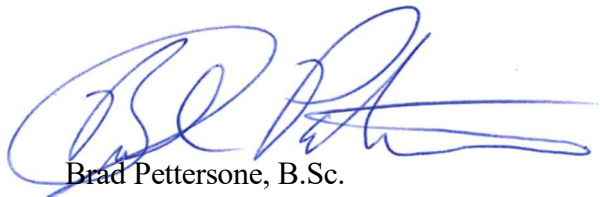




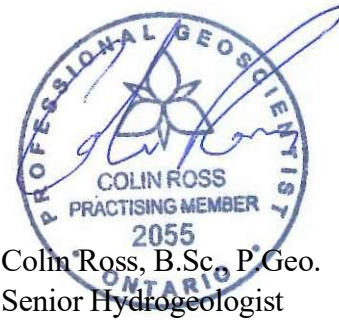
If there are any questions regarding the content of the report, do not hesitate to contact the undersigned.

Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.



Brad Pettersone, B.Sc.  
Environmental Scientist



Attach:

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## Executive Summary

The City of Kawartha Lakes (City) is responsible for the operation and maintenance of the Fenelon Landfill Site (Site) in accordance with the Ministry of Environment, Conservation & Parks (MECP) Environmental Compliance Approval (ECA) No. A321206 (Appendix E), issued October 28, 2003 and last amended January, 2019.

The Fenelon Landfill Site is located along an esker complex that extends along a southwest – northeast axis that is surrounded by low lying wetland areas. The soils underlying the Site vary from coarse sands and gravel along the center line of the esker, while a more extensive sand unit and underlying till deposit are located beneath. Peat deposits are present away from the landfill into the wetland areas that surround the landfill. Given these conditions, the monitoring network at the Site has historically been subdivided into three (3) target aquifer units referred to as the *shallow overburden*, *lower overburden* and *shallow bedrock*.

At this Site, there is a certain level of hydrogeologic complexity given the multiple aquifer units present, their deposition and the surrounding wetland complex. The Site geochemistry has been used to differentiate the individual flow regimes within the three aquifer units. The ability to distinguish different ground water signatures has allowed the physical flow regime to be better defined and suggests some degree of isolation between different flow zones. However, this is most discernable in close proximity to the waste mound, while both shallow and deep ground water further from the waste mound does not show as much of an appreciable difference. The one notable difference between the shallow and deeper ground water flow units is the consistency in water quality over time. The deep units (lower overburden and bedrock units) indicate very consistent ground water signatures, while the shallow unit is noted to have a bit more variability, likely owing to its proximity to surface influences (*i.e.*, precipitation, runoff and leachate infiltration). The one exception to this is MW27-I, which has shown a more mineralized water quality unique from the other bedrock wells at the Site.

The ground water flow patterns at the Site generally flow to the southeast from the esker/waste mound into the wetland features associated with Martin Creek, which represents the ultimate discharge point for ground water originating at the landfill. Ground water from the site flows within the granular overburden or underlying fractured bedrock ultimately discharging into Martin Creek. Despite the southeasterly flow path and permeable overburden and bedrock, there is a significant reduction in leachate indicator parameter concentrations only a short distance from the waste mound indicating that the attenuative capacity of the Site is sufficient to ensure the Site is in compliance which suggests that there is no impact to Martin Creek.



In interpreting the Site data, it was important to distinguish between the organic-rich geochemical signature present in the wetland complex from that in proximity to the waste mound. Of note, several leachate indicator parameters are also associated with the naturally occurring geochemically reduced conditions present in the downgradient wetland.

The data trends over this monitoring period have yielded a relatively consistent geochemical signature, although some shorter-term trends are present at the proximal locations owing to a shift in active area from west to east over time. This has resulted in greater leachate influence at wells in proximity to the Phase II waste (active) area. Conversely, a reduction in leachate influence in surface water along the western toe of the waste mound has resulted since the Phase I area was capped and closed in 2017. Despite these trends, the downgradient locations have remained very consistent for a number of years indicating the Site is in a relative steady state condition. In addition, the data shows that attenuative processes are active a short distance downgradient such that leachate influence is not seen east of Mark Road. This finding is in keeping with the soils present beneath the landfill site. Dilution and dispersion process are considerable in remedying the leachate flux percolating from the landfill. The permeability contrast between the emplaced waste and esker sediments affords the attenuation reported and hence dispersion to background levels within the downgradient area.

Exceedances with respect to Reasonable Use Policy (RUP) B-7-1 continued in 2023, with a few elevated concentrations at the southeastern boundary; however, the majority of these were related to the naturally mineralized ground water present in the *shallow bedrock* found at MW27-I. The remaining exceedances were attributed to natural variability as many more definable leachate indicator parameters were not similarly elevated.

Similar to previous years, downstream surface water quality results from Martin Creek did not indicate any leachate influence suggesting that the Site is providing adequate attenuation of leachate within the property boundaries. Leachate influence is observed along the western toe of the waste mound, although additional transect monitoring completed in past indicates that the leachate influence is generally not observed beyond 30 m of the toe of waste.

The trigger programs for the Site, which are targeted around protection of the adjacent Martin Creek and Martin Creek Wetland, had no parameter exceedances reported for the 2023 monitoring period.



Minor revisions to the monitoring program have been proposed as part of the 2024 monitoring program, similar to the last three (3) years which includes the removal of PCB and pesticide parameters given the lack of historical detections.

The operations at the Site are currently filling the Phase II area, and based on annual waste amounts it has approximately 2 years of operating capacity left. However, the landfill is now temporarily closed between November and May each year, which started in 2023. As such, the remaining Site life is expected to double to about 4 years.



## **1.0 Introduction**

The City of Kawartha Lakes (City) is responsible for the operation and maintenance of the Fenelon Landfill Site (Site) in accordance with the Ministry of Environment, Conservation & Parks (MECP) Environmental Compliance Approval (ECA) No. A321206 (Appendix E), issued October 28, 2003 and last amended January, 2019 to permit alternative daily cover materials.

The following report provides a summary of the 2023 monitoring data with comparison to the historical data set such that accurate assessment of the current state of the landfill Site is provided with respect to compliance with the existing ECA and applicable Provincial standards.

### **1.1 Site Background**

For the purposes of efficiency and consistency, much of the background information provided within this report has been referenced from previous Site reports, all of which have been referenced in Section 9.0.

The Site is located at 341 Mark Road, which is in the southeast corner of Lot 16, Concession 4, in the Township of Fenelon, approximately 5 kilometers (km) north of the Hamlet of Cameron and 9 km southwest of the Village of Fenelon Falls (Figure 1). The Site has been operating since 1972 and currently accepts domestic, commercial and industrial wastes from the City of Kawartha Lakes. Originally the landfill's service area consisted of the Township of Fenelon and the Village of Fenelon Falls. The Township of Fenelon was the owner/operator of the landfill until 1992 when the County of Victoria (now the City of Kawartha Lakes) assumed the responsibility for operation of the Site.

The Site is operated by the City under the current ECA (No. A321206), which allows for the use and operation of a 21.3 hectare (ha) site which includes a waste disposal area, a Household Hazardous Waste (HHW) Depot, a collection and transfer facility for waste electronics and electrical equipment, a Reuse Centre and an outdoor leaf and yard waste composting facility, as shown in Figure 2. The ECA also includes a 102.6 ha contaminant attenuation zone (CAZ) south and east of the Site as shown in Figure 2. The Site is licensed for the disposal of solid, non-hazardous, domestic, commercial and industrial wastes generated within the City. The waste fill area is comprised of Phase 1 (6.1 ha - historic) and Phase 2 (1.9 ha - active).

A provincially significant wetland referred to as the Martin Creek Wetland surrounds the Site (Figures 2 & 3), except for the north-east boundary which is adjoined by agricultural land and a sand and gravel pit. The nearest residential dwellings are located on Mark Road, approximately 700 m south and 450 m north of the waste fill area.





The Site has been approved and is currently operated as a natural attenuation facility, with no engineered liner and no leachate collection system. Natural attenuation of leachate occurs within the CAZ south and east of the waste fill area and within the wetland in close proximity to the landfill.

Table 1 below summarizes the noteworthy events relating to the history of the Site. In 2015, the City submitted an updated Design and Operations (D&O) Report including updated surface water and ground water monitoring programs and trigger mechanisms. The updated D&O Report was accepted and formed the basis for the amended ECA dated January 20, 2016 and directs the current monitoring program for the Site.

**Table 1: Site History**

| Date   | Event                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Feb-72 | • Fenelon landfill licensed by the Department of Environment under provisional Certificate of Approval No. 321206.                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Dec-72 | • Certificate of Approval No. 321206 issued by the Ministry of the Environment stating that the practice of open burning of refuse was to be discontinued.                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Dec-73 | • Certificate of Approval No. 321206 was reissued.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Jun-74 | • Certificate of Approval No. 321206 reissued with the condition that a plan indicating a schedule of site improvements was to be submitted to the Regional Director.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Dec-77 | • Certificate of Approval No. 321206 reissued acknowledging an Interim Development Plan prepared for the site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Feb-80 | • Certificate of Approval No. 321206 reissued requiring that the landfill be registered on title.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1987   | • County of Victoria commenced a County-wide Waste Management Master Plan Study.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 1992   | • County of Victoria assumed responsibility for waste disposal within the County.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Jan-94 | • Landfill Assets and Liabilities Reconciliation Agreement executed between the County of Victoria and Fenelon Township. Agreement reflected County's acquisition of ground water rights to Township Sand and Gravel Pit south of the landfill, and the future transition of ownership of the road allowance south of landfill from the Township to the County.                                                                                                                                                                                                                         |
| May-96 | • Certificate of Approval amended to show the owner of the site as the County of Victoria, and to allow the construction and operation of a "Reuse Centre".                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Jul-96 | • Certificate of Approval amended to allow the use of alternative daily cover material (paper fibre product).                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Aug-98 | <ul style="list-style-type: none"> <li>• Certificate of Approval amended as follows: <ul style="list-style-type: none"> <li>1. Site is granted approval to use additional alternative daily cover material for a two-year trial period subject to the following conditions: <ul style="list-style-type: none"> <li>• the cover will consist of construction/demolition fines supplied by Rancor Wood Recycling Inc.;</li> <li>• the Regional Director shall be notified at least two (2) working days prior to the commencement of the trial period;</li> </ul> </li> </ul> </li> </ul> |



| Date   | Event                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | <ul style="list-style-type: none"> <li>the County shall terminate the trial forthwith upon being advised by the Regional Director that he/she finds the use of the construction/demolition fines cover to be environmentally unsuitable; and</li> <li>adequate soil cover material shall be kept available for use should the construction demolition fines landfill cover prove unsuitable.</li> </ul> <p>2. County shall prepare and submit to the MOE a Design and Operations Report and Hydrogeological Report for the Fenelon Landfill Site by August 31, 1999.</p> |
| Oct-03 | <ul style="list-style-type: none"> <li>Certificate of Approval amended to reflect the Design and Operations Report (Gartner Lee Ltd., 2000) and the Hydrogeological Report (Middle Earth Hydrogeology Inc., 2002) prepared for the site.</li> </ul>                                                                                                                                                                                                                                                                                                                      |
| Oct-07 | <ul style="list-style-type: none"> <li>Certificate of Approval amended to approve the updated Continued Operations Plan, submitted by the City of Kawartha Lakes August 22, 2005, as required under Condition 12 of the Certificate of Approval.</li> </ul>                                                                                                                                                                                                                                                                                                              |
| Oct-09 | <ul style="list-style-type: none"> <li>Certificate of Approval amended to acknowledge the Design and Operations Plan prepared for the HHW Depot (January 2009) and revise the list of wastes acceptable for receipt at the HHW Depot, as well as the maximum quantity of waste that can be stored at the HHW Depot at any one time.</li> </ul>                                                                                                                                                                                                                           |
| Dec-09 | <ul style="list-style-type: none"> <li>Certificate of Approval amended as follows:               <ol style="list-style-type: none"> <li>The establishment and operation of an outdoor, open window leaf and yard waste compost facility consisting of a 50 m by 90 m pad; and</li> <li>The operation of an outdoor, open window organic waste composting pilot program on a 50 m by 20 m compost pad.</li> </ol> </li> </ul>                                                                                                                                             |
| Dec-12 | <ul style="list-style-type: none"> <li>Environmental Compliance Approval (ECA) amended to consolidate all approvals relating to the composting facilities, HHW Depot, collection and transfer to waste electronics and electrical equipment, reuse centre, waste diversion, and environmental monitoring.</li> </ul>                                                                                                                                                                                                                                                     |
| Oct-13 | <ul style="list-style-type: none"> <li>Submitted Updated Design and Operations Report for Phase II Landfilling to the MOECC.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Apr-15 | <ul style="list-style-type: none"> <li>Submitted Revision A of the Updated Design and Operations Report including a report on ground water and surface water monitoring program and trigger mechanisms to the MOECC.</li> </ul>                                                                                                                                                                                                                                                                                                                                          |
| Nov-15 | <ul style="list-style-type: none"> <li>Submitted Revision B of the Updated Design and Operations Report.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Jan-16 | <ul style="list-style-type: none"> <li>ECA amended to acknowledge the Updated Design and Operations Plan.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Jan-19 | <ul style="list-style-type: none"> <li>ECA amended to acknowledge alternative daily cover (steel plates)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

\* - Source: Golder, 2019

## 2.0 Geology

The ground water flow and transport is controlled by the Site's geological setting. The *site conceptual model* (SCM) is based on an understanding of the functional aspects of the regional and local geological setting.

The Fenelon Landfill Site is at a geologic transition point (esker) between an upland area that has a substantial thickness of glaciofluvial sand and gravel deposits (~20 m) and an



adjacent lower lying “wetland area”. A glacial till unit of approximately 5 m thickness (*i.e.*, Peterborough Drumlin Till Plain) lies over the underlying Ordovician limestone of the Verulam Formation (Golder, 2010). Over top of the till and present around the Site periphery is a glaciolacustrine silty fine sand unit which has been interpreted in borehole logs to be approximately 8 m thick. A wetland complex has developed over this unit and now supports a peat bog environment.

It was stated in the 2009 Annual Report (Golder, 2010) that the silty fine sand and till units have limited thickness or are not present in the center of the esker (MW18, 23), which is likely the result of glacial meltwater erosion prior to the deposition of the esker sediments. Middle Earth Hydrogeology (2000) had previously described the local geological sequence as limestone bedrock (Layer 1); beneath clay till material (Layer 2); beneath glaciolacustrine silty fine sand (Layer 4); which has been scoured and replaced by glaciofluvial sediments of the esker (Layer 3) and flanked by a peat bog (Layer 5). The Golder (2010) report has sub-divided the esker materials into a core sandy gravel material which is encased by a fine to medium sand which outcrops. A detailed northwest to southeast cross-section through the Site is presented in Figure 5.

Hydraulic data for the geological units noted above are provided in the following table.

**Table 2: Hydraulic Conductivity Values (from Golder, 2010)**

| Geologic Unit               | Average Hydraulic Conductivity(m/s) | Hydraulic Conductivity Range (m/s) |
|-----------------------------|-------------------------------------|------------------------------------|
| Peat (Layer 5)              |                                     | $10^{-6.2*}$ to $10^{-5.0}$        |
| Sand and Gravel** (Layer 3) | $5 \times 10^{-4} = 10^{-3.3}$      | $10^{-4.0}$ to $10^{-3.4}$         |
| Silty Fine Sand (Layer 4)   | $1 \times 10^{-4} = 10^{-4.0}$      | $10^{-5.1***}$                     |
| Glacial Till (Layer 2)      | $9 \times 10^{-6} = 10^{-5.1}$      | $10^{-7.5****}$                    |
| Upper Bedrock (Layer 1)     | $1 \times 10^{-4} = 10^{-4.0}$      | $10^{-4.0}$                        |

\* - Values lower in compacted peat beneath wastes

\*\* - Esker deposits

\*\*\* - Average value based on in-situ testing and grain size analysis

\*\*\*\* - Base on grain size analysis

Outside the immediate area of the Site, local MECP water well record data suggest that the overburden thickness is moderate to thin (*i.e.*, <4 m thick). However, some areas such as the Fenelon Landfill Site have much more significant overburden thicknesses and are typically associated with esker formations (Finamore & Bajc, 1981). Drumlins are also present on this landscape, but not in the immediate vicinity of the Site.

The local bedrock geology has been described by the Ontario Geologic Survey (OGS) as being composed generally of a gray-brown to blue-gray dolostone, included as part of the



Lower Verulam Formation (Armstrong & Rheume, 1994). The thickness of this dolostone formation averages about 30 m, and is underlain by the Bobcaygeon, Gull River and Shadow Lake Formations prior to intersecting the Pre-Cambrian contact. Below the weathered contact, the ground water flow in the limestone bedrock tends to be dominated by discrete laterally bedded fracture planes that would be expected to limit vertical migration deeper into the bedrock formations.

### **3.0 Hydrogeologic Interpretation**

As an initial step in our interpretation of the Site hydrogeology, geologic cross-sections were reviewed as they provide a visual representation of the major water-bearing zone(s) existing within the subsurface in the vicinity of the Fenelon Landfill Site (*i.e.*, upper 30 m). The current monitoring well network for the Site includes locations with multiple target zones (shallow overburden, deep overburden, shallow bedrock and till unit). The following section describes how ground water within these different zones moves and interacts both horizontally and vertically.

Ground water flows principally through both the underlying sand and gravel unit from the esker as well as the more regional silty fine sand aquifer, which due to their high permeability forms the preferred migration pathway. These units are underlain by a regional till unit which is locally discontinuous due to glaciofluvial processes. The till unit is in turn underlain by a weathered / fractured limestone. It should also be noted that much of the waste area is also deposited atop a 1.5 m layer of compacted peat soils associated with the surrounding wetland. Given the low hydraulic conductivities in the peat and presence of leachate mounding, it is likely that this unit provides a hydraulic barrier between the waste and underlying sand unit. However, as the peat layer does not extend completely across the base of the waste mound, there is still expected to be a hydraulic connection between the waste mound and underlying sand unit closest to the esker.

The ground water elevations (Appendix F) have been monitored from 2002 to present. The ground water elevation data suggest that the ground water table shows typical seasonal variation (*i.e.*, < 2 m change in most monitors). The hydraulic gradient is also quite muted at this Site with a differential hydraulic head of 2 to 3 m over the 500 m monitoring distance, with the exception of some mounding present within the waste mound.

Ground water flow direction within the overburden reflects the local topography with an elevated water table conditions observed within the highpoints of the Site (*i.e.*, waste mound and center of esker), although not significantly elevated around the surrounding area (~1 m). As such, ground water would be expected to migrate in a radial direction



from the waste mound/ esker. Beyond the waste mound a southeastern flow path is observed in the shallow overburden.

The ground water flow patterns in the lower overburden and bedrock also show a similar regional south to southeast flow path as the shallow overburden. Ground water flow mapping is presented on Figures 6 to 11 in Appendix A.

Based on the hydraulic properties, ground water velocities were calculated and summarized in Table 3 below. Porosity values are considered slightly low, but are considered conservative in estimating ground water flow and have been maintained based on previous estimates for the Site (Golder, 2010).

**Table 3: Ground Water Flow Velocities**

| Hydrogeologic Unit   | Hydraulic Conductivity (m/s) | Lateral Gradient (m/m) | Porosity    | Ground Water Velocity (m/yr) |
|----------------------|------------------------------|------------------------|-------------|------------------------------|
| Sand and Gravel*     | $5 \times 10^{-4}$           | 0.004                  | 0.25        | 250                          |
| Fine to Medium Sand* | $1 \times 10^{-4}$           | 0.004                  | 0.25        | 50                           |
| Lower Overburden     | $9 \times 10^{-6}$           | 0.003                  | 0.25        | 3                            |
| Upper Bedrock        | $1 \times 10^{-4}$           | 0.005                  | 0.01-0.02** | 800-1500                     |

\* - Esker Deposits

\*\* - Conservative assumption

\*\*\* - Data used in tables from Golder, 2010

Given the ground water flow directions and flow rates presented above, it is apparent that both the esker deposits as well as the upper bedrock aquifer units provide the primary pathways for potential leachate migration from the site assuming a sufficient vertical hydraulic connection with the waste mound. However, as the extent of the esker complex to the southwest is limited to approximately 300 m beyond the existing monitoring network, it is likely that ground water within the coarser grained esker deposits drains into surrounding silty fine sand lacustrine deposits.

Under these velocities, a contaminating source could have easily extended to the limits of the esker and beyond within a relatively short period of time. Assuming a constant source is present, the expectation is that a steady-state dissolved-phase plume would have been established within these transmissive units. Therefore, a constant geochemical signature at monitoring points would be anticipated under such conditions.



## 4.0 Site Conceptual Model

According to Chapman and Putnam (1984), the Fenelon Landfill Site is located within the physiographic region named the “Peterborough Drumlin Field”. The Peterborough drumlin field is located north of Lake Ontario, covering an area of ~5,000 km<sup>2</sup>. It covers regions of the Lowlands between the Niagara Escarpment and the Algonquin Uplands, encompassing a belt of southwestern trending glacial terrain spanning 140 km east of Lake Simcoe. The belt has an extent of 20 to 60 km north-south, which is bound by two (2) moraine ridges that are oriented west to east. The Dummer Moraine occurs to the North, while the Oak Ridge Moraine is situated to the South.

Based on previous reporting and regional geological mapping of the Site area, the Site is located along an esker complex that extends along a southwest – northeast axis which is surrounded by low lying wetland areas. The upper local soils consist of esker sediments (coarse sand and gravel) while deeper soils range from regionally extensive sand sequences to silty sand/ sandy silt till deposits. Modern organic (peat) deposits are also present in nearby wetland areas that surround the landfill.

Given the above-noted conditions, the monitoring network has historically targeted three (3) regional aquifer units referred to as “shallow overburden”, “lower overburden” and “shallow bedrock”. Based on these details, the hydrogeological environment is somewhat complex which is compounded by proposed deposition and the surrounding wetland complexes. The Site geochemistry has been used to differentiate the individual aquifer units at the Site. The ability to distinguish different geochemical signatures has allowed for a more defined ground water flow pathway which infers some degree of isolation between the different units. However, this is most discernable between the shallow overburden and lower units (lower overburden and bedrock) in proximity to the waste mound. This distinction becomes less obvious further out from the waste mound.

The most notable difference between the shallow and lower units is the consistency in water quality over time. The lower units (lower overburden and bedrock units) indicate similar and stable ground water signatures, while the shallow unit is a bit more variable. This variability is likely owing to its influence from surface water sources (*i.e.*, precipitation, runoff and leachate infiltration). The one (1) exception to this is MW27-I, which has shown a more mineralized ground water signature that is unique from other bedrock wells at the Site.

This overall pattern is not surprising given the fact there is no apparent confining layer which would hydraulically separate the units, aside from some differential in grain size and the depth in the coarse-textured esker complex. Although a basal till unit is present on top of the bedrock contact, it has been found to be discontinuous along the esker



complex, likely due to erosional processes associated with the esker's deposition. As such, there would be preferential ground water movement between these two (2) units, especially given the greater hydraulic conductivity observed in the bedrock which suggests greater weathering/ fracturing at the contact.

In addition to the ground water signatures described above, the surface water quality was also evaluated and compared to the observed leachate and ground water signatures. The surface water from Martin Creek and the established background station was found to have a similar geochemical signature to that of the ground water aquifers with some greater seasonal variability. The expectation is that ground water from the esker complex flows toward, and ultimately discharges to, Martin Creek. Despite this flow pattern, the surface water chemistry does not appear to be altered by the migration of leachate. This is expressly shown by the limited difference in samples collected between the upstream and downstream sampling locations. This continues to suggest that there is no detectable influence downgradient of the landfill. In addition, the movement of ground water from the landfill to the adjacent wetland area is not observed at any significant distance into the wetland from the landfill periphery (*i.e.*, within Site limits) and adjacent creek.

Based on the geochemical findings to date, there is limited migration of leachate within the overburden and surface water regimes. LIPs, such as ammonia, are not elevated in these units which suggests that the mass flux from the landfill is insufficient to dramatically alter or influence the background geochemical signature. Thus, there is a sufficient amount of ground water underflow that provides enough dilution from the amount of contaminant mass that may be leaching from the landfill. The leachate mound present in the landfill is evidence of this as the limited hydraulic conductivity of the wastes and/ or the compacted peat layer which underlies much of the waste mound has created at least a partial hydraulic barrier between the waste and the underlying aquifers. The basis for this interpretation was presented in the preceding sections of this report.

## **5.0 Summary of 2023 Monitoring Program**

The 2023 monitoring program for the Site was undertaken by Azimuth Environmental Consulting (Azimuth). This included ground and surface water monitoring which occurred in April and October 2023, as well as additional surface water monitoring events in April (later in month) and July.

This program, which includes 45 ground water monitoring wells and 12 surface water locations represents a similar program that has been completed for a number of years, although additional monitoring wells have been incorporated into the program over time.





Prior to sampling at ground water monitors, static water levels were measured. Ground water samples were then collected following purging of at least three well volumes of water from each monitor using dedicated check valve pumps and tubing or until the monitor was dry and sufficient recovery allowed for a sample collection. Ground water samples for metals and dissolved organic carbon (DOC) analysis were also field-filtered using disposable 0.45 µm filters.

Surface water samples were collected at a depth about equal to half of the surface water feature's total depth, while minimizing the potential for sediment entrainment and were not filtered, with the exception of WP6-13 which had a second additional filtered sample for metals.

In 2023, the analytical testing was completed by Caduceon Environmental Laboratories (Caduceon) of Kingston or Richmond Hill, Ontario. Caduceon is accredited by the Canadian Association for Laboratory Accreditation (CALA). Unabbreviated Laboratory Certificates of Analyses for all testing are presented in Appendix I, while the data has also been summarized with the historical data in Appendix B. Also, for a more detailed description of the field protocols employed for all monitoring activities associated with the 2023 monitoring program, the City's standard field protocols have been included in Appendix H.

### **5.1 2023 QA/QC Samples**

As part of the routine sampling program for the Site, duplicate samples were collected and analyzed for quality assurance purposes. In 2023, eight (8) QA/QC samples were collected out of 103 samples collected. The laboratory was not advised of the sample duplication prior to analysis of these samples. Results are provided in Appendix B and were found to be generally within acceptable limits.

A minor exception was noted for ammonia and TKN at MW11A during the October monitoring event. The concentrations for these parameters (TKN – 1.6 & 0.5 mg/L & ammonia – 1.52 & 0.5 mg/L) indicated a larger variance while both concentrations are found to be elevated above the historical range without similar deviations for other LIPs. A similar deviation was noted in April and July 2022 at this location. Similar deviations for these parameters have also been observed in other landfill datasets over the same time period. The anomalies show a spike in total ammonia concentrations that are about an order of magnitude or more above the typical range. These abrupt trends fall back within the expected ranges during later sampling rounds (*i.e.*, summer and fall), when concentrations would be expected to be more elevated due to seasonally dry conditions. In addition, the remainder of the parameters did not show similar variances, such that the overall geochemical data integrity is considered sufficient when those parameters





affected are discounted. For the purpose of this 2023 report this data has been considered anomalous unless these isolated parameter spikes correlate with other parameter trends supporting leachate influence. However, the 2024 data will be assessed to see if the trends fall into the expected range for the spring.

## **5.2 Ground Water & Leachate**

### **5.2.1 Ground Water & Leachate Flow**

Water level measurements were obtained prior to any disturbance of the static piezometric surface using an electronic water level meter (accuracy of +/- 0.5 cm). The water level data collected during monitoring events in 2023 was generally consistent with the historical data set; however, a shift in reference elevations was noted following a survey of all monitoring locations in 2019, which caused the results between 2019 and the historical values to differ slightly. The 2023 and historical ground water elevations have been included in Appendix F and illustrated on Figures 6 to 11.

### **5.2.2 Background Ground Water Quality**

The background ground water chemistry is currently and has historically been monitored at two upgradient locations (MW11A and the Office Well). MW11A monitors the shallow overburden unit northeast of the waste area, while the Office well targets the shallow fractured bedrock aquifer northeast of the waste area (Figure 2).

Some differences in chemistry have been noted between these background locations which include elevated sodium, chloride and TDS, likely from road salting activities along Mark Road. The water quality can be characterized by a moderate level of mineralization, with consistent exceedances to Ontario Drinking Water Quality Standards (ODWQS, 2006) noted for iron, manganese, DOC and hardness in both units. TDS is also exceeded occasionally at MW11A. The elevated iron and manganese concentrations present in the ground water are attributed to anoxic (“reduced” oxygen) conditions. The natural organic rich peat environment depletes / reduces the dissolved oxygen environment to a point where valence changes in iron and manganese occur and therefore account for the elevated concentration levels detected. Iron and manganese are much more soluble under geochemically reduced conditions and are naturally sourced earth elements. The hardness comes from the carbonate-rich sediments in both the overburden and bedrock environments. Elevated DOC may be the result of influence of the surrounding wetlands on the underlying ground water quality through decay of natural organic materials. The TDS is associated with the elevated sodium and chloride concentrations attributable to road salting on Mark Road.



### 5.2.3 Leachate Quality

Leachate quality is controlled by the availability of soluble contaminants in the waste pile, the residence time of infiltrating water in the waste, and the physical conditions (*i.e.*, temperature, redox potential, and pH) of the solution. Compared to natural waters, leachate that is produced from landfilled waste typically possesses elevated concentrations of calcium, magnesium, sodium, potassium, iron, zinc, chloride, sulphate, alkalinity, ammonia, total kjeldahl nitrogen (TKN), conductivity, total dissolved solids, dissolved organic carbon, and/or phenols (Jones, 2001). Aluminum, boron, barium, cobalt, nickel, strontium, titanium, vanadium and phosphorus species are also typically enriched, if available, although to a lesser degree. Leachate quality changes over time as a result of continued leaching of the waste pile, which preferentially removes more soluble compounds first. The valence of certain species (*i.e.*, nitrogen, sulphur) can also be used to evaluate differences in the waste environment, specifically the oxidation state which tends to be depleted in a landfilled environment. Inherent difficulties arise when selecting leachate related parameters in a limestone bedrock environment. Typically, elements such as alkalinity and sulphate are elevated in natural limestone bedrock ground waters, thus reducing their effectiveness to be used as leachate indicator parameters.

Presently, the best available estimate of leachate quality at the Fenelon Landfill Site is the analytical data obtained from MW7, which is screened within the waste (Figure 2). For the Fenelon Landfill Site, the leachate strength is relatively high as it is still an active site. One of the most significant deviations noted between the leachate and natural levels is with respect to nitrogen species (*i.e.*, TKN and total ammonia [as N]). An elevated concentration of both of these parameters is indicative of a reducing environment, as is typical of ground water conditions in the immediate vicinity of any landfill site. This is primarily due to the consumption of available dissolved oxygen within the subsurface by bacteriological activity, which is catalyzed by the large quantity of organic matter (organic carbon source for energy-producing reactions) occurring within the waste mass. The microbial activity is limited by the available oxygen which is often depleted within the landfill mass and hence the use of alternative sources of oxygen by facilitative bacteria (*i.e.*, reduction of oxygenated species [ $\text{NO}_3$  to  $\text{NH}_4$  and  $\text{SO}_4$  to  $\text{SO}_2$ ] dissolved in the leachate).

These geochemically reducing conditions will also allow for valence changes in many metal species which tends to increase dissolution potential of metals. This is evident at this site with the significantly elevated iron and manganese concentrations. Other parameters are slightly elevated (ex. chloride), but to a much lesser extent.

A final characteristic of the leachate quality is its relative consistency over time, albeit some variance is observed owing to the fact MW7 has been replaced several times



including 2013 and 2017. The parameter concentrations have all remained elevated and within a consistent range for the period of record with the exception of COD, TKN, DOC and iron, which have shown some variability since the monitor was last replaced in 2017. The inference is that the Fenelon Landfill Site will continue to yield this geochemical signature because it maintains a steady state condition likely due to the rate limiting effects. Eventually, the carbon-rich source present in the landfill will be depleted and will result in geochemical changes in line with the change within the host environment. It also suggests that the level of influence, the leachate at the Fenelon Landfill Site has on its surrounding environment would be expected to remain relatively steady throughout the operational lifespan of the Site and will likely show a slow decline over time. It should be noted that these assumptions are based on the Site accepting similar waste streams / annual waste volumes as has been historically.

Based on the leachate quality derived at MW7, the leachate indicator parameters (LIPs) identified for this Site in 2023 are listed below and have been included in the chemistry graphs (Appendix C) and average concentration tables in subsequent sections of the report. It is noted that these are similar to previous years:

- |                                      |                                        |
|--------------------------------------|----------------------------------------|
| <b>-Alkalinity</b>                   | <b>-Boron</b>                          |
| <b>-Chloride</b>                     | <b>-Dissolved Organic Carbon (DOC)</b> |
| <b>-Iron</b>                         | <b>-Manganese</b>                      |
| <b>-Chemical Oxygen Demand (COD)</b> | <b>-Potassium</b>                      |
| <b>-Total Dissolved Solids (TDS)</b> | <b>-Total Kjeldahl Nitrogen (TKN)</b>  |
| <b>-Ammonia</b>                      |                                        |

#### 5.2.4 Downgradient Ground Water Quality

In 2023, the ground water quality downgradient of the Fenelon Landfill Site is monitored via twenty-five (25) monitoring wells at twelve (12) locations (MW1, 12, 13, 14, 15, 16, 17, 18, 23, 26, 27 and 28). Additionally, eleven (11) perimeter monitoring wells at six (6) locations (MW2, 3, 5, 6, 10 and 22) are present only a short distance from the waste area. Many of these locations are nested and target the *shallow bedrock*, *shallow overburden* and *lower overburden*. Lastly, there are six (6) wetland probes (WP1, 2, 3, 4, 5 & 6) which are constructed shallow (~3 m) and are located in close proximity to the perimeter of the waste fill area.

A review of the geochemical database has indicated that the water quality of the *shallow overburden* and *lower overburden* units at the Site have generally consistent water quality, unless influenced by leachate. The leachate influence tends to target both of these units when in close proximity to the waste mound (*i.e.*, perimeter wells). The strongest chemical trend occurs in the *lower overburden* aquifer moving away from the



waste area (*i.e.*, southeast). This separation may be attributable to a plunging of the plume with distance coupled with infiltration contributing to the surficial water table quality away from the waste mound. It is further supported by the geological setting which has been previously described without a confining layer which would separate the shallow and lower overburden units. This is discussed in greater detail below.

#### Overburden Aquifer Summary

A summary of the 5-year average concentrations for the LIPs in the perimeter overburden wells at the Site is provided in Table 4. Averages from the past five (5) years are used to provide a general representation of water quality since the geochemical signature is consistent over time. As observed, leachate influence is present in all directions from the landfill. These results support the previously interpreted ground water flow directions which originate from the northeast. Results in about 2017 at MW5 & MW22B had shown the onset of leachate impacts at the east and northeast parts of the landfill, which is in the perceived up/ side gradient direction of the waste. However, it is noted that the active waste area has shifted towards these monitors. As such, this influence appears related to radial flow from the waste mound which is somewhat expected now that the active waste area has shifted. It is noted that the geochemical conditions have remained stable since the initial increases.

A variable leachate influence around the perimeter of the waste mound is noted, but this is more likely related to spatial distribution of these monitors and the variable distribution of the waste found across the waste mound. Another item to note is the inconsistency in leachate influence between the *shallow overburden* and *lower overburden* amongst the perimeter monitors. MW3 displays greater leachate influence in the *lower overburden* relative to the *shallow overburden* (MW3A), while perimeter locations to the east at MW5 and MW22 suggest a greater influence in the *shallow overburden* relative to the *lower overburden*. This is interpreted to be from the complex stratigraphy along the esker feature. MW5 and MW22 are located along the eastern flank of this geologic feature where soils consist of fine-textured sands overlying a medium-coarse sand in the lower overburden. The lower permeable sands are thought to limit the downward vertical migration of leachate in this area.

The lateral migration of the leachate plume at depth is evident from the values included in Tables 5 and 6, which provide the 5-year running average for LIP concentrations in all downgradient overburden monitors. The concentrations clearly indicate that although elevations are noted in the downgradient monitors, it is apparent that attenuative processes are active downgradient of the landfill as concentrations become greatly reduced a short distance downgradient of the landfill.



The tables also illustrate the relative influence migrating leachate has on the downgradient monitors. Slight elevations for select parameters are noted at MW13 and MW18 in the *shallow overburden*, while the *lower overburden* appears to be most influenced at MW15A and MW18B; although MW17 and MW19 may also be showing some minor influence as well. Based on the interpreted findings, and considering the southeasterly ground water flow direction, it can be interpreted that the center line of a dilute leachate plume extends to MW18. While the concentrations in the downgradient locations are less than those monitors within and surrounding the waste area, suggest that attenuative processes are active at the Site. Moreover, the most distant locations at MW26, MW26-2 and MW28-II/III indicate LIP concentrations that align with those observed in the background monitor (MW11A).

**Table 4: Average Leachate Indicator Parameter Concentrations – Perimeter Overburden**

| Parameters      | ODWQS | Background | Leachate    | North       |             | South       |             |            |            | East        |             |            |             |
|-----------------|-------|------------|-------------|-------------|-------------|-------------|-------------|------------|------------|-------------|-------------|------------|-------------|
|                 |       |            |             | Lower       | Shallow     | Shallow     | Lower       | Shallow    | Shallow    | Shallow     | Lower       | Lower      | Shallow     |
|                 |       |            |             | MW6         | MW6A        | MW10        | MW3         | MW3A       | MW2        | MW5         | MW5A        | MW22A      | MW22B       |
| Alkalinity      | 500   | 252        | <b>2404</b> | <b>1674</b> | <b>1510</b> | <b>1569</b> | <b>1088</b> | 354        | <b>637</b> | <b>888</b>  | <b>913</b>  | 344        | <b>1871</b> |
| Boron           | 5     | 0.02       | 4           | 2           | 1           | 1.4         | 0.3         | 0.1        | 0.4        | 1.0         | 2.3         | 0.05       | 1.7         |
| COD             | -     | 31         | 900         | 372         | 431         | 256         | 160         | 50         | 63         | 263         | 334         | 63         | 388         |
| Chloride        | 250   | 120        | <b>655</b>  | 234         | 166         | <b>255</b>  | 142         | 28         | 41         | 68          | 218         | <b>305</b> | <b>253</b>  |
| DOC             | 5     | 7          | <b>66</b>   | <b>51</b>   | <b>36</b>   | <b>48</b>   | <b>20</b>   | <b>12</b>  | <b>15</b>  | <b>31</b>   | <b>35</b>   | <b>12</b>  | <b>69</b>   |
| Iron            | 0.3   | <b>2</b>   | <b>13</b>   | <b>6</b>    | <b>24</b>   | <b>12</b>   | <b>25</b>   | <b>5</b>   | <b>52</b>  | <b>72</b>   | <b>66</b>   | <b>5</b>   | <b>19</b>   |
| Manganese       | 0.05  | <b>0.2</b> | <b>0.1</b>  | <b>1</b>    | <b>2</b>    | <b>1</b>    | <b>0.4</b>  | <b>0.2</b> | <b>1</b>   | <b>6</b>    | <b>1.1</b>  | <b>0.3</b> | <b>2</b>    |
| Potassium       | -     | 2          | 284         | 123         | 86          | 182         | 110         | 17         | 47         | 40          | 48          | 2          | 162         |
| TKN             | -     | 1          | 497         | 177         | 133         | 197         | 80          | 17         | 41         | 10          | 32          | 1          | 198         |
| Ammonia (total) | -     | 1          | 430         | 151         | 123         | 190         | 74          | 15         | 38         | 7.2         | 26.1        | 1          | 180         |
| TDS             | 500   | 472        | <b>3605</b> | <b>2222</b> | <b>1852</b> | <b>2140</b> | <b>1435</b> | 432        | <b>764</b> | <b>1107</b> | <b>1378</b> | <b>868</b> | <b>2462</b> |

Bold Highlighting indicates ODWQS exceedance

Average data from 2019 to 2023, where available

**Table 5: Average Leachate Indicator Parameter Concentrations – Shallow Overburden**

| Parameters      | ODWQS | Background | Leachate    | Downgradient (in order of proximity to waste) |       |       |            |       |       |            |            |          |          |
|-----------------|-------|------------|-------------|-----------------------------------------------|-------|-------|------------|-------|-------|------------|------------|----------|----------|
|                 |       |            |             | MW18                                          | MW16  | MW12  | MW13       | MW15  | MW14  | MW23-B     | MW28-III   | MW26     | MW27-III |
| Alkalinity      | 500   | 252        | <b>2404</b> | 252                                           | 213   | 238   | 180        | 181   | 196   | 149        | 236        | 285      | 203      |
| Boron           | 5     | 0.02       | 4           | 0.02                                          | 0.01  | 0.01  | 0.02       | 0.01  | 0.01  | 0.01       | 0.04       | 0.05     | 0.01     |
| COD             | -     | 31         | 900         | 34                                            | 7     | 7     | 7          | 10    | 35    | 19         | 27         | 47       | 356      |
| Chloride        | 250   | 120        | <b>655</b>  | 4                                             | 4     | 4     | 4          | 4     | 16    | 1          | 33         | 45       | 18       |
| DOC             | 5     | 7          | <b>66</b>   | <b>11</b>                                     | 3     | 3     | 2          | 4     | 3     | 3          | 2          | 4        | 2        |
| Iron            | 0.3   | <b>2</b>   | <b>13</b>   | 0.03                                          | 0.01  | 0.02  | <b>1</b>   | 0.01  | 0.03  | 0.02       | <b>0.4</b> | <b>1</b> | 0.2      |
| Manganese       | 0.05  | <b>0.2</b> | <b>0.1</b>  | 0.004                                         | 0.001 | 0.002 | <b>0.1</b> | 0.001 | 0.003 | <b>0.1</b> | <b>0.1</b> | 0.04     | 0.03     |
| Potassium       | -     | 2          | 284         | 34                                            | 1     | 1     | 3          | 0.2   | 0.3   | 0.3        | 2          | 3        | 2        |
| TKN             | -     | 1          | 497         | 1                                             | 0.2   | 0.4   | 1          | 0.3   | 1     | 0.4        | 0.3        | 0.4      | 5        |
| Ammonia (total) | -     | 1          | 430         | 0.2                                           | 0.1   | 0.2   | 1          | 0.1   | 0.05  | 0.1        | 0.05       | 0.1      | 0.1      |
| TDS             | 500   | 472        | <b>3605</b> | 324                                           | 232   | 259   | 199        | 192   | 237   | 156        | 362        | 386      | 243      |

Bold Highlighting indicates ODWQS exceedance

Average data from 2019 to 2023, where available



**Table 6: Average Leachate Indicator Parameter Concentrations – Lower Overburden**

| Parameters      | ODWQS | Background | Leachate    | Downgradient (in order of proximity to waste) |            |            |            |       |            |            |         |
|-----------------|-------|------------|-------------|-----------------------------------------------|------------|------------|------------|-------|------------|------------|---------|
|                 |       | 11A        | MW7         | MW17                                          | MW19       | MW18B      | MW15A      | MW23A | MW28-II    | MW26-2     | MW27-II |
| Alkalinity      | 500   | 252        | <b>2404</b> | 333                                           | 373        | 389        | 387        | 245   | 222        | 364        | 203     |
| Boron           | 5     | 0.02       | 4           | 0.1                                           | 0.1        | 0.1        | 0.1        | 0.02  | 0.02       | 0.04       | 0.01    |
| COD             | -     | 31         | 900         | 18                                            | 15         | 24         | 28         | 6     | 93         | 16         | 33      |
| Chloride        | 250   | 120        | <b>655</b>  | 28                                            | 40         | 60         | 69         | 14    | 35         | 51         | 20      |
| DOC             | 5     | 7          | <b>66</b>   | <b>8</b>                                      | <b>6</b>   | <b>8</b>   | <b>7</b>   | 3     | 2          | <b>7</b>   | 2       |
| Iron            | 0.3   | <b>2</b>   | <b>13</b>   | 0.01                                          | 0.2        | <b>8</b>   | <b>6</b>   | 0.2   | <b>0.4</b> | <b>3</b>   | 0.03    |
| Manganese       | 0.05  | <b>0.2</b> | <b>0.1</b>  | 0.01                                          | <b>0.1</b> | <b>0.4</b> | <b>0.1</b> | 0.03  | 0.04       | <b>0.1</b> | 0.004   |
| Potassium       | -     | 2          | 284         | 4                                             | 4          | 4          | 3          | 1     | 2          | 2          | 2       |
| TKN             | -     | 1          | 497         | 1                                             | 0.4        | 2          | 1          | 0.3   | 1          | 0.5        | 0.4     |
| Ammonia (total) | -     | 0.5        | 430         | 0.2                                           | 0.1        | 2          | 0.7        | 0.1   | 0.2        | 0.2        | 0.1     |
| TDS             | 500   | 472        | <b>3605</b> | 415                                           | 491        | <b>518</b> | <b>517</b> | 281   | 305        | 458        | 263     |

Bold Highlighting indicates ODWQS exceedance  
Average data from 2019 to 2023, where available

### Shallow Bedrock Aquifer Summary

The 5-year average concentrations for monitoring wells targeting the *shallow bedrock* aquifer are provided in Table 7. The bedrock water quality appears to have elevated concentration for many indicator parameters, most notably iron. The most notable leachate influence is noted at MW18A, which is the closest downgradient bedrock well to the waste mound. Some marginal influence may also be present at MW15B and MW23.

The water quality from MW27-I indicates a very different geochemical signature than the most bedrock monitoring wells. While most LIPs are elevated, several other parameters such as barium, sodium, selenium, hardness and strontium are significantly elevated above those found in the leachate monitoring well (MW7). This, coupled with its large distance the waste source, suggests that the source of these elevations is from natural mineralization within the bedrock aquifer environment. Other distant locations MW26-1 and MW28-I do appear to have elevated LIPs (*i.e.*, ammonia, boron and DOC) concentrations; however, these are similar or below those concentrations observed in the background well (Office). Chloride concentrations at these locations are also elevated; however, this is likely the result of influence from Mark Road.

**Table 7: Average Leachate Indicator Parameter Concentrations – Shallow Bedrock**

| Parameters      | ODWQS | Background | Leachate    | Downgradient (in order of proximity to waste) |            |             |            |            |            |             |
|-----------------|-------|------------|-------------|-----------------------------------------------|------------|-------------|------------|------------|------------|-------------|
|                 |       | Office     | MW7         | MW22                                          | MW18A      | MW15B       | MW23       | MW28-I     | MW26-I     | MW27-I      |
| Alkalinity      | 500   | 221        | <b>2404</b> | 253                                           | 388        | 371         | 352        | 211        | 320        | 162         |
| Boron           | 5     | 0.1        | 4           | 0.1                                           | 0.2        | 0.1         | 0.1        | 0.02       | 0.05       | 1           |
| COD             | -     | 13         | 900         | 27                                            | 22         | 19          | 24         | 6          | 11         | 148         |
| Chloride        | 250   | 14         | <b>655</b>  | 55                                            | 83         | 71          | 60         | 44         | 52         | <b>3166</b> |
| DOC             | 5     | <b>10</b>  | <b>66</b>   | <b>9</b>                                      | <b>7</b>   | <b>7</b>    | <b>9</b>   | 2          | <b>5</b>   | 0.4         |
| Iron            | 0.3   | 4          | <b>13</b>   | 2                                             | <b>3</b>   | <b>2</b>    | <b>5</b>   | <b>0.5</b> | <b>1</b>   | <b>1</b>    |
| Manganese       | 0.05  | <b>0.1</b> | <b>0.1</b>  | 0.04                                          | <b>0.1</b> | <b>0.05</b> | <b>0.1</b> | 0.02       | <b>0.1</b> | 0.02        |
| Potassium       | -     | 4          | 284         | 5                                             | 8          | 4           | 3          | 2          | 3          | 55          |
| TKN             | -     | 1          | 497         | 1                                             | 2          | 1           | 1          | 0.2        | 0.4        | 10          |
| Ammonia (total) | -     | 0.5        | 430         | 1.0                                           | 1          | 0.5         | 0.7        | 0.1        | 0.1        | 8           |
| TDS             | 500   | 247        | <b>3605</b> | <b>348</b>                                    | <b>529</b> | <b>494</b>  | 462        | 305        | 419        | <b>5106</b> |

Bold Highlighting indicates ODWQS exceedance  
Average data from 2019 to 2023, where available



### Geochemical Trends

Since there appears to be a measurable leachate influence in the downgradient *shallow overburden* and *lower overburden* wells, it is important to chart temporal trends with respect to the selected LIPs. This observational exercise is central to assess any migrating leachate plumes originating from the Site and if it has changed or evolve over time. This trending is also important to assess the effectiveness of the monitoring program for the Site.

These trends are illustrated for several LIPs over time graphs provided in Appendix C. It should be noted that these locations were selected as they provided adequate coverage of the Site and surrounding area. For reference purposes, the entire geochemical database has been appended in Appendix B.

Again, leachate influence is noted at a few proximal locations, including MW5, MW22A & MW22B, which exhibited an increase in several LIPs in ~2018 owing to the transition of the active waste area to the east and towards these monitoring locations. While ammonia continues to show an increasing trend at MW5, the other locations have shown relative stability in concentrations following the initial increases with some parameters even declining. Other locations, such as MW12, MW13 & MW23B, have shown some variability potentially owing to modest leachate influence. MW12 has indicated more variability in ammonia, TKN and COD concentrations, although this variability has been present for many years with no obvious increasing trends and the concentrations are still relatively minimal. MW13 continues to show slight decreasing trends for select LIPs since 2005/2006, while recent trends for LIPS (*i.e.*, ammonia, COD, iron and TKN) remain below the long-term average at this location.

MW23 and MW23B have concentrations falling within a predictable range with the exception of ammonia and TKN which remain somewhat elevated following slight increases in 2022 (though within the historical range). Other LIPs remain within their respective range, suggesting independent sources but these trends will continue to be monitored in 2023.

Other subtle increases in ammonia and TKN concentrations at MW15A over the past 10 years are noted and similar subtle trends over a similar period for iron and alkalinity at MW18A and MW19. These increases are marginal in nature and appear isolated from other LIPs, and as such, are not viewed as a concern. Notwithstanding, this shows that a dilute leachate plume is observed downgradient of the active waste area.





MW27-III has indicated a small but consistent increasing trend for chloride; however, it is interpreted to be sourced to road salt given a lack of other elevated LIP concentrations. It is also noted that concentrations are below those observed at MW28, which is in closer proximity to Mark Road and had a similar historical subtle increasing trend for chloride, which has since stabilized.

Other locations, including background monitors have shown variable geochemical concentrations over time; however, they all fall within a predictable range. This is most evident for COD concentrations which are shown to fluctuate at most locations regardless of whether a leachate influence is present or not. Despite this variability, there is no defined seasonal trending at any of these locations.

#### ODWQS Assessment

In addition to the above assessment, all 2023 values were compared to ODWQS in the chemistry summary tables (Appendix B), which indicated relatively similar results to previous years. Numerous LIPs are elevated along the perimeter of the landfill, albeit more dilute concentrations from those found at MW7. Further downgradient, LIP exceedances included hardness, iron, manganese, DOC, aluminum and TDS, with the most elevated concentrations and number of exceeded parameters found in the lower overburden and bedrock. It is noted that the concentration differentials between locations and with distance from the waste mound were variable and did not show a declining trend with distance from the waste mound. This would suggest that natural sources are contributing to these elevated parameters, which is also supported by the fact that many of these parameters have shown to be exceeded in the background locations.

The exception to this would be TDS at MW15A, MW18A & MW18B which are more likely sourced to the landfill based on their proximity and centerline location of the perceived dilute leachate plume orientation. Beyond the exceedances noted above, several other parameters including barium, chloride and sodium were noted to exceed at MW27-I, with concentrations consistent for the period of record. As noted above, this location had been determined to target a naturally mineralized horizon within the bedrock such that these exceedances are not related to the landfill. This is further supported by the fact these exceedances represent significant elevations in concentrations at the most distant monitoring location.

### **5.3 Wetland Ground Water Monitoring**

In addition to the ground water monitoring network discussed above, a set of shallow drive point monitors are installed within the adjacent wetland surrounding the landfill. WP2, WP3 and WP4 are located immediately adjacent to the waste mound, WP5 is





located approximately 200 m south of the waste area while WP1 is located approximately 200 m northeast of the waste mound. WP6 is located approximately 700 m south of the waste mound. Given the location and water quality at WP1 and WP6, these locations are utilized as representative background locations, while the others provide an indication of shallow ground water impacts beyond the edge of waste.

The following table illustrates the horizontal distribution of leachate influence within the shallow ground water within the wetland.

**Table 8: Average Leachate Indicator Parameter Concentrations – Wetland Probes**

| Parameters      | PWQO /<br>CWQG* | Background | WP1      | Leachate   | Perimeter Locations |          |          |           |
|-----------------|-----------------|------------|----------|------------|---------------------|----------|----------|-----------|
|                 |                 | WP6        |          | MW7        | WP2                 | WP3      | WP4      | WP5       |
| Alkalinity      | -               | 307        | 224      | 2404       | 462                 | 794      | 816      | 272       |
| Boron*          | 1.5             | 0.03       | 0.01     | <b>4</b>   | 0.2                 | 0.4      | 1        | 0.3       |
| COD             | -               | 74         | 444      | 900        | 2309                | 412      | 806      | 1323      |
| Chloride*       | 120             | 28         | 22       | <b>655</b> | 30                  | 64       | 99       | 11        |
| DOC             | -               | 9          | 17       | 66         | 19                  | 39       | 34       | 21        |
| Iron            | 0.3             | <b>8</b>   | <b>1</b> | <b>13</b>  | <b>11</b>           | <b>1</b> | <b>1</b> | <b>61</b> |
| Manganese       | -               | 0.2        | 0.5      | 0.1        | 0.5                 | 0.3      | 0.2      | 1.3       |
| Potassium       | -               | 3          | 2        | 284        | 14                  | 67       | 75       | 16        |
| TKN             | -               | 2          | 7        | 497        | 59                  | 73       | 51       | 9         |
| Ammonia (total) | -               | 0.3        | 1        | 430        | 5                   | 60       | 39       | 0.8       |
| TDS             | -               | 485        | 276      | 3605       | 599                 | 1088     | 1022     | 328       |

\* - CWQG

Bold Highlighting indicates PWQO CWQG exceedance

Average data from 2019 to 2023, where available

As observed at WP1 & WP6, naturally elevated iron concentrations are present with the naturally anoxic wetland conditions beyond the influence of the landfill. As well, the average concentration at WP5 is strongly influenced by a single concentration from April 2019 (391 mg/L). Leachate influence is observed within the three (3) closest locations WP2, WP3 and WP4, while a potentially more subtle influence is observed at WP5, which suggests attenuative processes are active limiting the extent of influence with distance from the waste mound.

Elevated concentrations relative to PWQO for these wetland monitors in 2023 include iron, aluminum, zinc, phenols, phosphorus and unionized ammonia at various locations. The zinc exceedances were historically related to the galvanized steel drivepoint construction, which registered concentrations about two-orders higher than current suggesting they are not sourced to the landfill. While variability amongst the dataset is noted, these elevated concentrations are not attributable to the landfill.

The long-term trends at these locations are charted and presented in Appendix C. Most locations show variability over time, although with no defined trends for most parameters



indicating that any leachate influence falls within a predictable range. Since the western area of the waste mound has now been fully covered and seeded, there is no expectation that leachate influence to the north, south or western periphery will significantly increase.

Given that the surrounding wetland is interpreted to be a ground water discharge feature, the surface water sampling program provides more consistent insight into the landfills influence on the surface water regime.

## **5.4 Surface Water**

### **5.4.1 Surface Water Flow**

The Site is located within the catchment area of Martin Creek as shown on Figure 3. Martin Creek flows in a northeast direction and drains into Cameron Lake at Sackett Bay, approximately 11.3 km northeast of the Site. The size of the catchment area is approximately 4,450 ha, with about 1,750 ha upstream of the Site. The bulk of the catchment area is occupied by the Martin Creek Wetland, a provincially significant wetland. The landfill (waste footprint – 8 ha) represents a very small portion of the creek recharge area west of Mark Road (0.5%).

The surface runoff from roughly three-quarters of the landfill drains to the north and west into the wetland. The remaining runoff drains into the wetland to the south of the landfill. Drainage within the wetland is generally towards the southeast toward Martin Creek, with no direct surface watercourse between the landfill and the creek. The creek is approximately 900 m south of the waste mound and separated by the upland area of the esker in which the landfill is located. This results in very slow and indirect drainage over relatively flat ground throughout the wetland near the landfill.

### **5.4.2 Surface Water Quality**

The purpose of this monitoring network has been to establish any potential influence the landfill may be having on the water quality of Martin Creek and associated wetland as it has been determined to represent a ground water discharge location downgradient of the landfill. The monitoring network consists of six (6) perimeter sampling locations within the Martin Creek Wetland adjacent to the waste mound, with two (2) samples collected from each SW13 and SW15 at 10 and 30 m from edge of waste. Additionally, four (4) locations along Martin Creek and associated tributaries are also sampled. For reference, these locations are illustrated on Figure 3.

Surface water monitoring is required three (3) times annually, during spring, summer and fall. Monitoring is completed for a comprehensive list of parameters including general water quality, VOC's, and PCB's.



Additional monitoring is also required by the ECA including electrical conductivity monitoring in spring of each year along transect lines extending from the toe of the landfill to approximately 30 m into the wetland as shown in Figure 3. The transect lines coincide with the locations of existing surface water sampling stations and wetland probes (drive points) that are about 10 m into the wetland from the toe of the landfill. Conductivity readings are taken at about 5 m horizontal distance intervals along the transect lines. The conductivity monitoring serves to delineate the lateral extent and magnitude of leachate impacts within the wetland adjacent the toe of the landfill. At three (3) of the transect lines – Transect Lines WP4, SW-13 and SW-15, surface water samples are collected at 30 m distance from the landfill in spring, summer and fall for analysis of the comprehensive list of parameters. These three (3) transect lines were selected for water quality sampling as they indicated the greatest impacts during the initial (May 2014) transect line monitoring event. The conductivity monitoring was not completed during the 2023 monitoring period, due to operational issues; however, it has since continued in 2024.

Table 9 (overleaf) summarizes the 5-year average concentrations of LIPs between up and downstream monitoring locations. This summary table and the 2023 results (Appendix B) continue to show consistent water quality between the up- and downstream locations with the exception of slightly elevated iron, manganese, COD, TKN and DOC in some of the downstream locations. Since Martin Creek represents a ground water discharge feature, the aggregation of some of these parameters with distance downstream is not surprising. Any differences are likely attributable to natural variance in the feature (or alternative sources) given the distance between up and downstream locations (~2.7 km). Overall, the water quality continues to show that there is no leachate influence in Martin Creek.

**Table 9: Average Leachate Indicator Parameter Concentrations – Martin Creek**

| Parameters      | PWQO / CWQG* | Background |      | Leachate  | Downstream<br>(in order) |            |
|-----------------|--------------|------------|------|-----------|--------------------------|------------|
|                 |              | SW2        | SW16 |           | SW3                      | SW4        |
| Alkalinity      | -            | 165        | 238  | 2404      | 163                      | 145        |
| Boron           | 0.2          | 0.05       | 0.01 | <b>4</b>  | 0.04                     | 0.01       |
| COD             | -            | 35         | 15   | 900       | 42                       | 47         |
| Chloride        | -            | 14         | 15   | 655       | 14                       | 13         |
| DOC             | -            | 14         | 8    | 66        | 17                       | 19         |
| Iron            | 0.3          | <b>1.0</b> | 0.1  | <b>13</b> | <b>0.4</b>               | <b>0.3</b> |
| Manganese       | -            | 0.2        | 0.04 | 0.1       | 0.1                      | 0.1        |
| Potassium       | -            | 1          | 1    | 284       | 1                        | 1          |
| TKN             | -            | 1          | 1    | 497       | 1                        | 1          |
| Ammonia (total) | -            | 0.1        | 0.3  | 430       | 0.1                      | 0.1        |
| TDS             | -            | 209        | 285  | 3605      | 202                      | 176        |

Bold Highlighting indicates PWQO CWQG exceedance

Average data from 2019 to 2023, where available

\* - CWQG



Table 10 (below) provides a summary of the water quality at the perimeter locations around the waste mound.

**Table 10: Average Leachate Indicator Parameter Concentrations – Perimeter SW Locations**

| Parameters      | PWQO | Background | Leachate | Perimeter Locations |       |      |      |      |       |           |
|-----------------|------|------------|----------|---------------------|-------|------|------|------|-------|-----------|
|                 |      |            |          | West                | North |      |      |      | South |           |
|                 |      | SW14*      | MW7      | SW12                | WP2   | WP3  | SW13 | SW17 | SW15  | WP4 (30m) |
| Alkalinity      | -    | 136        | 2404     | 183                 | 109   | 119  | 157  | 151  | 401   | 221       |
| Boron           | 0.2  | 0.01       | 4        | 0.03                | 0.01  | 0.01 | 0.01 | 0.01 | 0.2   | 0.1       |
| COD             | -    | 57         | 900      | 95                  | 82    | 41   | 114  | 57   | 347   | 111       |
| Chloride        | -    | 9          | 655      | 10                  | 6     | 7    | 10   | 11   | 11    | 13        |
| DOC             | -    | 21         | 66       | 17                  | 17    | 16   | 24   | 23   | 37    | 19        |
| Iron            | 0.3  | 0.4        | 13       | 1                   | 0.4   | 0.2  | 1    | 0.5  | 1     | 4         |
| Manganese       | -    | 0.4        | 0.1      | 0.1                 | 0.3   | 0.03 | 0.2  | 0.3  | 1.1   | 1         |
| Potassium       | -    | 2          | 284      | 3                   | 1     | 2    | 2    | 3    | 40    | 7         |
| TKN             | -    | 1.2        | 497      | 2                   | 2     | 1    | 3    | 1    | 6     | 3         |
| Ammonia (total) | -    | 0.4        | 430      | 0.2                 | 0.4   | 0.1  | 0.3  | 0.2  | 2     | 1         |
| TDS             | -    | 161        | 3605     | 209                 | 127   | 139  | 181  | 184  | 559   | 260       |

Bold Highlighting indicates PWQO exceedance

Average data from 2019 to 2023, where available

The results indicate leachate influence is present around the entire periphery in close proximity to the toe of the landfill with varying levels of impact, although significant elevations are not observed on average beyond background. This is expected in close proximity to the landfill as it is a natural attenuation site. The lowest impact is found at SW17 which is not immediately adjacent to the waste mound, and WP2 and WP3 which are along the northern and western edges of the waste mound. WP4 also shows slightly higher but limited impacts, which is further south than SW15 (30 m), such that full attenuation is likely occurring a short distance from the waste mound.

As shown in the trend charts for SW2, SW4, SW12, SW13 and SW15 (Appendix C), surface water quality over time varies between locations. The locations along Martin Creek (SW2 & SW4) show long term stability with concentrations generally falling within a predictable seasonal range. SW4 indicates slightly more seasonal variation with iron and manganese concentrations, which may be reflective of the increased ground water contributions with distance along this feature. The remaining locations plotted water quality over time for the perimeter locations, which all indicate a stable to long term declining trends for many to all LIP's, with the most defined decline noted at SW15. The reduction in parameter concentrations and lessening leachate influence is likely owing to the fact the active waste area has progressed east over time with an increase buffer distance from the wetland. As well, the Phase I area has been progressively capped over the past number of years such that these activities have likely resulted in reduced leachate generation that limits the contributions to the adjacent wetland. These conditions are expected to continue over time as the leachate source in Phase I depletes over time.



The 2023 results were also compared to the PWQO as is standard for surface water quality evaluations. Elevated concentrations relative to the PWQO during 2023 are summarized in Table 11 (below) which identifies a number of exceedances noted at both in upstream (background) and downstream locations. Historically, parameters such as iron, phosphorus, cobalt, unionized ammonia and zinc have been elevated or exceed the PWQO in the upstream (background) locations; however, these are not interpreted to be related to the landfill. The ammonia concentration at SW16 represents a deviation from the historical range such that it could be attributable to the data issues outlined in Section 5.1.

**Table 11: PWQO Exceedances Summary Table**

| Location   | Parameter         | PWQO   | Concentrations (mg/L) |         |         |
|------------|-------------------|--------|-----------------------|---------|---------|
|            |                   |        | April                 | August  | October |
| SW2        | No Exceedances    |        |                       |         |         |
| SW3        | Iron              | 0.3    | 0.08                  | 0.4     | 0.12    |
| SW4        | Iron              | 0.3    | 0.08                  | 0.8     | 0.4     |
|            | Chromium          | 0.001  | 0.002                 | < 0.001 | < 0.001 |
|            | Zinc              | 0.02   | 0.007                 | 0.04    | 0.009   |
| SW12 (10m) | No samples        |        | Dry                   | Dry     | Dry     |
| SW13 (10m) | Total Phosphorus  | 0.03   | 0.21                  | Dry     | Dry     |
|            | Iron              | 0.3    | 4.8                   |         |         |
| SW13 (30m) | Total Phosphorus  | 0.03   | 0.05                  | Dry     | 8.8     |
|            | Iron              | 0.3    | 0.5                   |         | 1.1     |
| SW14       | No Exceedance     |        |                       | Dry     | Dry     |
| SW15 (10m) | No samples        |        | Dry                   | Dry     | Dry     |
| SW15 (30m) | No samples        |        | Dry                   | Dry     | Dry     |
| SW16       | Unionized Ammonia | 0.02   | 0.03                  | Dry     | < 0.01  |
|            | Aluminum          | 0.075  | 0.03                  | Dry     | 0.09    |
| SW17       | Iron              | 0.3    | Dry                   | Dry     | 0.552   |
| WP2 (10m)  | Iron              | 0.3    | 1.64                  | Dry     | Dry     |
|            | Total Phosphorus  | 0.03   | 0.07                  |         |         |
|            | Cobalt            | 0.0009 | 0.0012                |         |         |
| WP2 (30m)  | No samples        |        | Dry                   | Dry     | Dry     |
| WP3 (10m)  | No samples        |        | Dry                   | Dry     | Dry     |
| WP3 (30m)  | No samples        |        | Dry                   | Dry     | Dry     |
| WP4 (30m)  | No samples        |        | Dry                   | Dry     | Dry     |

Notes: NS – No sample required  
 \* - Concentrations in bold exceed PWQO

An electrical conductivity (EC) monitoring profile was not completed during the 2023 monitoring period due to staff changeover at the City. It is understood that this requirement was included during the 2024 monitoring period which will once again be



evaluated in the 2024 annual monitoring report. Notwithstanding, the general consistency of the program over the years effectively demonstrates that leachate influence becomes nearly imperceptible about 30 m from the edge of the waste mound. Therefore, this trend is not expected to change.

## 5.5 Organic Sampling Results

As part of the monitoring program in 2023, volatile organic compounds (VOC) sampling was completed from select monitoring wells during the April and October monitoring events, while the surface water locations SW2, SW3 and SW4 are targeted during the April and July monitoring events. SW12, SW13, SW14 and SW15 are analyzed for toluene during the April, July and October monitoring events; however, were all noted to be dry during 2023 with the exception of SW13 & SW14 in April and SW14 in July. In addition to the VOC parameters, Polychlorinated biphenyl (PCB) samples were also collected at MW7, MW15, MW15A, MW15B, MW26, MW26-1, MW26-2, MW27-I, MW27-II, MW27-III, MW28-I, MW28-II, MW28-III during both the April and October monitoring events, as well as from SW3 during the October monitoring event. Finally pesticides were targeted at MW7 during the April monitoring event. The results for PCB's were similar to previous years with no detection at any location, which is similar to the past 10 years. Similarly, pesticide results from MW7 did not indicate any detection in 2023.

The VOC results were similar to previous years with parameters present within the leachate (MW7) and select downgradient wells, although the concentrations and numbers found within the downgradient locations were much less than at MW7 as summarized in the following table.

**Table 13: VOC Detection and Exceedance Summary**

| Parameter              | ODWQS      | MW7-13      | MW26       | MW26-1     | MW26-2     | MW28-II    | WP3-10      |
|------------------------|------------|-------------|------------|------------|------------|------------|-------------|
|                        |            | 19-Apr-23   | 12-Oct-23  | 12-Oct-23  | 12-Oct-23  | 12-Oct-23  | 12-Oct-23   |
| Vinyl Chloride         | <b>2</b>   | < 0.2       | < 0.2      | <b>0.2</b> | <b>0.4</b> | < 0.2      | < 0.2       |
| Cis 1,2-Dichloroethene | -          | < 0.5       | <b>1.2</b> | <b>3.2</b> | <b>3.2</b> | < 0.5      | < 0.5       |
| Benzene                | <b>5</b>   | <b>3.8</b>  | < 0.5      | < 0.5      | < 0.5      | < 0.5      | <b>3.6</b>  |
| Toluene                | <b>24</b>  | < 0.5       | < 0.5      | < 0.5      | < 0.5      | <b>0.6</b> | < 0.5       |
| Chlorobenzene          | -          | <b>18</b>   | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5       |
| Ethylbenzene           | <b>2.4</b> | < 0.5       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | <b>0.6</b>  |
| 1,4-Dichlorobenzene    | <b>5</b>   | <b>1.7</b>  | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5       |
| 1,2-Dichlorobenzene    | <b>200</b> | <b>0.7</b>  | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5       |
| m/p-Xylene             | -          | <b>23.1</b> | < 1.0      | < 1.0      | < 1.0      | < 1.0      | <b>2.0</b>  |
| o-Xylene               | -          | <b>2.7</b>  | < 0.5      | < 0.5      | < 0.5      | < 0.5      | <b>0.7</b>  |
| Total Xylene           | <b>0.3</b> | <b>25.8</b> | < 1.1      | < 1.1      | < 1.1      | < 1.1      | <b>2.70</b> |
| Acetone                | -          | < 30        | < 30       | < 30       | < 30       | < 30       | <b>39</b>   |

bold and italics indicates detection above reporting limit

highlight indicates exceedance above ODWQS



No downgradient concentrations were noted to exceed their associated PWQO, although there have been consistent detections for cis 1,2-Dichloroethene at a few downgradient locations with the most elevated concentrations found at MW26 at all three (3) intervals. A trace detection of vinyl chloride was noted during the October monitoring event at MW26-1 and MW26-2; however, this parameter has been occasionally observed at these locations in the past. A minor detection of toluene was also reported at MW28-II during the fall sampling event which is only marginally above the report limit and well below the ODWQS. This is the first detection of a BTEX compound at this location. No other detections were reported in the shallower or deeper monitoring intervals at this location suggesting this is an isolated detection. Historically, toluene detections are not routinely observed nor are they found to be significantly elevated above the report limit in the leachate (MW7-13). As such, this detection is considered to be anomalous.

Several detections were reported at WP3-10 during the fall monitoring period for benzene, ethylbenzene, xylene mixtures and acetone, which are all compounds associated with the leachate (MW7-13). VOC detection are not typically reported at this location, but their presence is not unexpected due to its proximity to the waste mound. According to Figure 7, the ground water flow direction is somewhat radial at this location towards the adjacent wetland features. Notwithstanding, due to the isolated occurrence of these detections, this trend will continue to be monitored in 2024.

Overall, the detection of parameters at the downgradient locations are at trace or very low concentrations. The limited concentrations of these parameters (especially in the source area) do suggest that the landfill is not creating impacts further downgradient of the Site. As discussed previously, the poor hydraulic connection between the waste and underlying aquifers (*i.e.*, leachate mound) limits the contaminant mass flux. Generally, the results are consistent with previous years indicating there are residual organic sources in the landfill; however, the concentrations are low and not migrating much past the periphery of the waste mound. Monitoring should continue to assess the downgradient conditions, but given the lack of detections in the surface water, and surrounding wetland points, would suggest that the organic sampling could be eliminated as it is perceived that any pathway would likely be through the overburden to the southeast.

## **5.6 2023 PFAS Sampling Results**

Azimuth undertook PFAS sampling as part of the routine fall monitoring program in 2023. Selected locations at the Site were targeted to represent reference leachate, background, perimeter and downgradient locations as summarized in Table 14. The results and findings were previously presented in a letter response prepared by Azimuth (2023b) to support the expansion of the Fenelon Landfill.





Detections and elevated concentrations for PFAS were reported at MW7 (leachate well), MW22B (in waste area) and wetland perimeter locations (WP2-10, WP3-10 and WP4-10). These results generally correlate with the long-term water quality results for the Site which all show a very definable leachate influence. An exception is noted at WP3-10 which has the highest PFAS concentrations and more dilute leachate signature being noted in the general water quality results. This variance is likely owing to the observed variability in the leachate strength found across the Site.

The remaining locations with detections had lower concentrations with only single parameter detections. The locations are found southeast of the waste mound and are generally located within the centerline of the dilute leachate plume. The plume has been interpreted to extend from the waste mound in the direction ground water flow. This same trend is noted general water quality data for the Site. Minor PFAS detections in the *lower overburden* and *shallow bedrock* at MW18 suggests a preferential pathway deeper in the stratigraphic profile. This supports the Site's interpretation of a plunging leachate plume with distance from the Site. Again, the relatively low PFAS concentrations compared to the waste area also supports the historical interpretation that a dilute leachate signature is found at this location and at MW19.

**Table 14: PFAS Results Summary**

| Monitor No. | Location                  | Total PFAS Concentration (µg/L) | No. of Parameters Detected |
|-------------|---------------------------|---------------------------------|----------------------------|
| MW7         | Leachate                  | <b>1.114</b>                    | 6                          |
| MW11A       | Background - Shallow OB   | <1.1                            | 0                          |
| MW13        | Downgradient - Shallow OB | <1.1                            | 0                          |
| MW15        | Downgradient - Shallow OB | <1.1                            | 0                          |
| MW15A       | Downgradient - Deep OB    | <1.1                            | 0                          |
| MW15B       | Downgradient - Bedrock    | <1.1                            | 0                          |
| MW18        | Downgradient - Shallow OB | <1.1                            | 0                          |
| MW18A       | Downgradient - Bedrock    | 0.024                           | 1                          |
| MW18B       | Downgradient - Deep OB    | 0.036                           | 1                          |
| MW19        | Downgradient - Deep OB    | 0.03                            | 1                          |
| MW22B       | Leachate                  | <b>0.906</b>                    | 4                          |
| MW26        | Downgradient - Distant    | <1.1                            | 0                          |
| MW26-1      | Downgradient - Bedrock    | <1.1                            | 0                          |
| MW26-2      | Downgradient - Deep OB    | <1.1                            | 0                          |
| MW27-I      | Downgradient - Bedrock    | <1.1                            | 0                          |
| MW27-II     | Downgradient - Deep OB    | <1.1                            | 0                          |
| MW27-III    | Downgradient - Shallow OB | <1.1                            | 0                          |
| MW28-I      | Downgradient - Bedrock    | <1.1                            | 0                          |
| MW28-II     | Downgradient - Deep OB    | <1.1                            | 0                          |
| MW28-III    | Downgradient - Shallow OB | <1.1                            | 0                          |
| WP2-10      | Perimeter - North         | <b>0.234</b>                    | 5                          |
| WP3-10      | Perimeter - West          | <b>2.072</b>                    | 7                          |
| WP4-10      | Perimeter - South         | <b>0.706</b>                    | 5                          |

Bold indicates MECP Guideline of 0.07 µg/L  
OB - Overburden





The limited detections to the west at MW13 would suggest the plume orientation is more southeast trending and following the primary ground water flow pathway. Despite detections along the flow pathway away from the landfill, the minor detections at MW18 and MW19 so indicate that attenuative processes are active in limiting the leachate migration west and east of Mark Road. This again, falls in line with the overall Site interpretation presented in the annual monitoring reports for the past number of years.

General chemistry at MW27-I has shown strongly elevated concentrations of many key parameters, including several LIPS, at even more elevated concentrations than those observed in the leachate (*i.e.* chloride, sodium, strontium and barium). Since PFAS were not reported at this location, the geochemistry is likely influenced by naturally mineralized ground water found in the bedrock. Based on this finding, it does not appear to represent an appropriate monitoring location and should be removed from the monitoring program.

### **5.7 Ground Water Trigger Mechanism**

The groundwater trigger mechanism is presented in Appendix H of the Updated Design and Operations Report (Golder, 2015) and referenced in Sections 8.2(a) and 8(3) of the ECA.

Given that potential receptors of contaminant migration from the landfill also include the Martin Creek Wetland complex and Martin Creek to the south/southeast of the landfill, the trigger program provides early warning of potential adverse impacts to surface water.

The trigger mechanism has three (3) parts, with the objective of providing early warning of the potential development of either of the following conditions:

- exceedance of the Reasonable Use Policy (RUP) at the downgradient (southeast) boundary of the CAZ;
- exceedance of Provincial Water Quality Objectives and/or Canadian Water Quality Guidelines in the wetland downgradient (southeast) of the landfill (east of Mark Road); and
- exceedance of Provincial Water Quality Objectives and Canadian Water Quality Guidelines in Martin Creek.

The following sections summarize the ground water trigger mechanism and their application to the 2023 ground water monitoring data.



#### 5.7.1 Reasonable Use Policy Compliance Trigger Parameters/Locations

Calculations with respect to MECP's Reasonable Use Policy (RUP) B-7 were performed using the 2023 monitoring program results at MW11A for background shallow overburden and Office well for the background lower overburden and bedrock. These locations are similar to what have been used historically.

The MECP's Reasonable Use Policy states that, in accordance with the appropriate criteria for particular uses, a change in quality of the ground water on an adjacent property will be accepted only as follows:

*The quality cannot be degraded by an amount in excess of 50% of the difference between background and the Ontario Drinking Water Standards for non-health related parameters and in excess of 25% of the difference between background and the ODWS for health-related parameters. Background is considered to be the quality of the groundwater prior to any man-made contamination.*

*MOE Procedure B-7-1. (MOE, 1994a)*

The maximum concentration of a particular contaminant that is considered acceptable in the ground water beneath an adjacent property is calculated in accordance with the following relationship:

$$C_m = C_b + x (C_r - C_b)$$

where:

- $C_m$  = maximum concentration accepted
- $C_b$  = background concentration
- $C_r$  = Maximum concentration permitted in accordance with the Ontario Drinking Water Quality Standards
- $x$  = a constant that reduces the contamination to a level that is considered by the MECP to have a negligible effect on water use.  
*i.e.*, 0.5 for non-health related parameters  
0.25 for health-related parameters.

In 2023, the RUP values were calculated using the values of the 5-year average background concentration ( $C_b$ ). The maximum allowable concentration ( $C_m$ ) of any particular parameter was calculated using the background concentration of that parameter from a monitor upgradient of the Site, the designated ODWQS value for that parameter, and a constant that reflects whether the parameter is health or aesthetic-related as defined by the ODWQS. Where background concentrations were less than the laboratory method



detection limit, the method detection limit was used as the background value. Where locations were noted to exceed ODWQS in the background, these parameters were discounted from the evaluation. These include iron, DOC, manganese, hardness and aluminum. The calculated  $C_m$  values for the Site were set as the RUP values and are included in the chemistry summary tables (Appendix B) for both the shallow and overburden and lower overburden / bedrock.

Since this assessment is based on compliance at the downgradient property / CAZ boundaries, MW26 and MW27-III were used for the shallow overburden and MW26-1, MW26-2, MW27-I and MW27-II were used for the lower overburden / bedrock. Specific exceedances for RUP are illustrated in the summary chemistry table below.

**Table 15: Reasonable Use Policy Exceedance Summary Table**

| Location | Screened Unit | Parameter      | ODWQS | RUP  | Concentrations Exceeding RUP* |               |
|----------|---------------|----------------|-------|------|-------------------------------|---------------|
|          |               |                |       |      | April, 2023                   | October, 2023 |
| MW26     | Shallow OB    | No Exceedances |       |      |                               |               |
| MW26-1   | Bedrock       | TDS            | 500   | 374  | 422                           | 401           |
| MW26-2   | Lower OB      | Alkalinity     | 500   | 360  | 387                           | 393           |
|          |               | TDS            | 500   | 374  | 475                           | 462           |
| MW27-I   | Bedrock       | TDS            | 500   | 374  | 4,626                         | 5,300         |
|          |               | Barium         | 1     | 0.32 | 2.07                          | 2.08          |
|          |               | Sodium         | 200   | 106  | 995                           | 1,070         |
|          |               | Chloride       | 250   | 131  | 2,920                         | 3,640         |
| MW27-II  | Lower OB      | No Exceedances |       |      |                               |               |
| MW27-III | Shallow OB    | No Exceedances |       |      |                               |               |

Notes: All values are in mg/L

\* - Concentrations in bold exceed RUP and Underline for ODWQS

Similar to previous years, a number of parameters exceed the RUP, with the majority of them occurring at MW27-I. Based on the well's location and its construction in the underlying limestone bedrock, it is expected that this location is influenced by naturally mineralized ground water rather than being influenced by the landfill. The TDS exceedances at MW26-1 and MW26-2 are at least partly sourced to road salting along Mark Road due to corresponding elevations in both sodium and chloride.

The alkalinity exceedances at MW26-2 are only marginally elevated above the criteria and is below its respective ODWQS which is only an operational guideline and not health related standard. The fact that there are no other notable LIP concentrations (*i.e.*, ammonia), the elevated parameter is likely naturally sourced.



Finally, it is interpreted that ground water discharges into Martin Creek and associated wetland feature, which intersects along the southern property boundary such that any exceedances would not extend beyond the southern property boundary.

Based on these items, it is concluded that the Site is in compliance with RUP and that no further action is required to address these exceedances.

#### 5.7.2 Martin Creek / Wetland Protection Trigger Parameters/Locations

To provide early warning of potential adverse impacts to Martin Creek southeast of the landfill, the Martin Creek trigger monitoring wells are the Wetland Probe WP6 and the shallow overburden wells MW26, MW27-III and MW28-III, all of which are the closest monitoring points upgradient of Martin Creek. The Martin Creek Wetland Trigger monitoring wells are shallow overburden wells MW12, MW14, MW15 and MW16. As illustrated on Figure 2, these wells are located along the west side of Mark Road in close proximity to the wetland east of the esker.

The trigger parameters for protection of Martin Creek and the wetland are chloride, un-ionized ammonia, boron and toluene as identified in previous reporting (Golder, 2019). These parameters are at elevated concentrations in leachate compared to background levels and surface water criteria, are relatively mobile/persistent and have less natural variability. The trigger concentrations based on Provincial Water Quality Objectives and Canadian Water Quality Guidelines are as follow:

**Table 16: Shallow Overburden Triggers for Martin Creek**

| Trigger Parameter   | Trigger Concentrations (mg/L) |
|---------------------|-------------------------------|
| Chloride            | 120 (CWQG)                    |
| Ammonia (unionized) | 0.02 (PWQO)                   |
| Boron               | 0.2 (PWQO)                    |
| Toluene             | 0.0008 (PWQO)                 |

The reported data for 2023 indicates that all trigger concentrations were met at all locations during the most recent monitoring period.



## **5.8 Surface Water Trigger Mechanism**

In addition to the ground water trigger program outlined in Section 5.7, which is in place to provide protection against leachate impacts reaching the local surface water features, a surface water trigger program has also been established. This program has similar criteria as that outlined in Table 15, with the exception of toluene, which is not included in the surface water trigger program. The trigger locations are the 30 m offset locations at SW13, SW15 and WP4. During 2023, most locations were reported to be dry throughout the sampling period, and for those sampled, no parameter exceedances were reported. As such, compliance with the trigger program has been met.

## **5.9 Landfill Gas**

Passive landfill gas venting occurs vertically through the landfill cover. Given the shallow depth to the groundwater table, surrounding wetland feature and the distance between the waste fill area and the nearest residences (*i.e.*, approximately 450 m north and 700 m south of the waste fill area), the potential for lateral migration of landfill gas outside the waste footprint to the closest residential buildings is considered negligible. Permanent methane monitors were installed in the on-site buildings in March 2016 and are currently operating. Landfill gas has not been detected in any of the buildings to date.

## **6.0 Site Operations**

As the Site is active, it is accessed by the public at the main entrance gate and information signage exists which states the hours of operation, permitted users, and types of waste accepted at the Site. The facility is approved to accept solid non-hazardous wastes from the City of Kawartha Lakes, although most of the waste originates from residents within the local area.

The hours of operation for the Site in 2023 were 9:00 AM to 5:00 PM Mondays, Wednesdays and Saturdays from May 1<sup>st</sup> to October 15<sup>th</sup>, with the Site being closed for the remainder of the year.

### **6.1 2023 Site Maintenance & Activities**

The Site inspection logs are included in Appendix K, which were completed as part of the monitoring events during January, July and October. These reports did not identify any concerns requiring action or mitigation measures beyond some modest amounts of litter found along the periphery of the wetland during April and July. However, these issues were remedied by the October inspection.



## 6.2 2023 Site Expansion Correspondence

In 2023 The City began discussions with the MECP to advise about potential Site expansion. Additional correspondence between the City, MECP and Azimuth have been included in Appendix G of this report.

## 6.3 2023 Waste Volumes / Site Capacity

In 2023, landfilling occurred in Phase II of the waste fill area and has been filled since 2017 when Phase I area reached capacity. As indicated in the Updated Design and Operations Plan (Golder, 2015), the overall waste fill capacity in Phase II is approximately 76,125 tonnes (*i.e.*, 101,500 m<sup>3</sup> air space volume x 0.75 tonnes/m<sup>3</sup> apparent waste density). As per the annual waste amounts summarized in the table below, the remaining capacity at the end of 2023 is 15,979 tonnes, which based on the waste acceptance rate of 4,205 tonnes for 2023. Since the landfill is now temporarily closed between November and April, the remaining site life is expected to be between 3 to 4 years based on the decreased tonnage in accepted waste.

**Table 17: Summary of Waste Amounts in Phase II Area**

| Year | Annual Tonnage<br>(tonnes) | Cumulative Tonnage<br>(tonnes) | Remaining Capacity<br>(tonnes) |
|------|----------------------------|--------------------------------|--------------------------------|
| 2017 | 7,895                      | 7,895                          | 68,230                         |
| 2018 | 10,070                     | 17,965                         | 58,160                         |
| 2019 | 15,202                     | 33,167                         | 42,958                         |
| 2020 | 8,658                      | 41,825                         | 34,300                         |
| 2021 | 9,778                      | 51,603                         | 24,522                         |
| 2022 | 4,337                      | 55,940                         | 20,185                         |
| 2023 | 4,206                      | 60,146                         | 15,979                         |

## 6.4 Recyclable Materials Summary

The Site also operates as a waste disposal and recycling transfer site. According to City records, the following amounts of recyclable materials were received at the Site in 2023.



**Table 18: Summary of Recyclable Materials Received in 2023**

| Item                      | Number of Units | Units  |
|---------------------------|-----------------|--------|
| Recycling (containers)    | 7.5             | Tonnes |
| Recycling (fibres)        | 22.9            | Tonnes |
| Leaf and Yard Waste       | 347.8           | Tonnes |
| Electronics               | 17.7            | Tonnes |
| Scrap Metal               | 63.1            | Tonnes |
| Textiles                  | 0.9             | Tonnes |
| Household Hazardous Waste | 28.4            | Tonnes |

Based on the diversion quantities listed above, and 4,206 tonnes of waste received in 2023, the total divertible material received at the Site in 2023 was approximately 489 tonnes. Of the material received at the Fenelon WDS, approximately 12% of the received waste material was diverted.

### **6.5 Compost Operations**

On December 8, 2009, the City received approval from the MECP for the establishment of an outdoor open windrow composting facility for leaf and yard waste. The leaf and yard waste composting facility consists of a 50 m by 90 m wood chip pad at the east end of Phase 2 for aerated static pile composting. Windrows are formed with adequate spacing between them for turning. The maximum approved receiving capacity of the composting facility is 250 tonnes per day and 2,000 tonnes annually. The maximum approved quantity of material in the composting facility at any one time is 1,500 tonnes. Approximately 348 tonnes of leaf and yard waste was received at the Site in 2023, while the 250 tonne daily limit was not exceeded in 2023.

As the progression of filling within Phase 2 had continued towards the composting area, it was relocated in 2023 to the north west end of the site such that base grades and berms could be established at the east end of Phase 2 for filling.

Composting of leaf and yard waste at the site is required to be conducted in accordance with Sections 31 to 33 of Regulation 101/94, Part V – Leaf and Yard waste Composting Sites and Condition 10 of the ECA.

There were no major environmental or operational problems encountered at the leaf and yard waste composting facility in 2023. Furthermore, there were no complaints received from the public relating to odours or vermin associated with the composting facility in 2023.



## **6.6 Household Hazardous Waste Depot**

The HHW Depot is located at the entrance to the Site adjacent to the attendant building, and adjoins the Site Reuse Centre (Figure 2). It began receiving household hazardous waste on November 3, 2001. The service area for the HHW Depot includes all residents of the municipality. Industrial, commercial and institutional establishments are not permitted to use the HHW Depot. In accordance with Condition 11 of the ECA, waste storage at the HHW Depot is limited to 7,000 litres of liquid waste and 40 tonnes of solid waste at any one time. The maximum storage duration at the HHW Depot is three (3) months.

The HHW Depot is operated in accordance with the City of Kawartha Lakes Household Hazardous Waste Depot Operations Manual (2018). In 2023, the depot was operated each day that the landfill was open. The City was responsible for the receipt, handling, packing, and safe storage of waste, as well as general housekeeping of the HHW Depot and emergency/spill response. GFL Environmental Inc was contracted in 2023 to transport and dispose the HHW off-site.

All HHW materials are evaluated by the attendant. Approved wastes are sorted by waste type and segregated according to chemical compatibility for lab packing or bulking. Every effort is made to prevent spills. As a contingency, the building is designed with a 250 mm (5") curbing that extends around the perimeter of each of the two rooms and has a containment capacity of 110% per room. The floor and curbing are sealed with an epoxy. The oil bulking tank located west of the HHW Depot is constructed with 100% secondary containment.

The HHW Depot is registered as Waste Generator No. ON0293706 with Ontario's Hazardous Waste Information Network ("HWIN"). Wastes that are accepted at the HHW Depot are described according to their Waste Class as defined in the MECP "New Ontario Waste Classes", dated January 1986.

In 2023, the HHW Depot accepted approximately 28 tonnes of HHW. There were no PCB contaminated materials, radioactive wastes or pathological wastes (other than syringes, lancets and needles) received at the HHW Depot in 2023.

The HHW Depot was inspected during Site inspection and there were no issues noted.

## **6.7 Active Waste Area**

A topographic site survey is planned to be completed early in 2024 to update the previous survey conducted in 2022 to show the active waste configuration.





As shown in Figure 12, the active fill area during 2022-23 was located at the west to centre part of Phase 2.

#### 6.7.1 Daily/ Interim Cover

As documented and completed in previous years, daily cover is added immediately following spreading and compaction of incoming wastes on any given day, an approximately 150 mm thick layer of cover material or large steel plates were applied to the landfilled waste for litter and odour control.

The soil used for daily cover consisted of imported sandy soil from a private source located within the City. The amount of soil imported was recorded and tracked by landfill staff. Based on the sensitivity and proximity of the Martin Creek Wetland to the limit of waste, the current ECA (Condition 7[19]) does not allow the use of contaminated (non-hazardous) soils for daily cover.

Condition 7(13) of the ECA describes the process by which proposed alternative daily cover materials may be approved for use at the site. Alternative daily cover materials that have been approved include compost, wood chips, foundry sand, shingles, non-hazardous wood/construction waste (fines), paper fibre and flexible membranes (*e.g.*, tarps, Enviro Cover System) as well as large metal plates which was most recently approved in 2019.

#### 6.7.2 Final Cover

The purpose of the final cover is to provide a physical barrier over the waste that will reduce infiltration into the waste and support vegetation growth. Condition 7 (11c) of the ECA requires that the final cover be constructed progressively as areas of landfilling reach the final waste contours. The final cover is required to be placed within twelve months after reaching the final contours in any given area and to consist of a minimum 600 mm thick layer of “medium permeability” soil overlain by 150 mm of natural topsoil. The ECA does not allow the use of composted leaf and yard material either on its own or mixed with natural soils as an alternative to the use of 100% natural topsoil. Finally, the topsoil is required to meet O. Reg. 153 Table 9 standards. The Table 9 standards apply because the landfill is situated within 30 m of a water body (*i.e.*, Martin Creek Wetland). Figure 12 shows the area of the landfill that has final cover in place as of the end of 2023. No additional final cover was placed during 2023.

### 6.8 Other Site Activities / Incidents

As documented by the City, the following activities and incidents took place at the Site in 2023.

- Calcium chloride was sprayed for dust control on active Site roadways; and
- Methane detection system and weigh scale calibration.



## 7.0 Conclusions

Based on the interpretation presented in the above sections, the environmental setting at the Fenelon Landfill Site is well understood. The data trends over this monitoring period have generally yielded a relatively consistent geochemical signature at most monitoring locations, although some increasing trends are present at locations in close proximity the current active waste area with MW22 indicating increased concentrations since the waste area has moved east towards this monitoring location. Despite these localized trends, the relative consistency in water quality within the downgradient monitoring network in all three (3) aquifer units indicates that the underlying environmental setting has characteristics of a steady state condition.

Results from monitoring wells southeast of the waste mound appear to show a modest leachate influence, although at much lower concentrations than those observed in closer proximity wells. This same trend is not observed (or is essentially negligible) within the Site property west of Mark Road. The presence of this plume was further evaluated by undertaking PFAS sampling. Similar trends and elevated parameter detections were reported. Thus, supporting the site conceptual model presented herein.

The Site is located in an area which can be characterized as marshy / boggy lands with rather slow movement of ground water. The same can be said for the surface water conditions. The abundance of peat materials in the Site vicinity attests to this condition. The slow ground water movement and organic-rich peat materials create a naturally reduced geochemical environment, which also portrays an elevated dissolved organic signature. This natural condition can be difficult to distinguish with from the geochemically reduced conditions created by the landfill setting and therefore caution must be exercised in interpreting results, especially those found within the surface water and *shallow overburden* environments.

The geochemically reducing conditions generated within the landfill have also created additional indicators which extend beyond the overall water quality at the site. These reduced conditions allow for the mobilization of naturally occurring earth elements such as iron and manganese. However, the landfill also generates an ammonia signature and has an elevated chloride concentration. The absence of these two (2) particular components of the landfill leachate signature distinguishes that signature from the natural setting. Thus, while downgradient locations may show elevated iron and manganese concentrations, as well as elevated DOC; it was interpreted to represent the natural peat environment. As these natural conditions have been observed in downgradient locations, as well as within Martin Creek.



Attenuative processes at this Site are very active and have abated the influence of the leachate contaminant plume within a short distance of the waste mound and within the Site lands. It is also recognized that the contaminant flux from the landfill site is rate-limited by the waste permeability relative to the underlying geology. As such, these conditions prevent a significant contaminant plume extending away from the landfill and leachate influences is completely retained within approximately 200 m from the waste mound. Reasonable Use is met at the Site in 2023. Some exceedances were noted; however, these were more related to natural variation and mineralized ground water found within the *bedrock aquifer* such that they were not interpreted to landfill sourced.

Detections of organic parameters have been noted in the downgradient monitors, similar to what has been seen historically; however, the concentrations and distribution within the monitoring well network would suggest an alternative source is present as similar concentrations were not observed in the leachate well or perimeter locations. Nonetheless concentrations are very low and not interpreted to be of concern although ongoing monitoring is recommended to confirm this conclusion.

Although ground water contribution is apparent within Martin Creek based on the water quality, the overall water quality within this feature is not degraded as a result. Downstream water quality has historically shown to be relatively consistent over time as well as generally consistent with upstream quality. The slight increases in concentration of some parameters downstream are a result of increased ground water contributions rather than from leachate influence as most notable leachate indicator parameters such as ammonia and boron do not show a measurable increase in the downstream location.

The ground water elevation data and the water quality within the ground and surface water along the northern and western perimeters of the waste area does suggest the potential for low level leachate migration to the southeast. However, the parameters noted within the surface water locations do suggest that sediment entrainment during some sampling events is likely responsible for many of the exceedances that have been observed historically. In addition, the transect monitoring program completed over the past several years has indicated a defined decrease in leachate influence with distance from the waste mound. While this program was not completed in 2023, conditions are not expected to be significantly different from those collected historically. This program will be completed again during the 2024 monitoring period, although its worth after 10+ years of monitoring is somewhat questioned.

In general, surface water quality is shown to fall within the background range generally within 10 to 30 m from the waste edge indicating the leachate toe seepage has a limited radial extent. Furthermore, surface water quality at the perimeter locations has shown a



gradual, but consistent, downward trend in leachate influence. This is likely owing to the fact the active waste area has moved east away from the wetland edge and that the western section of the waste mound has been capped. As such, a further decline in leachate influence is expected over time as the leachate source becomes more limited.

The trigger programs for the Site which are targeted around protection of the adjacent surface water features, being Martin Creek and Martin Creek Wetland did not trigger a single parameter exceedance in the ground or surface water trigger monitoring locations in 2023.

## **8.0 Recommendations**

The monitoring program recommended for 2024 is identified in Table 18 and is based on the current data set and Site understanding and previous AMRs. The current monitoring network is found to be sufficient in characterizing the ground water quality downgradient of the Site in all three aquifer units such that no new monitoring points are recommended. However, there are a large number of downgradient wells such that some redundancy does exist within the network. It is understood that this redundancy is likely the result of previous downgradient compliance assessments previous to the establishment of the CAZ to the southeast. As such, it is recommended that MW17 be removed as MW19 already characterizes water quality in the overburden in this location. Similarly, MW12 and MW15 are recommended to be removed as MW16 provides water quality from the shallow overburden at the north end of this area, while MW14 provides water quality to the south such that these two (2) locations are viewed as redundant.

The surface water monitoring network is also deemed to be sufficient in characterizing the surface water quality in both Martin Creek and the adjacent wetland feature. However, given the results of the electrical conductivity transect monitoring, it is inferred that there is a sufficient understanding of the attenuation process at various distances from the waste mound. As such this program could be removed and have the surface water samples targeted to 30 m from the waste edge at all perimeter surface water monitoring locations as this has shown to be the maximum lateral extent of leachate influence. Given the waste mound abuts the wetland and was designed as a natural attenuation facility, there is an expectation that there will be a measurable leachate influence at the toe of the waste. As such, the program should continue to track the lateral extent of this leachate influence at the 30 m distance. These locations also represent routine sample collection points as more distant locations tend to dry out. Given the consistency in water quality and lack of observable detection of leachate within Martin Creek, it is proposed that monitoring could be reduced from three (3) times annually to two (2) times during the spring and fall.



Finally, PCB and pesticide parameter detections have been null over the last several years which indicates that these monitoring parameters are not required for the Site any longer.

**Table 19: Proposed 2024 Monitoring Program**

| Monitoring Station                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Frequency                                                | Parameters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Ground Water</u><br>MW1*, MW2*, MW3*,<br>MW3A*, MW4*, MW5*,<br>MW5A*, MW6*, MW6A*,<br><u>MW-7</u> , MW10, MW11A,<br>MW13, <u>MW14</u> , <u>MW15A</u> ,<br><u>MW15B</u> , <u>MW16</u> , MW19,<br>MW18, MW18A, MW18B,<br>MW22, MW22A, MW22B,<br>MW23, MW23A, MW23B,<br><u>MW26</u> , <u>MW26-1</u> , <u>MW26-2</u> , <u>MW27-I</u> , <u>MW27-II</u> ,<br><u>MW27-III</u> , <u>MW28-I</u> ,<br><u>MW28-II</u> , <u>MW28-III</u> ,<br>WP1*, WP2*, WP3*,<br>WP3*, WP4*, WP5*&<br>WP6* | Semi-Annual<br>(April / May<br>& September /<br>October) | Total Kjeldahl Nitrogen (TKN),<br>Nitrate, Nitrite, Ammonia, Unionized<br>Ammonia, Alkalinity, Hardness,<br>Chloride, Calcium, Magnesium, Total<br>Phosphorous, Phosphorous, Sulfate,<br>Phenols, Dissolved Organic Carbon<br>(DOC), Aluminum, Antimony,<br>Arsenic, Barium, Beryllium, Boron,<br>Cadmium, Chromium, Cobalt,<br>Copper, Fluoride, Iron, Lead,<br>Manganese, Mercury, Molybdenum,<br>Nickel, Potassium, Selenium, Silver,<br>Sodium, Thallium, Vanadium, Zinc,<br>pH, Conductivity, Total Dissolved<br>Solids (TDS), Chemical Oxygen<br>Demand (COD).<br><br><u>VOCs</u><br><br>* - Water Level Measurements Only<br>During Fall Monitoring Event |



| Monitoring Station                                                                                                         | Frequency                                                                                                                                                    | Parameters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Surface Water</u><br>SW2*, SW3*, SW4*,<br>SW12 (30 m)*,<br>SW13 (30m)*, SW14,<br>SW15 (30 m) SW16, SW17<br>& WP4 (30 m) | Seasonal<br>(April / May,<br>July &<br>September /<br>October)<br><br>* Martin Creek<br>locations only<br>sampled April<br>/ May &<br>September /<br>October | Total Kjeldahl Nitrogen (TKN),<br>Nitrate, Nitrite, Ammonia, Alkalinity,<br>Hardness, Chloride, Calcium,<br>Magnesium, Total Phosphorous,<br>Phosphorous, Sulfate, Phenols,<br>Dissolved Organic Carbon (DOC),<br>Aluminum, Antimony, Arsenic,<br>Barium, Beryllium, Boron,<br>Cadmium, Chromium, Cobalt,<br>Copper, Fluoride, Iron, Lead,<br>Manganese, Mercury, Molybdenum,<br>Nickel, Potassium, Selenium, Silver,<br>Sodium, Thallium, Vanadium, Zinc,<br>pH, Conductivity, Total Dissolved<br>Solids (TDS), Chemical Oxygen<br>Demand (COD), Biochemical<br>Oxygen Demand (BOD), Free<br>Cyanide, Colour, Turbidity, Total<br>Suspended Solids (TSS) |



## 9.0 References

- Armstrong D.K., and Rheaume P., 1994  
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3<sup>rd</sup> Edition, OGS Special Volume 2, MNR, ISBN 0-7743-9422-6.
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*Quaternary Geology of the Fenelon Falls Area – Southern Ontario*, Preliminary Map P. 2596, Ontario Geological Survey Ontario, Scale 1:50,000.
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*Provincial Water Quality Objectives*

Queen's Printer for Ontario.





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## APPENDICES

- Appendix A: Figures**
  - Appendix B: Chemistry Summary Tables**
  - Appendix C: Chemistry Over Time Graphs**
  - Appendix D: Borehole Logs**
  - Appendix E: ECA and MECP Communications**
  - Appendix F: Ground Water Elevation Tables**
  - Appendix G: 2023 MECP Correspondence**
  - Appendix H: Sampling Protocols**
  - Appendix I: Laboratory Certificate of Analysis**
  - Appendix J: MECP Landfill Reporting Submission Forms**
  - Appendix K: Site Inspection Forms**
  - Appendix L: Surface Water Photos**
- 
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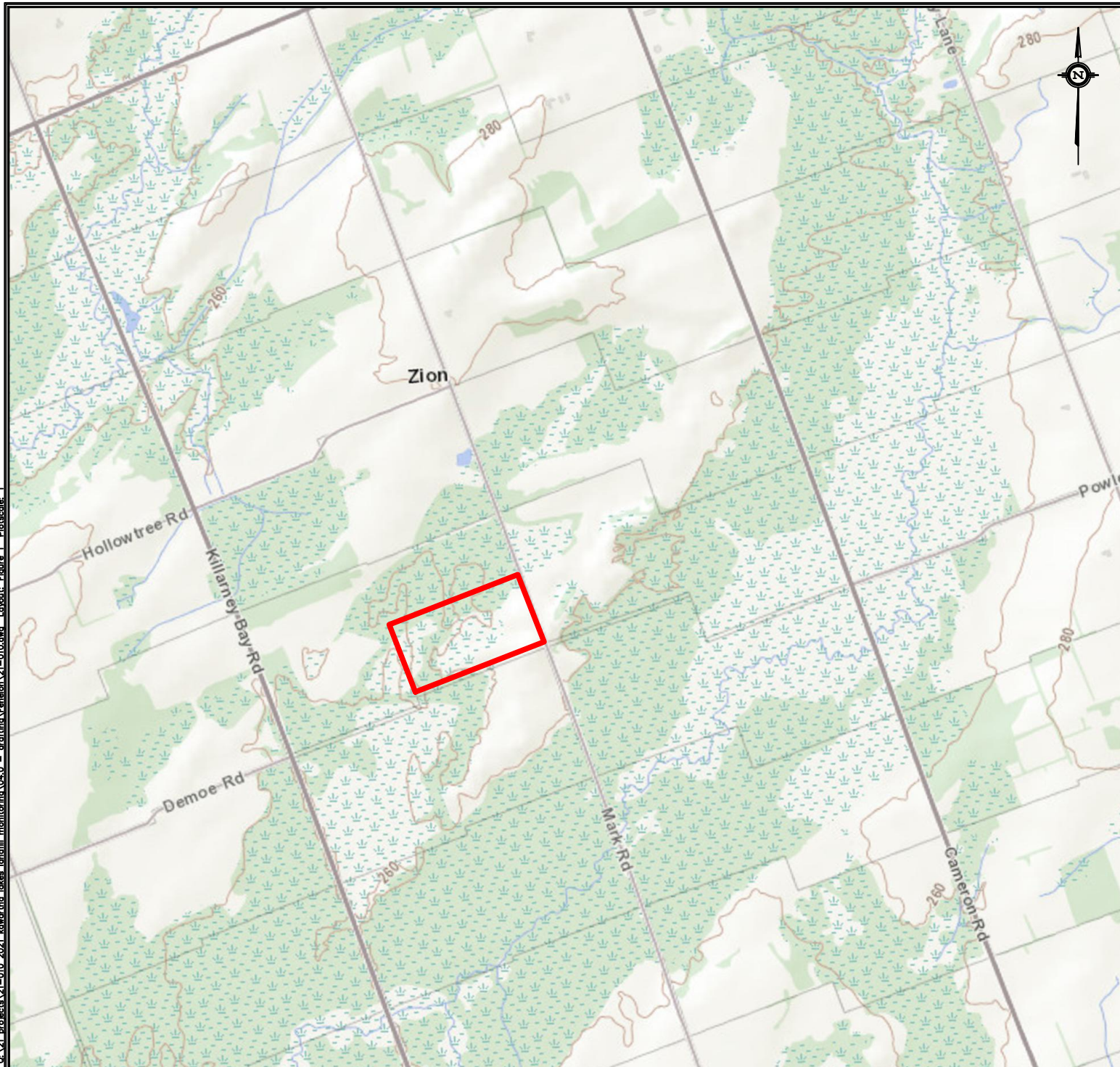
## **APPENDIX A**

### **Figures**

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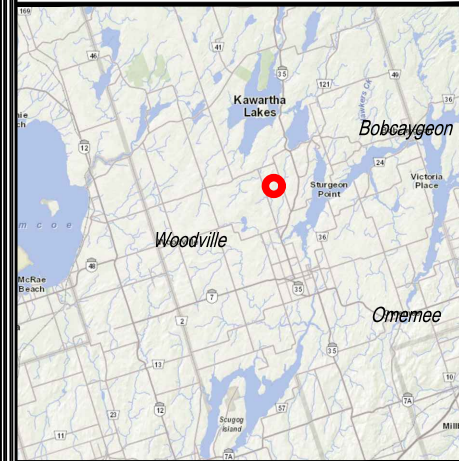
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**LEGEND:**

 *Approx. Property Boundary*



*REG MAP*

250m 0 750m  
  
HORIZONTAL SCALE 1:25,000



Study Area Location

Fenelon Falls Landfill,  
Fenelon Falls, ON

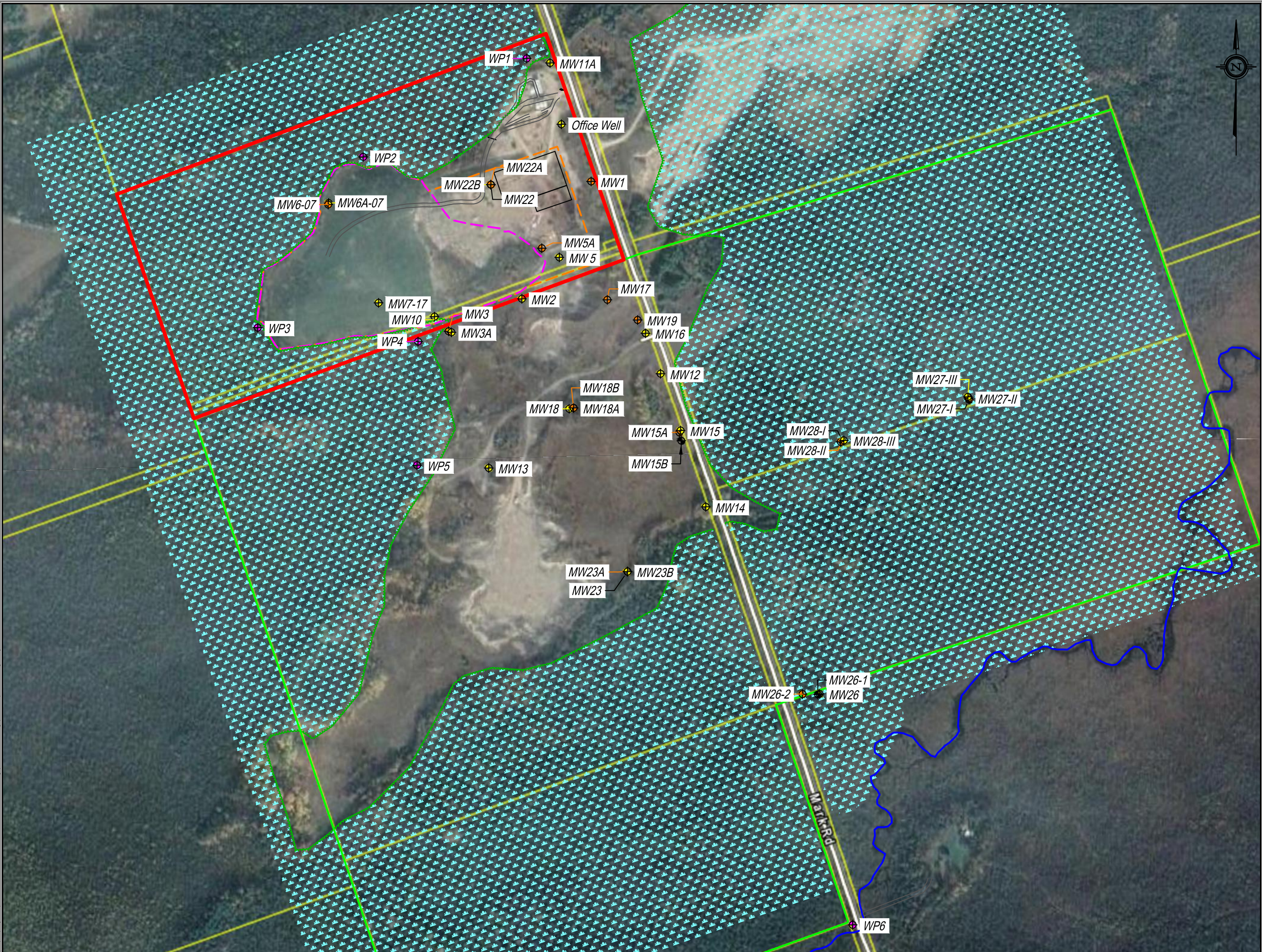
DATE ISSUED: April 2024  
CREATED BY: JLM  
PROJECT NO.: 24-010  
REFERENCE: MNR

Figure No.

1

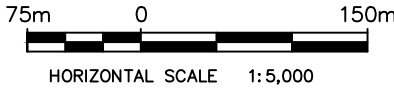


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LEGEND:

- Approx. Property Boundary (~XXha)
- Contaminant Attenuation Zone
- Watercourse
- Landfill Limits Phase I
- Landfill Limits Phase II
- Shallow Overburden Well Locations
- Lower Overburden Well Locations
- Bedrock Well Locations
- Wetland Monitor Locations

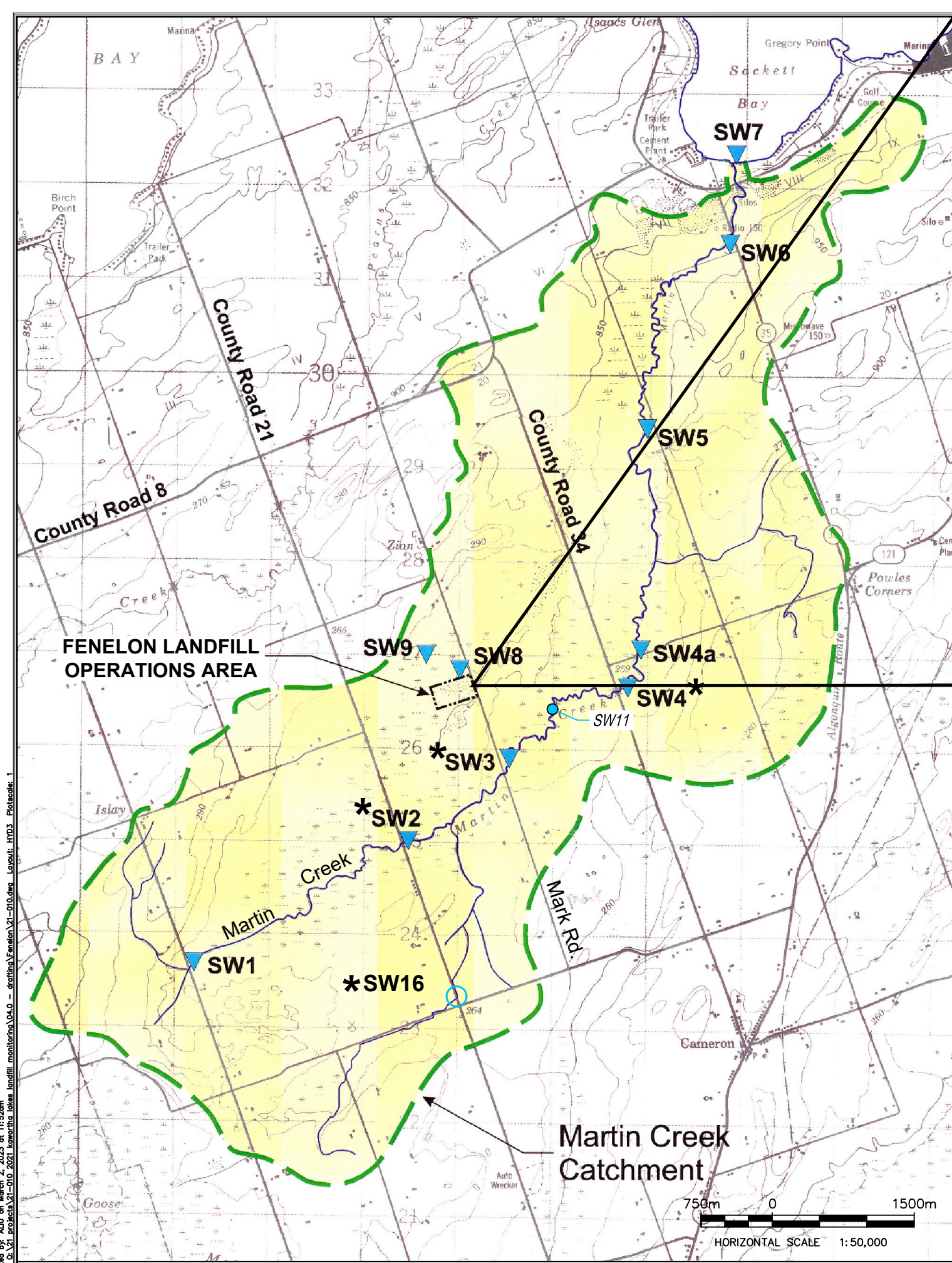


Ground Water Monitoring Network

Fenelon Falls Landfill,  
Fenelon Falls, ON

|              |                      |                     |
|--------------|----------------------|---------------------|
| DATE ISSUED: | March 2023           | Figure No.<br><br>2 |
| CREATED BY:  | JLM                  |                     |
| PROJECT NO.: | 23-010               |                     |
| REFERENCE:   | First Base Solutions |                     |





**LEGEND:**

- Approx. Property Boundary
- ▼ Historical Surface Water Monitoring Station
- Surface Water Station Established in 2005
- \* Denotes Current Surface Water Monitoring Location
- New Background Station (2013)
- Conductivity Monitoring Transect Line
- ⊕ Wetland Monitor Locations

**REFERENCE:**

1. MAP BASED ON FIGURE 3 TITLED "SURFACE WATER FEATURES" FROM REPORT NO. GLL 99-521, "FENELON LANDFILL SITE - DESIGN AND OPERATIONS REPORT", DATED MARCH 2000, BY GARTNER LEE LTD.

2. CONTOURS FOR THE ACTIVE FILL AREA UPDATED TO REFLECT 2012 LANDFILL SURFACE CONTOURS PROVIDED BY THE CITY OF KAWARTHA LAKES, SURVEYED BY COE, FISHER, CAMERON DATED DECEMBER 4, 2012.

**AZIMUTH ENVIRONMENTAL CONSULTING, INC.**

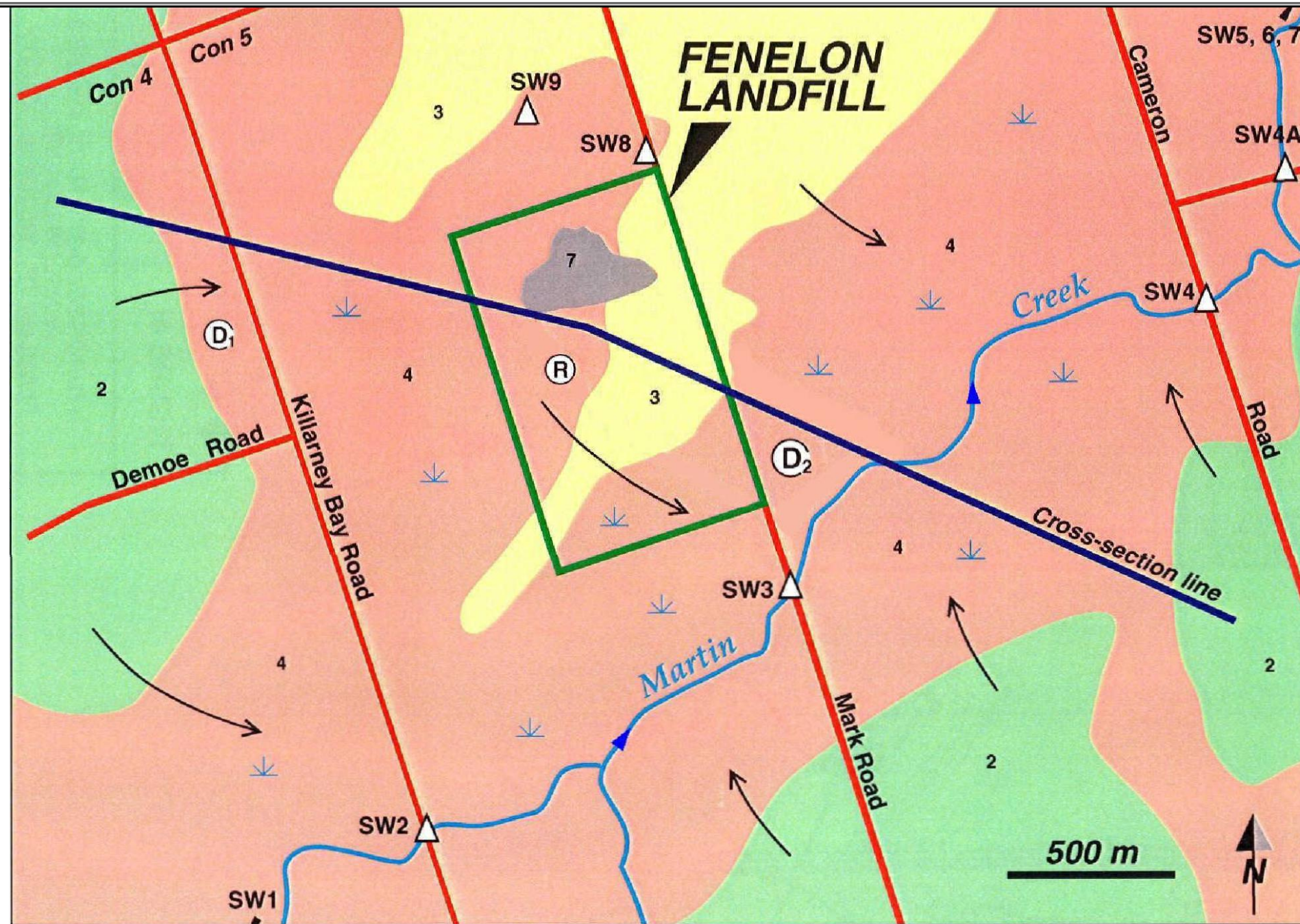
**Surface Water Monitoring Network**

**Fenelon Falls Landfill, Fenelon Falls, ON**

|              |                      |                        |
|--------------|----------------------|------------------------|
| DATE ISSUED: | March 2023           | Figure No.<br><b>3</b> |
| CREATED BY:  | JLM                  |                        |
| PROJECT NO.: | 23-010               |                        |
| REFERENCE:   | First Base Solutions |                        |

Printed by: AUJ on March 2, 2023 at 11:52am  
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#### LEGEND:

##### Geological Units

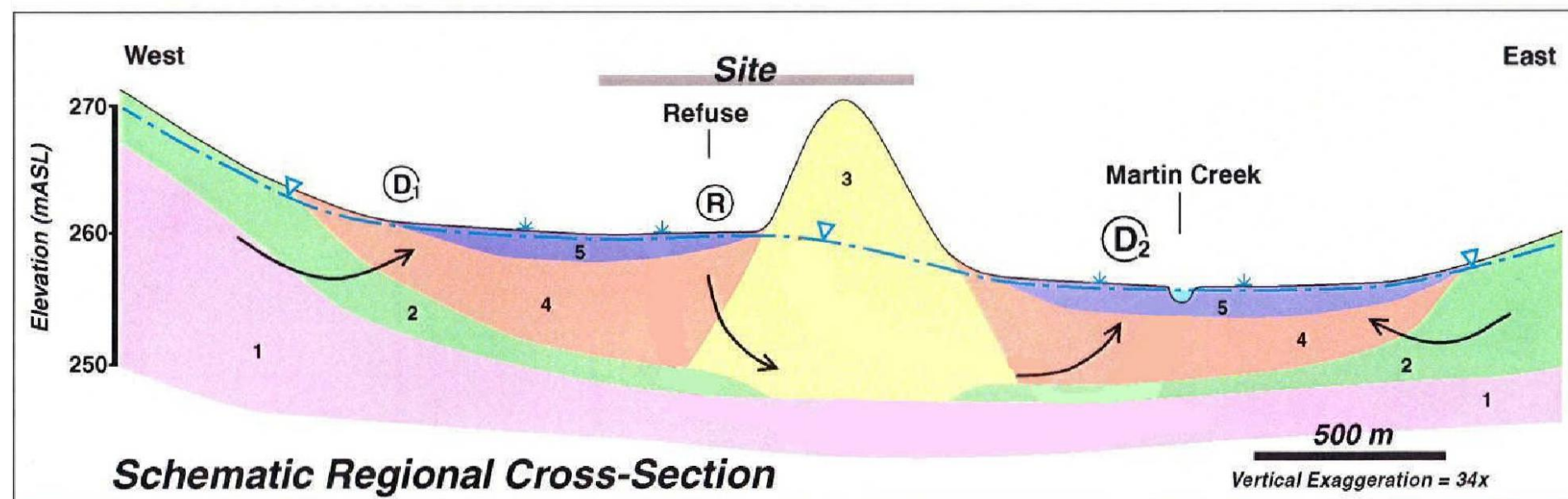
|   |                                                   |                                     |
|---|---------------------------------------------------|-------------------------------------|
| 7 | Refuse                                            | <b>Note:</b> On-site fill not shown |
| 5 | Bog deposit: peat                                 |                                     |
| 4 | Glaciolacustrine sediments: silty fine sand       |                                     |
| 3 | Glaciofluvial (esker) sediments: fine-medium sand |                                     |
| 2 | Till                                              |                                     |
| 1 | Limestone                                         |                                     |

Geology based on Gravenor, 1957.

##### Symbols

|  |                                |
|--|--------------------------------|
|  | Water Table                    |
|  | Schematic groundwater flow     |
|  | Discharge area                 |
|  | Recharge area                  |
|  | Wetland                        |
|  | Surface Water Sampling Station |

Source: Golder, 2019



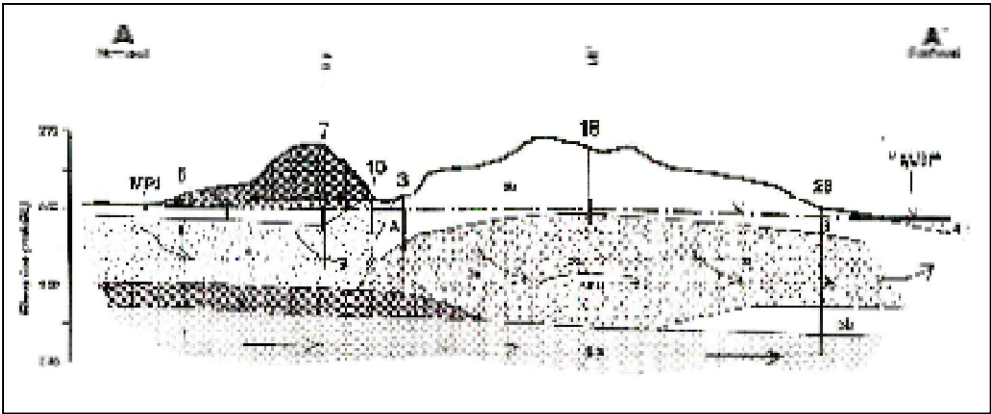
Regional Hydrogeology

Fenelon Falls Landfill,  
Fenelon Falls, ON

DATE ISSUED: March 2023  
CREATED BY: JLM  
PROJECT NO.: 24-010  
REFERENCE: Golder, 2019

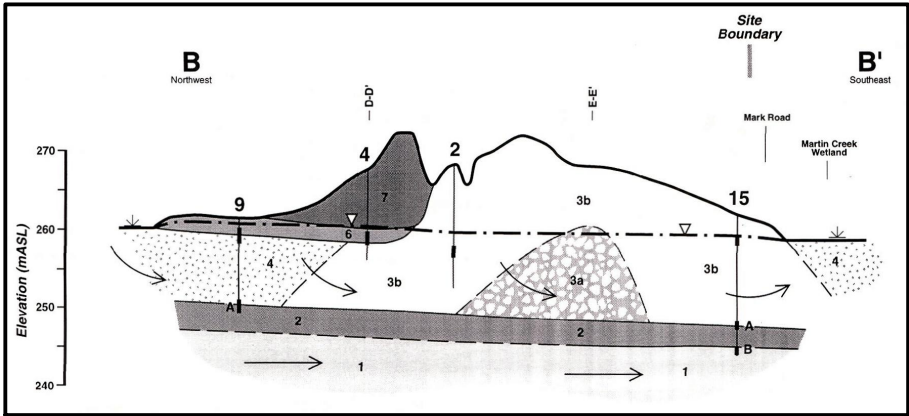
Figure No.  
4



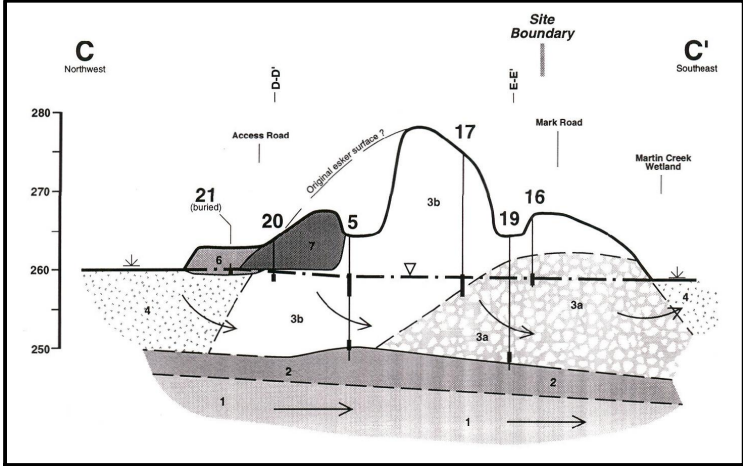


CROSS-SECTION A-A'

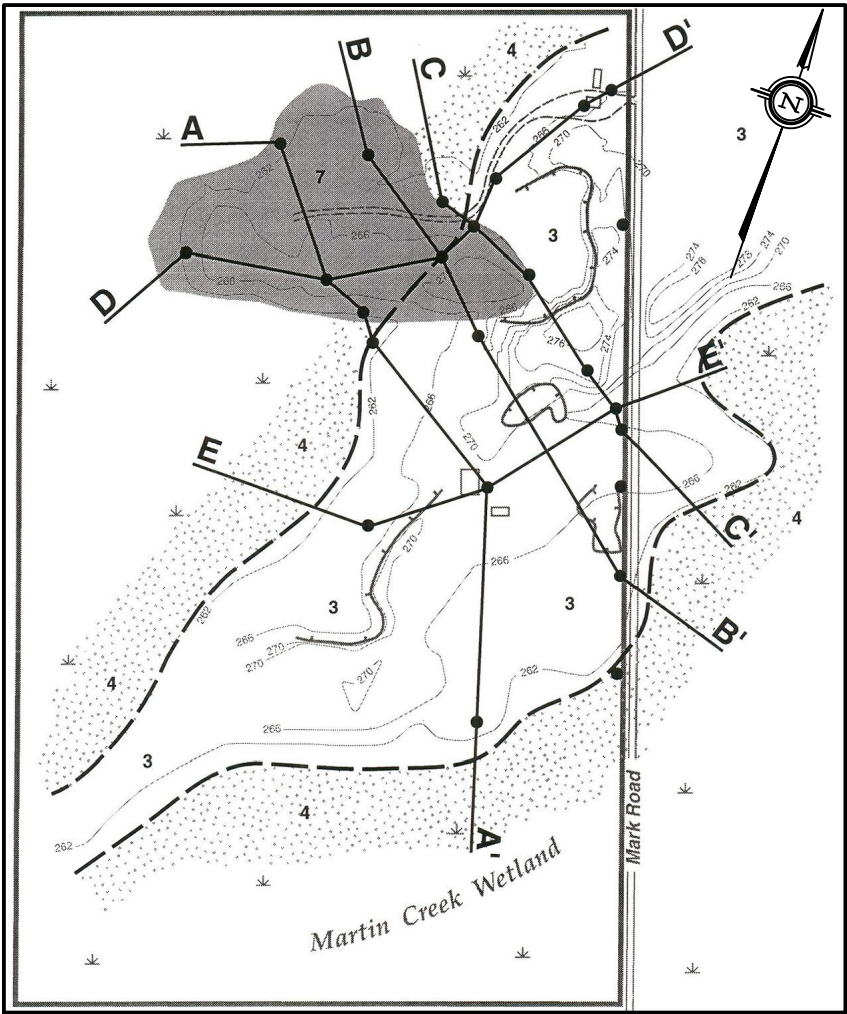
| Geological Units |                                                   | Symbols |                                        |
|------------------|---------------------------------------------------|---------|----------------------------------------|
| 7                | Refuse                                            |         | Well with intake interval              |
| 6                | Fill: sand                                        | 10      | Well number                            |
| 5                | Bog deposit: peat                                 | ▽       | Water Table                            |
| 4                | Glaciolacustrine sediments: silty fine sand       | ↖       | Schematic groundwater flow             |
| 3b               | Glaciofluvial (esker) sediments: fine-medium sand | ↗       | Geological contact (defined, inferred) |
| 3a               | Glaciofluvial (esker) sediments: sandy gravel     |         |                                        |
| 2                | Till                                              |         |                                        |
| 1                | Limestone                                         |         |                                        |



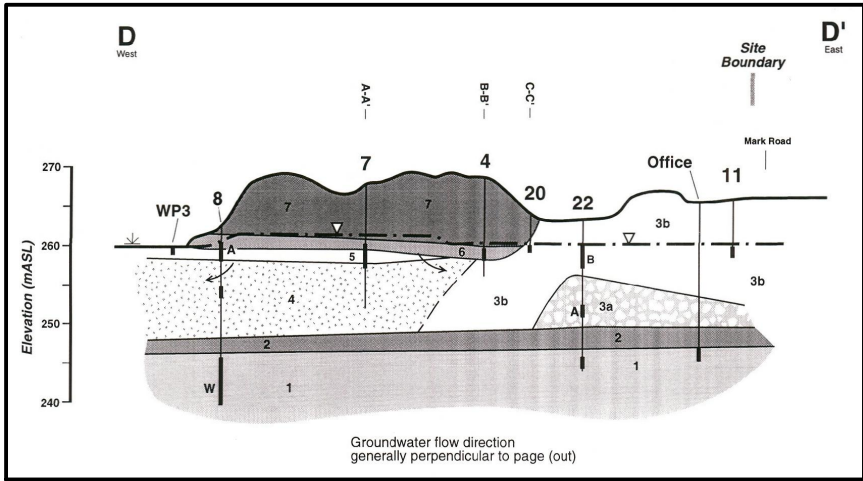
CROSS-SECTION B-B'



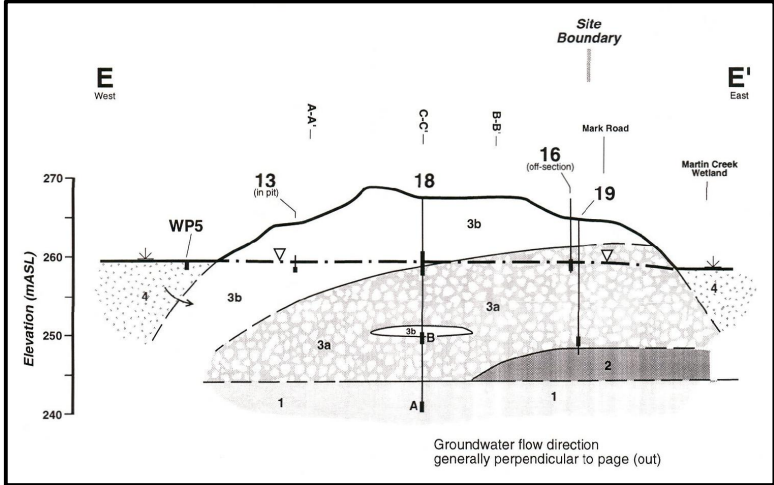
CROSS-SECTION C-C'



SURFICIAL GEOLOGY



CROSS-SECTION D-D'



CROSS-SECTION E-E'

LEGEND:

REFERENCES:  
1. SURFICIAL GEOLOGY AND CROSS-SECTIONS A-A' TO E-E' BASED ON FIGURES 4 TO 9 FROM REPORT NO. 00-201 TITLED, "HYDROGEOLOGY STUDY, PHASE 3, FENELON LANDFILL, FENELON TOWNSHIP, VICTORIA COUNTY", DATED MARCH 2000, BY MIDDLE EARTH HYDROGEOLOGY INC.



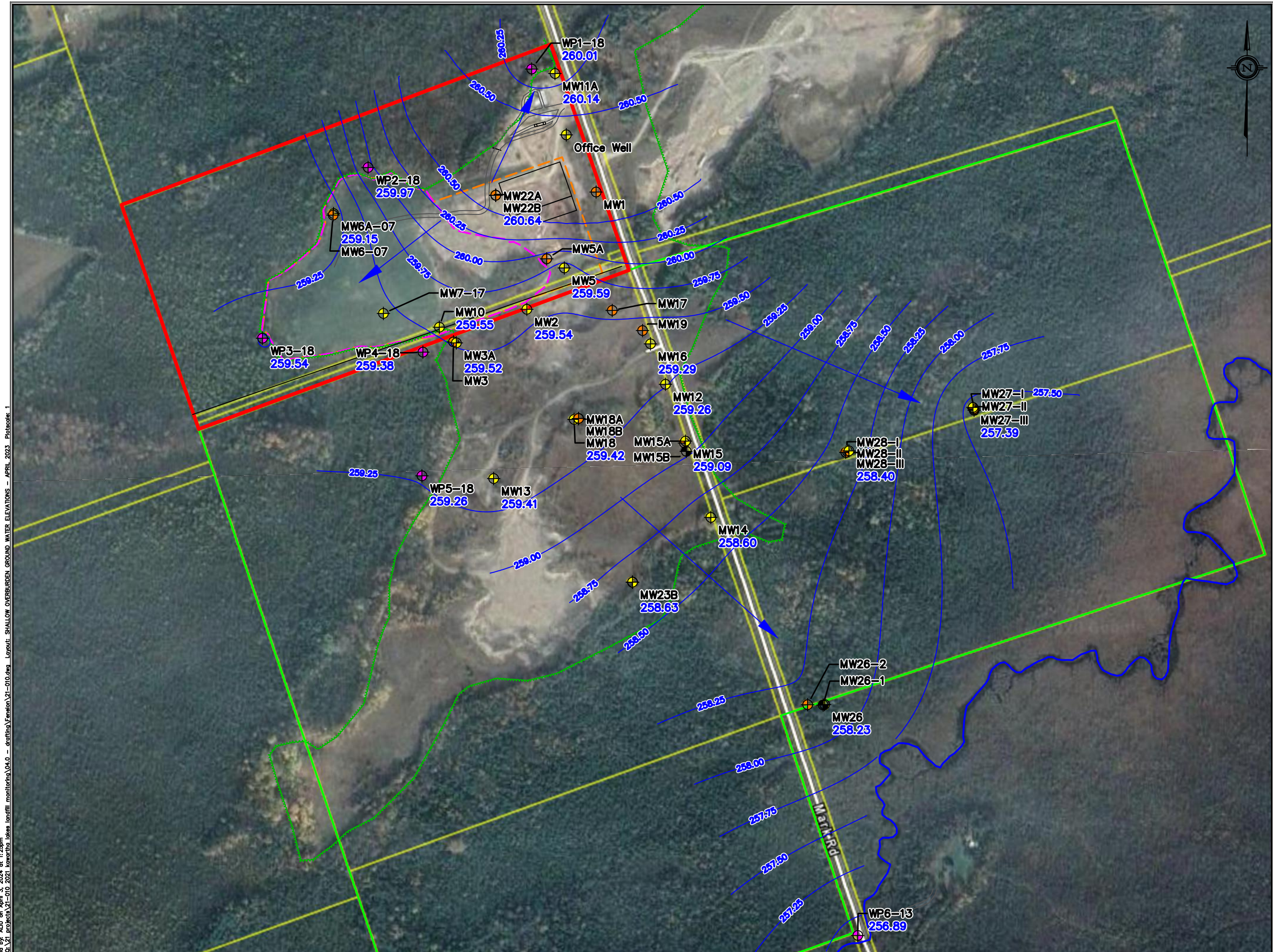
Geological Cross-Sections

Fenelon Falls Landfill,  
Fenelon Falls, ON

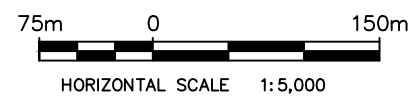
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| PROJECT NO.: | 24-010     |                     |
| REFERENCE:   |            |                     |



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- LEGEND:**
- Approx. Property Boundary (~XXha)
  - Contaminant Attenuation Zone
  - Watercourse
  - Landfill Limits Phase I
  - Landfill Limits Phase II
  - Shallow Overburden Well Locations
  - Lower Overburden Well Locations
  - Bedrock Well Locations
  - Wetland Monitor Locations
  - Inferred Direction of Ground Water Flow
  - 293.5 Ground Water Elevation (April 2023)
  - 0.5m Ground Water Contour



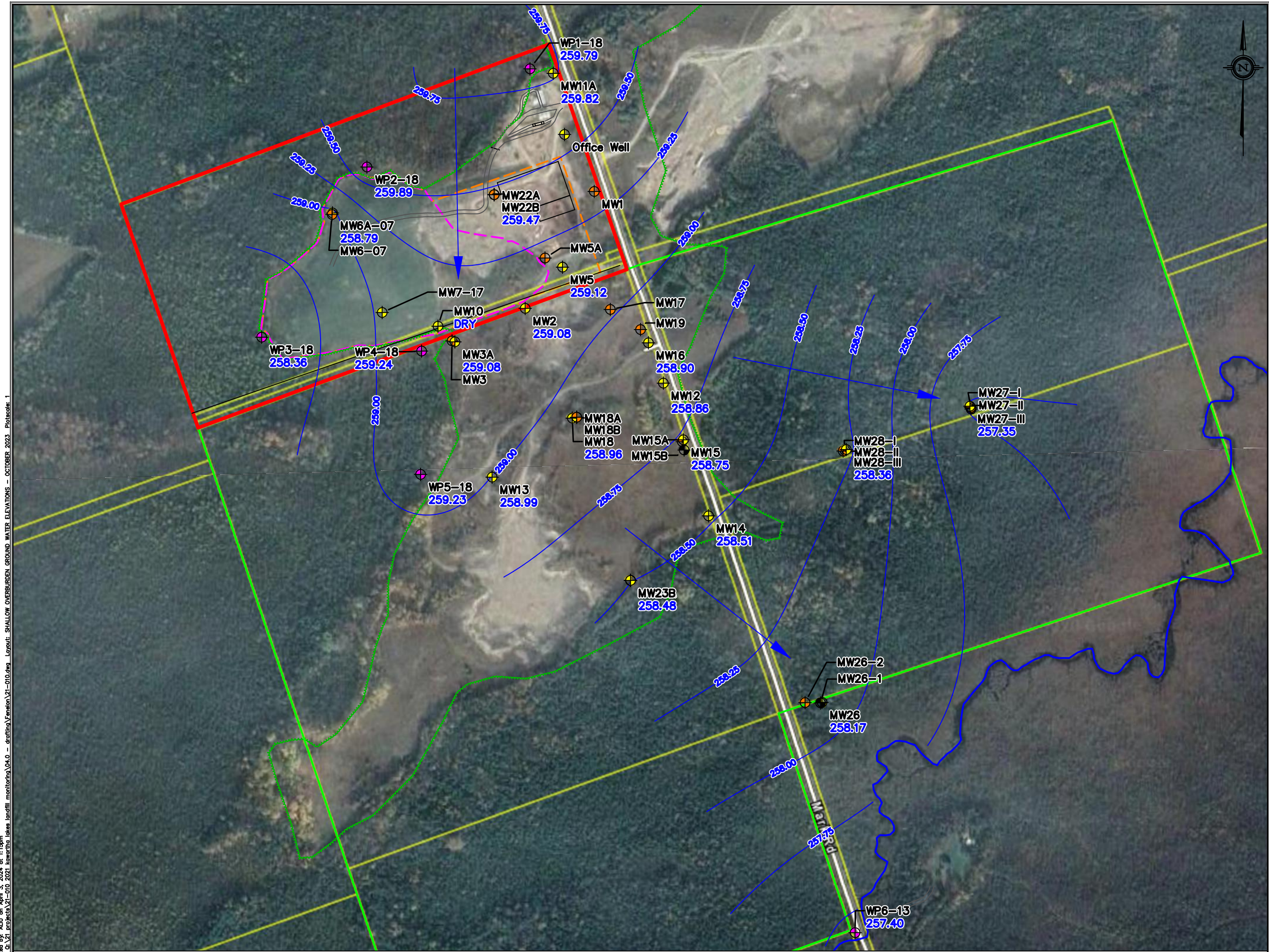
Shallow Overburden Ground Water Elevations  
April 2023

Fenelon Falls Landfill,  
Fenelon Falls, ON

|              |                      |                     |
|--------------|----------------------|---------------------|
| DATE ISSUED: | April 2024           | Figure No.<br><br>6 |
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| REFERENCE:   | First Base Solutions |                     |

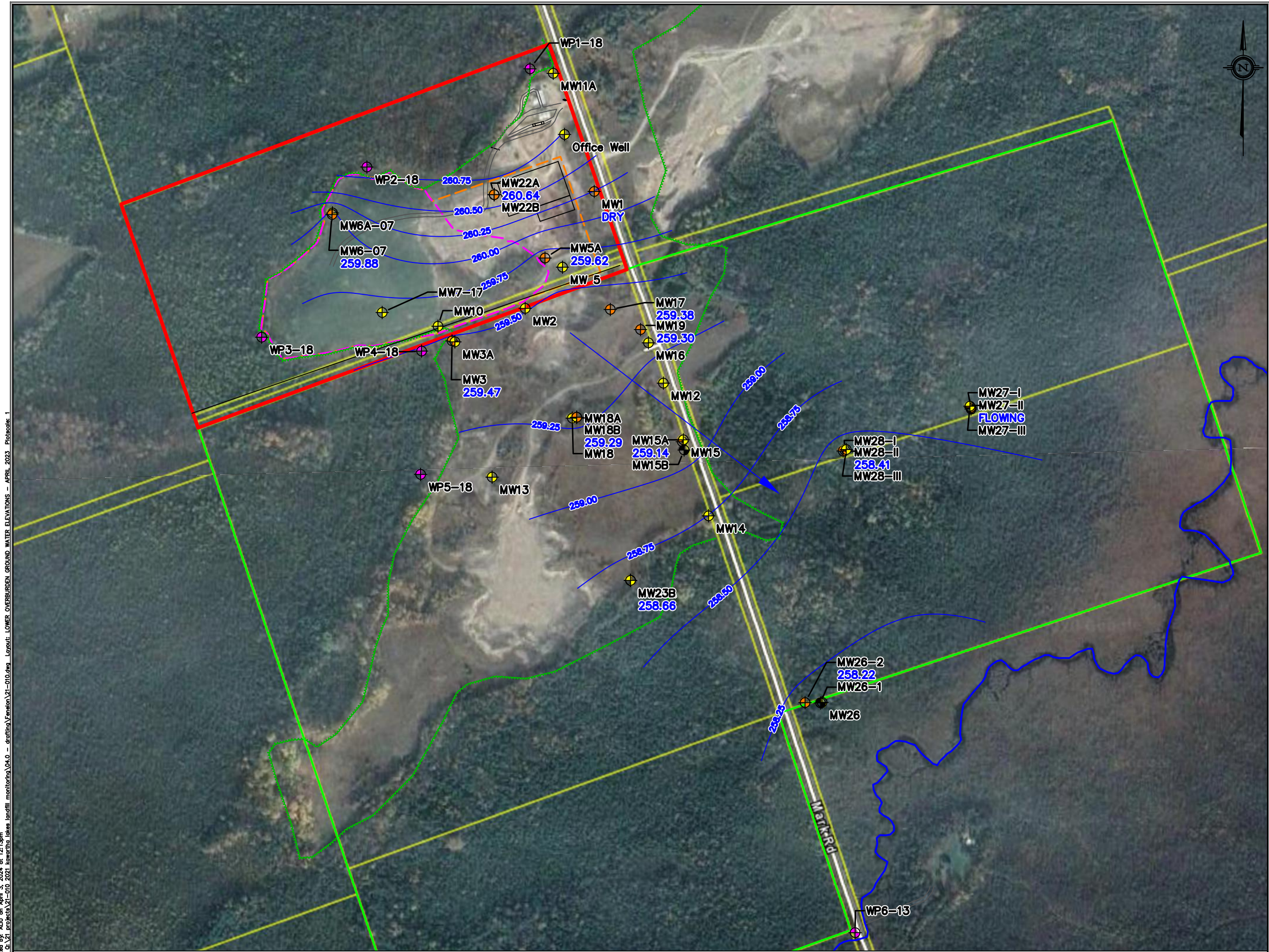


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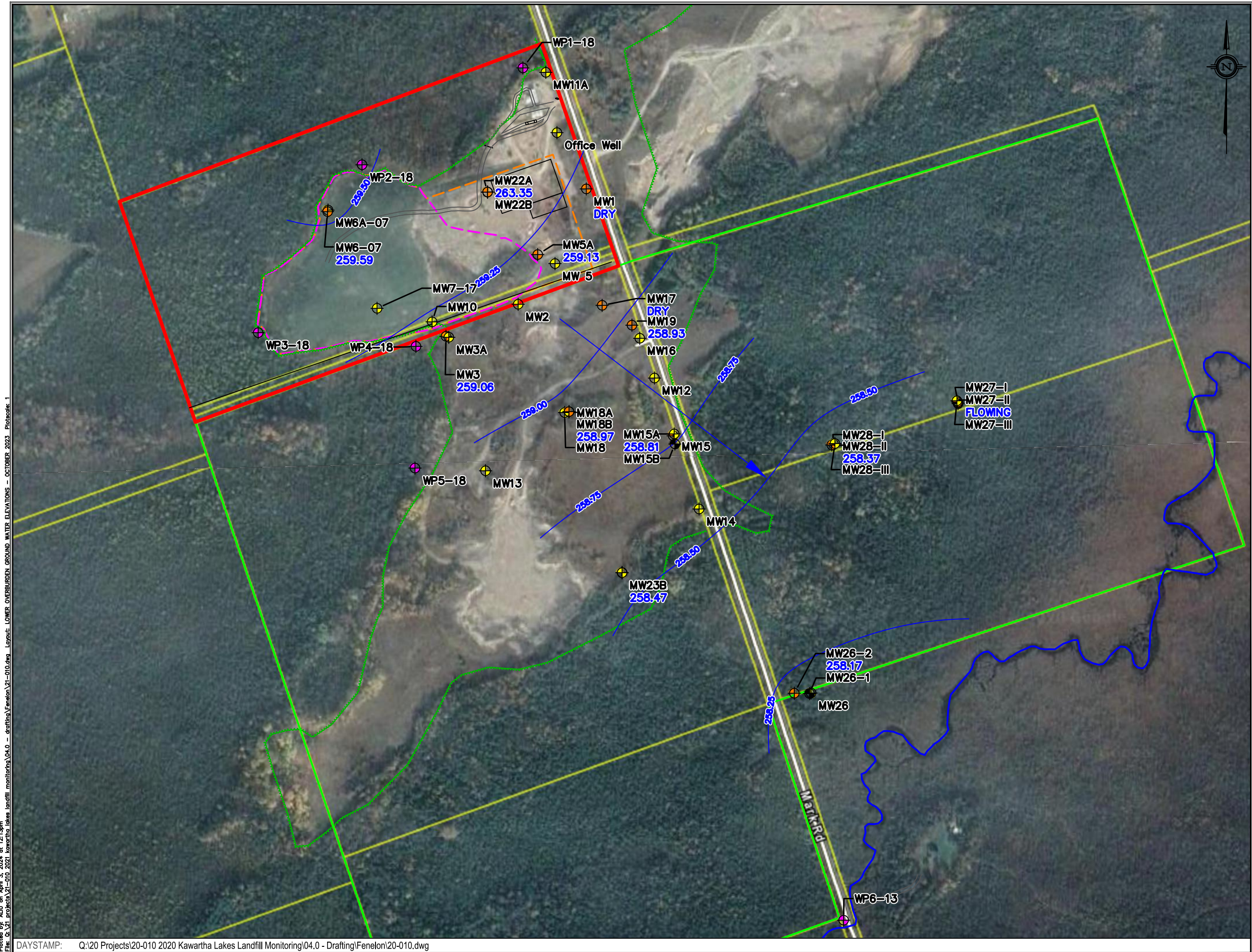


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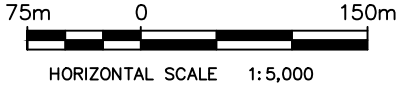




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- LEGEND:**
- Approx. Property Boundary (~XXha)
  - Contaminant Attenuation Zone
  - Watercourse
  - Landfill Limits Phase I
  - Landfill Limits Phase II
  - Shallow Overburden Well Locations
  - Lower Overburden Well Locations
  - Bedrock Well Locations
  - Wetland Monitor Locations
  - Inferred Direction of Ground Water Flow
  - 293.5 Ground Water Elevation (October 2023)
  - 0.25m Ground Water Contour



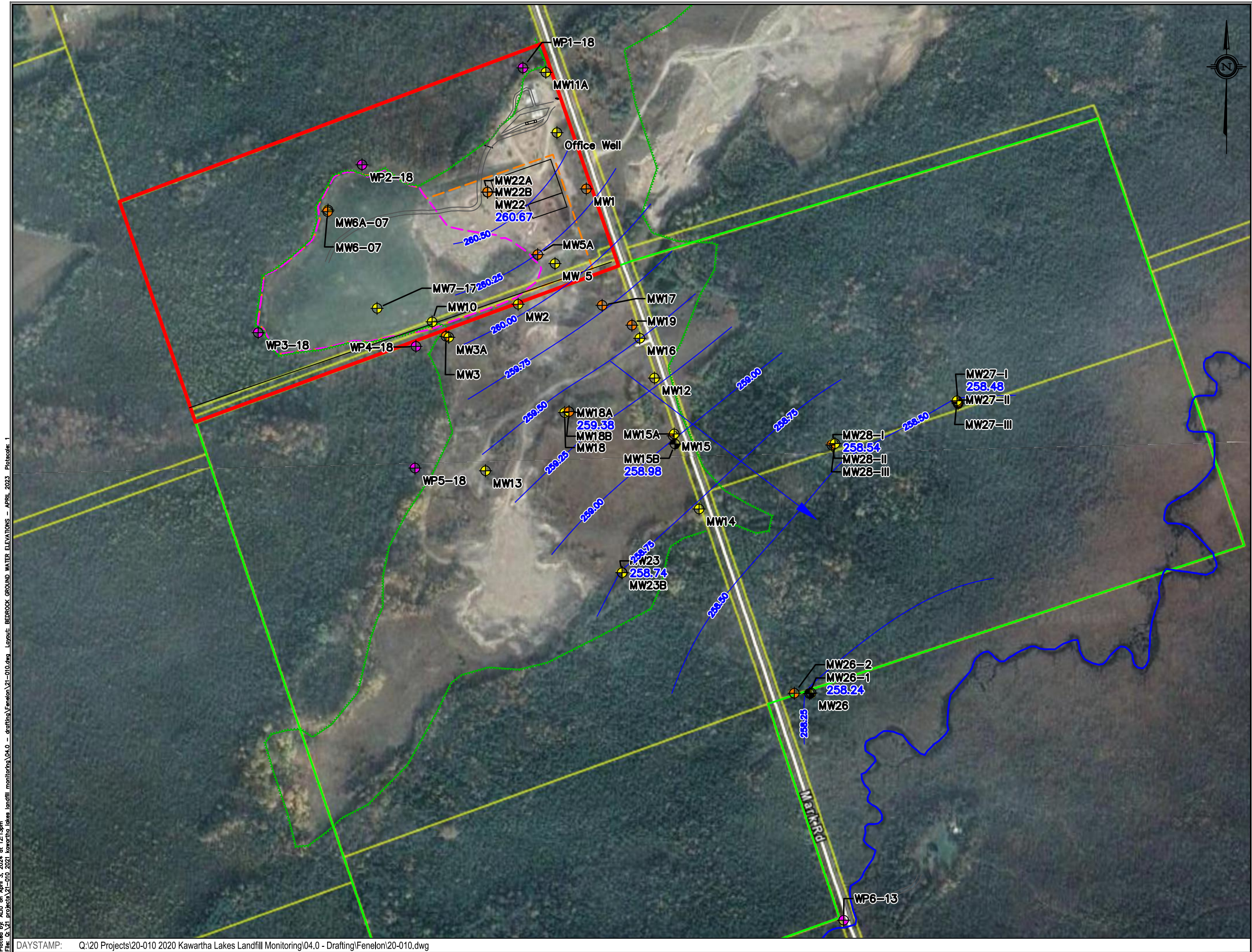
Lower Overburden Ground Water Elevations  
October 2023

Fenelon Falls Landfill,  
Fenelon Falls, ON

|              |                      |            |
|--------------|----------------------|------------|
| DATE ISSUED: | March 2023           | Figure No. |
| CREATED BY:  | JLM                  | 9          |
| PROJECT NO.: | 23-010               |            |
| REFERENCE:   | First Base Solutions |            |



Printed by: ALU on April 3, 2024 at 12:13pm  
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**LEGEND:**

- Approx. Property Boundary (~XXha)
- Contaminant Attenuation Zone
- Watercourse
- Landfill Limits Phase I
- Landfill Limits Phase II
- Shallow Overburden Well Locations
- Lower Overburden Well Locations
- Bedrock Well Locations
- Wetland Monitor Locations
- Inferred Direction of Ground Water Flow
- 293.5 Ground Water Elevation (April 2023)
- 0.25m Ground Water Contour

75m 0 150m

HORIZONTAL SCALE 1:5,000

**AZIMUTH ENVIRONMENTAL CONSULTING, INC.**

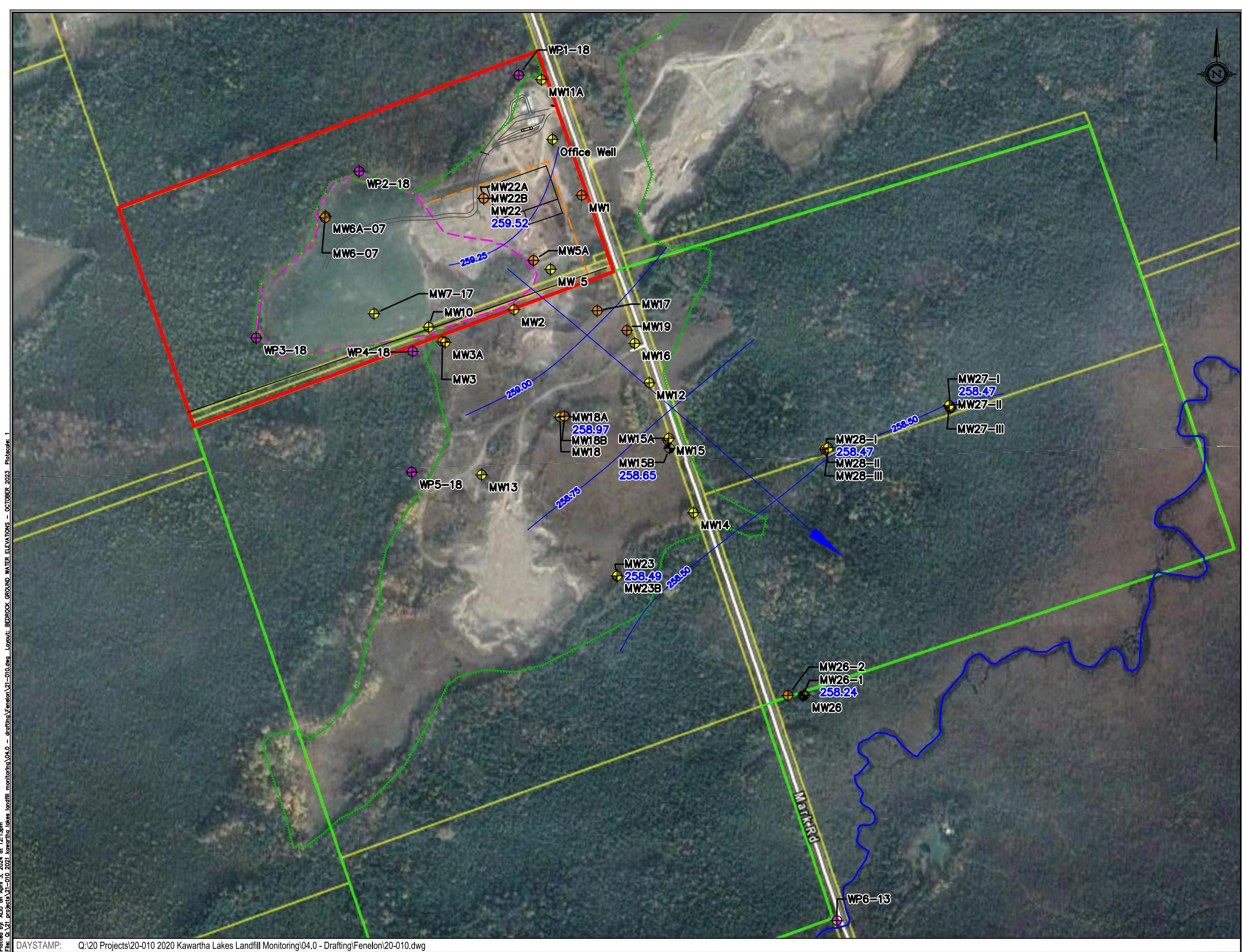
Bedrock Ground Water Elevations  
April 2023

Fenelon Falls Landfill,  
Fenelon Falls, ON

|              |                      |            |
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| PROJECT NO.: | 24-010               |            |
| REFERENCE:   | First Base Solutions |            |



Printed by: ALU on April 3, 2024 at 12:13pm  
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**LEGEND:**

- Approx. Property Boundary (~XXha)
- Contaminant Attenuation Zone
- Watercourse
- Landfill Limits Phase I
- Landfill Limits Phase II
- Shallow Overburden Well Locations
- Lower Overburden Well Locations
- Bedrock Well Locations
- Wetland Monitor Locations
- Inferred Direction of Ground Water Flow
- 293.5 Ground Water Elevation (October 2023)

75m 0 150m  
HORIZONTAL SCALE 1:5,000

**AZIMUTH ENVIRONMENTAL CONSULTING, INC.**

Bedrock Ground Water Elevations  
October 2023

Fenelon Falls Landfill,  
Fenelon Falls, ON

|              |                      |            |
|--------------|----------------------|------------|
| DATE ISSUED: | April 2024           | Figure No. |
| CREATED BY:  | JLM                  | 11         |
| PROJECT NO.: | 24-010               |            |
| REFERENCE:   | First Base Solutions |            |



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**LEGEND:**

- Approx. Property Boundary (~XXha)
- Contaminant Attenuation Zone
- Watercourse
- Landfill Limits Phase I
- Landfill Limits Phase II
- Compost Area
- Shallow Overburden Well Locations
- Lower Overburden Well Locations
- Bedrock Well Locations
- Wetland Monitor Locations
- 0.5m Contours, 2018-2022 (masl)
- 2.5m Contours, 2018-2022 (masl)

30m 0 60m

HORIZONTAL SCALE 1:2,000

**AZIMUTH ENVIRONMENTAL CONSULTING, INC.**

2022 Site Survey

Fenelon Falls Landfill,  
Fenelon Falls, ON

|              |                      |            |
|--------------|----------------------|------------|
| DATE ISSUED: | April 2024           | Figure No. |
| CREATED BY:  | JLM                  | 12         |
| PROJECT NO.: | 24-010               |            |
| REFERENCE:   | First Base Solutions |            |





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## **APPENDIX B**

### **Chemistry Summary Tables**

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW2<br>12-May-10 | MW2<br>08-Jun-11 | MW2<br>23-May-12 | MW2<br>22-May-13 | MW2<br>23-Apr-14 | MW2<br>15-Apr-15 | MW2<br>27-Apr-16 | MW2<br>17-Apr-17 | MW2<br>25-Apr-18 | MW 2<br>11-Apr-19 | MW 2<br>22-Apr-20 | MW 2<br>19-Apr-21 |
|------------------------|----------|-----------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L     | 500       | 509              | 430              | 460              | 473              | 444              | 502              | 456              | 582              | 605              | 608               | 636               | 597               |
| Calcium                | mg/L     | -         | 153              | 140              | 140              | 158              | 156              | 168              | 149              | 174              | 197              | 196               | 206               | 186               |
| Chloride               | mg/L     | 250       | 83               | 71               | 70               | 84.7             | 105              | 88.1             | 78.4             | 62.3             | 51.8             | 39.1              | 23.2              | 40.1              |
| COD                    | mg/L     | -         | 18               | 43               | 37               | 41               | 41               | 48               | 46               | 52               | 60               | 60                | 50                | 64                |
| Specific Conductivity  | umhos/cm | -         | 989              | 1100             | 1100             | 1190             | 1080             | 1200             | 1120             | 1280             | 1220             | 1350              | 1340              | 1350              |
| DOC                    | mg/L     | 5         | 12               | 8.4              | 9.5              | 15               | 11               | 12               | 10               | 15.6             | 16.5             | 18                | 17.5              | 18.3              |
| Fluoride               | mg/L     | 1.5       | < 0.1            | < 0.10           | < 0.10           | 0.2              | 0.2              | 0.2              | 0.2              | 0.6              | < 0.1            | < 0.1             | < 0.1             | < 0.1             |
| Iron                   | mg/L     | 0.3       | 32.2             | 28               | 28               | 33.8             | 33               | 36.7             | 31.9             | < 0.005          | 40.7             |                   | 49.6              | 50.5              |
| Magnesium              | mg/L     | -         | 12               | 10               | 11               | 11.6             | 10.6             | 11.9             | 9.66             | 10.8             | 12.4             | 14.4              | 17.4              | 15.8              |
| Manganese              | mg/L     | 0.05      | 0.46             | 0.55             | 0.56             | 0.72             | 0.606            | 0.64             | 0.695            | 0.832            | 0.727            | 0.798             | 1.01              | 0.975             |
| Nitrate                | mg/L     | 10        | 0.1              | < 0.10           | 0.12             | 0.2              | 0.2              | 0.2              | 0.1              | 0.2              | 0.06             | < 0.05            | 0.08              | < 0.05            |
| Nitrite                | mg/L     | 1         | < 0.1            | < 0.010          | < 0.010          | < 0.1            | < 0.1            | < 0.1            | < 0.1            | 0.7              | < 0.05           | < 0.05            | < 0.05            | < 0.05            |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 6.99             | 7.12             | 7.45             | 7.2              | 7.19             | 7.11             | 7.45             | 7.29             | 7.4              | 7.48              | 7.19              | 7.05              |
| Phenols                | mg/L     | -         | < 0.001          | < 0.0010         | < 0.0010         | < 0.001          | < 0.001          | < 0.001          | 0.008            | < 0.001          | < 0.001          | < 0.002           | < 0.002           | < 0.001           |
| Phosphorus             | mg/L     | -         | 0.01             | 0.14             | < 0.10           | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1             | < 0.1             | < 0.1             |
| Potassium              | mg/L     | -         | 21               | 22               | 20               | 20.5             | 21.5             | 19.9             | 18.3             | 19.3             | 25.2             | 33.3              | 40                | 47.1              |
| Sodium                 | mg/L     | 200       | 59               | 51               | 50               | 47.2             | 44.8             | 59.6             | 63.4             | 57.8             | 57.8             | 30.4              | 23.9              | 34.5              |
| Sulphate               | mg/L     | 500       | 15               | 16               | 22               | 21               | 20               | 14               | 14               | 6                | 7                | 4                 | 12                | 3                 |
| Dissolved Solids       | mg/L     | 500       | 643              | 643              | 639              | 646              | 659              | 716              | 653              | 714              | 741              | 721               | 743               | 743               |
| Tot Kjel N             | mg/L     | -         | 15.8             | 15               | 13               | 19.7             | 1.5              | 13.1             | 12.3             | 25.1             | 23.1             | 31.8              | 33.7              | 45.2              |
| Ammonia (NH3-N)        | mg/L     | -         | 14.2             | 18               | 15               | 13.7             | 0.17             | 11.7             | 10.2             | 23.8             | 20.4             | 30.2              | 29.3              | 44                |
| Ammonia - Unionized    | mg/L     | -         |                  |                  |                  |                  |                  |                  |                  |                  |                  |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | 432              | 390              | 400              | 442              | 433              | 468              | 412              | 479              | 543              | 549               | 587               | 530               |
| BOD                    | mg/L     | -         | --               | --               | --               | --               | --               | --               | --               | --               |                  |                   |                   |                   |
| Cyanide (free)         | mg/L     | -         | --               | --               | --               | --               | --               | --               | --               | --               |                  |                   |                   |                   |
| Total Suspended Solids | mg/L     | -         | --               | --               | --               | --               | --               | --               | --               | --               |                  |                   |                   |                   |
| Aluminum               | mg/L     | 0.1       | 0.02             | 0.0095           | 0.0076           | 0.05             | 0.04             | 0.05             | 0.05             | 0.1              | 0.11             | 0.1               | 0.11              | 0.09              |
| Antimony               | mg/L     | 0.006     | < 0.01           | < 0.00050        | < 0.00050        | 0.0002           | < 0.0001         | 0.0002           | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001          | 0.0001            | 0.0001            |
| Arsenic                | mg/L     | 0.025     | < 0.005          | 0.0039           | 0.0036           | 0.0061           | 0.0058           | 0.0058           | 0.005            | 0.0072           | 0.0041           | 0.0052            | 0.0043            | 0.0048            |
| Barium                 | mg/L     | 1         | 0.6              | 0.72             | 0.63             | 0.712            | 0.646            | 0.644            | 0.511            | 0.696            | 0.786            | 0.89              | 0.99              | 0.995             |
| Beryllium              | mg/L     | -         | < 0.1            | < 0.00050        | < 0.00050        | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002           | < 0.002           | < 0.002           |
| Boron                  | mg/L     | 5         | < 0.1            | 0.21             | 0.21             | 0.21             | 0.199            | 0.219            | 0.183            | 0.25             | 0.336            | 0.357             | 0.367             | 0.481             |
|                        |          |           |                  |                  |                  |                  |                  |                  |                  |                  |                  |                   |                   |                   |
| Cadmium                | mg/L     | 0.005     | 0.0006           | < 0.00010        | < 0.00010        | 0.00011          | < 0.00002        | < 0.00002        | < 0.00002        | < 0.000020       | < 0.000015       | < 0.000015        | < 0.000015        | < 0.000015        |
| Chromium (total)       | mg/L     | 0.05      | 0.0007           | < 0.0050         | < 0.0050         | < 0.0002         | 0.0019           | < 0.0002         | < 0.0002         | 0.003            | 0.001            | 0.001             | 0.001             | 0.001             |
| Chromium (VI)          | mg/L     | -         |                  |                  |                  |                  |                  |                  |                  |                  |                  |                   |                   |                   |
| Cobalt                 | mg/L     | -         | 0.0067           | 0.0062           | 0.0058           | 0.01             | 0.008            | 0.011            | 0.009            | 0.015            | 0.005            | 0.011             | 0.012             | 0.016             |
| Copper                 | mg/L     | 1         | < 0.0001         | < 0.0010         | < 0.0010         | 0.001            | 0.0009           | 0.0008           | 0.0007           | 0.0004           | 0.0005           | 0.0005            | 0.0004            | 0.0012            |
| Lead                   | mg/L     | 0.01      | 0.003            | < 0.00050        | < 0.00050        | 0.00006          | 0.00004          | < 0.00002        | 0.00002          | < 0.00002        | 0.00003          | 0.00002           | < 0.00004         | 0.00009           |
| Mercury                | mg/L     | 0.001     | < 0.00002        | < 0.00001        | < 0.00001        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002         | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L     | -         | < 0.002          | < 0.0010         | 0.00067          | 0.0007           | 0.0005           | 0.0003           | 0.0006           | 0.0005           | 0.0004           | 0.0004            | 0.0008            | 0.0005            |
| Nickel                 | mg/L     | -         | < 0.01           | 0.0041           | 0.0034           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01            | < 0.01            | < 0.01            |
| Selenium               | mg/L     | 0.01      | < 0.01           | < 0.0020         | < 0.0020         | < 0.001          | 0.001            | < 0.001          | < 0.001          | 0.002            | 0.003            | < 0.001           | < 0.001           | < 0.001           |
| Silver                 | mg/L     | -         | < 0.0001         | < 0.00010        | < 0.00010        | 0.00002          | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.0001         | < 0.0001          | < 0.0001          | < 0.0001          |
| Strontium              | mg/L     | -         | 0.412            | 0.38             | 0.37             | --               | --               | 0.481            | 0.416            | 0.46             | 0.526            | 0.553             | 0.578             | 0.528             |
| Thallium               | mg/L     | -         | < 0.0003         | < 0.000050       | < 0.000050       | < 0.00005        | < 0.00005        | 0.00013          | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005         | < 0.00005         | < 0.00005         |
| Vanadium               | mg/L     | -         | 0.001            | 0.0022           | 0.0019           | 0.0056           | 0.0048           | 0.0064           | 0.003            | 0.0054           | 0.0021           | 0.0024            | 0.0022            | 0.0034            |
| Zinc                   | mg/L     | 5         | < 0.01           | 0.018            | < 0.0050         | 0.005            | < 0.005          | < 0.005          | 0.006            | < 0.005          | < 0.005          | < 0.005           | < 0.005           | < 0.005           |

ODWQS - Ontario Drinking Water Quality  
Standards

Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW 2<br>20-Apr-22 | MW2<br>19-Apr-23 | MW3<br>23-May-12 | MW3<br>22-May-13 | MW3<br>23-Apr-14 | MW3<br>15-Apr-15 | MW3<br>27-Apr-16 | MW3<br>17-Apr-17 | MW3<br>25-Apr-18 | MW3<br>11-Apr-19 | MW3<br>22-Apr-20 | MW3<br>19-Apr-21 |
|------------------------|----------|-----------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Total Alkalinity       | mg/L     | 500       | 625               | 719              | 1400             | 1490             | 1480             | 1490             | 1400             | 1420             | 1260             | 1200             | 1050             | 1020             |
| Calcium                | mg/L     | -         | 171               | 199              | 290              | 269              | 261              | 301              | 265              | 286              | 254              | 255              | 288              | 310              |
| Chloride               | mg/L     | 250       | 49.4              | 50.9             | 140              | 183              | 150              | 147              | 181              | 153              | 81.3             | 142              | 134              | 134              |
| COD                    | mg/L     | -         | 72                | 70               | 200              | 163              | 211              | 205              | 203              | 202              | 189              | 144              | 189              | 167              |
| Specific Conductivity  | umhos/cm | -         | 1440              | 1477             | 3000             | 3130             | 2870             | 3010             | 3000             | 2950             | 2380             | 2700             | 2420             | 2430             |
| DOC                    | mg/L     | 5         | 11.7              | 9.9              | 75               | 57.2             | 100              | 78.9             | 27.3             | 65.9             | 29.1             | 28.9             | 26.1             | 27.2             |
| Fluoride               | mg/L     | 1.5       | < 0.1             | < 0.1            | < 0.10           | 0.2              | 0.1              | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Iron                   | mg/L     | 0.3       | 48.5              | 57.8             | 38               | 44.8             | 44.8             | 49.2             | 41               | 31               | 24.4             | 23.1             | 28.2             | 23               |
| Magnesium              | mg/L     | -         | 19.2              | 20.2             | 34               | 37.2             | 37.1             | 48.3             | 36.4             | 30.7             | 31.5             | 31.3             | 30.8             | 24.1             |
| Manganese              | mg/L     | 0.05      | 0.812             | 1.04             | 0.83             | 1.09             | 0.89             | 0.84             | 0.738            | 0.626            | 0.43             | 0.425            | 0.518            | 0.385            |
| Nitrate                | mg/L     | 10        | < 0.05            | < 0.05           | < 0.10           | 0.1              | 0.1              | < 0.1            | < 0.1            | 0.1              | < 0.05           | < 0.05           | < 0.05           | < 0.05           |
| Nitrite                | mg/L     | 1         | < 0.05            | < 0.05           | < 0.010          | < 0.1            | < 0.1            | < 0.1            | < 0.1            | 1.6              | < 0.05           | < 0.05           | < 0.05           | < 0.05           |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.25              | 7.25             | 7.35             | 7.06             | 6.98             | 6.94             | 7.16             | 7.26             | 7.57             | 7.6              | 7.33             | 7.16             |
| Phenols                | mg/L     | -         | < 0.001           | < 0.001          | 0.0029           | 0.002            | < 0.001          | < 0.001          | 0.023            | < 0.001          | < 0.001          | < 0.002          | < 0.002          | < 0.001          |
| Phosphorus             | mg/L     | -         | < 0.1             | < 0.1            | 0.12             | < 0.1            | < 0.1            | < 0.1            | 0.1              | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Potassium              | mg/L     | -         | 54.5              | 61.4             | 140              | 141              | 133              | 131              | 126              | 143              | 147              | 137              | 110              | 107              |
| Sodium                 | mg/L     | 200       | 35.2              | 29.6             | 130              | 136              | 126              | 111              | 157              | 148              | 99.8             | 138              | 116              | 110              |
| Sulphate               | mg/L     | 500       | < 1               | 2                | < 1              | < 1              | 2                | 7                | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              |
| Dissolved Solids       | mg/L     | 500       | 705               | 909              | 1750             | 1830             | 1810             | 1810             | 1650             | 1730             | 1523             | 1575             | 1391             | 1395             |
| Tot Kjeh N             | mg/L     | -         | 48.2              | 48               | 93               | 159              | 127              | 107              | 116              | 105              | 101              | 96               | 78.4             | 78.3             |
| Ammonia (NH3-N)        | mg/L     | -         | 44.4              | 43.5             | 110              | 132              | 127              | 92.5             | 113              | 87               | 101              | 99.9             | 63.2             | 77.8             |
| Ammonia - Unionized    | mg/L     | -         |                   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Hardness (CaCO3)       | mg/L     | 100       | 506               | 581              | 870              | 825              | 806              | 952              | 812              | 841              | 764              | 766              | 847              | 874              |
| BOD                    | mg/L     | -         |                   |                  | --               | --               | --               | --               | --               | --               |                  |                  |                  |                  |
| Cyanide (free)         | mg/L     | -         |                   |                  | --               | --               | --               | --               | --               | --               |                  |                  |                  |                  |
| Total Suspended Solids | mg/L     | -         |                   |                  | --               | --               | --               | --               | --               | --               |                  |                  |                  |                  |
| Aluminum               | mg/L     | 0.1       | 0.09              | 0.07             | 0.057            | 0.12             | 0.1              | 0.11             | 0.1              | 0.14             | 0.15             | 0.13             | 0.14             | 0.14             |
| Antimony               | mg/L     | 0.006     | 0.0002            | 0.0002           | < 0.00050        | 0.0003           | 0.0003           | 0.0005           | 0.0002           | 0.0002           | 0.0003           | 0.0002           | 0.0002           | 0.0002           |
| Arsenic                | mg/L     | 0.025     | 0.0055            | 0.0048           | 0.0011           | 0.0027           | < 0.0001         | 0.0031           | 0.0021           | 0.0021           | 0.0009           | 0.0008           | 0.0005           | 0.0006           |
| Barium                 | mg/L     | 1         | 0.979             | 1.14             | 0.76             | 0.763            | 0.685            | 0.697            | 0.581            | 0.674            | 0.657            | 0.628            | 0.543            | 0.559            |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.002          | < 0.00050        | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          |
| Boron                  | mg/L     | 5         | 0.421             | 0.448            | 0.74             | 0.582            | 0.598            | 0.646            | 0.442            | 0.404            | 0.461            | 0.438            | 0.264            | 0.284            |
|                        |          |           |                   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Cadmium                | mg/L     | 0.005     | < 0.000015        | < 0.000012       | < 0.00010        | 0.00002          | < 0.00002        | < 0.00002        | < 0.00002        | < 0.000020       | < 0.000015       | < 0.000015       | < 0.000029       | < 0.000029       |
| Chromium (total)       | mg/L     | 0.05      | 0.001             | < 0.001          | < 0.0050         | < 0.0002         | 0.0081           | < 0.0002         | < 0.0002         | 0.005            | 0.003            | 0.003            | 0.003            | 0.003            |
| Chromium (VI)          | mg/L     | -         | < 0.001           | < 0.001          |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Cobalt                 | mg/L     | -         | 0.014             | 0.023            | 0.0039           | 0.008            | 0.007            | 0.008            | 0.009            | 0.009            | 0.016            | 0.008            | 0.006            | < 0.005          |
| Copper                 | mg/L     | 1         | 0.0003            | 0.0002           | < 0.0010         | 0.0006           | 0.0017           | 0.001            | 0.0012           | 0.0023           | 0.0004           | 0.0004           | 0.0002           | 0.0015           |
| Lead                   | mg/L     | 0.01      | < 0.00004         | < 0.00004        | < 0.00050        | 0.00009          | 0.0002           | < 0.00002        | 0.00004          | < 0.00002        | 0.00011          | 0.00003          | < 0.00009        | 0.00013          |
| Mercury                | mg/L     | 0.001     | < 0.00002         | < 0.00002        | 0.00002          | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        |
| Molybdenum             | mg/L     | -         | 0.0007            | 0.0005           | < 0.00050        | 0.0002           | 0.0002           | < 0.0001         | 0.0001           | 0.0001           | 0.0001           | 0.0001           | 0.0009           | < 0.0002         |
| Nickel                 | mg/L     | -         | < 0.01            | < 0.01           | 0.0041           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           |
| Selenium               | mg/L     | 0.01      | 0.002             | < 0.001          | < 0.0020         | < 0.001          | < 0.001          | 0.003            | < 0.001          | 0.001            | 0.01             | 0.003            | 0.001            | 0.002            |
| Silver                 | mg/L     | -         | < 0.0001          | < 0.0001         | < 0.00010        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         |
| Strontium              | mg/L     | -         | 0.462             | 0.587            | 0.87             | --               | --               | 1.06             | 0.882            | 0.877            | 0.846            | 0.911            | 0.919            | 0.998            |
| Thallium               | mg/L     | -         | < 0.005           | < 0.00005        | < 0.000050       | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        |
| Vanadium               | mg/L     | -         | 0.0039            | 0.004            | 0.0091           | 0.0194           | 0.022            | 0.0214           | 0.0108           | 0.0155           | 0.0058           | 0.0063           | 0.0051           | 0.0052           |
| Zinc                   | mg/L     | 5         | < 0.005           | < 0.005          | 0.0051           | < 0.005          | 0.007            | < 0.005          | 0.005            | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          |

ODWQS - Ontario Drinking Water Quality

Standards

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW3<br>20-Apr-22 | MW3<br>19-Apr-23 | MW3A<br>23-May-12 | MW3A<br>22-May-13 | MW3A<br>23-Apr-14 | MW3A<br>15-Apr-15 | MW3A<br>27-Apr-16 | MW3A<br>17-Apr-17 | MW3A<br>25-Apr-18 | MW3A<br>11-Apr-19 | MW3A<br>22-Apr-20 | MW3A<br>19-Apr-21 |
|------------------------|----------|-----------|------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L     | 500       | 1030             | 1140             | 310               | 222               | 351               | 363               | 411               | 354               | 349               | 399               | 451               | 344               |
| Calcium                | mg/L     | -         | 300              | 318              | 77                | 91.8              | 108               | 133               | 152               | 107               | 103               | 142               | 113               | 122               |
| Chloride               | mg/L     | 250       | 146              | 155              | 16                | 7.5               | 12                | 28.1              | 29.2              | 30.2              | 12.7              | 46.5              | 36.7              | 27.6              |
| COD                    | mg/L     | -         | 138              | 160              | 25                | 19                | 31                | 39                | 35                | 50                | 23                | 39                | 115               | 48                |
| Specific Conductivity  | umhos/cm | -         | 2530             | 2466             | 670               | 510               | 703               | 779               | 906               | 807               | 692               | 999               | 1070              | 865               |
| DOC                    | mg/L     | 5         | 15.3             | 3.8              | 6.4               | 13.6              | 12.8              | 15.3              | 11.3              | 14.5              | 8.4               | 16.7              | 15.5              | 12.8              |
| Fluoride               | mg/L     | 1.5       | < 0.5            | < 0.1            | < 0.10            | 0.2               | 0.2               | < 0.1             | < 0.1             | 0.4               | < 0.1             | < 0.1             | < 0.1             | < 0.1             |
| Iron                   | mg/L     | 0.3       | 22.4             | 26.2             | 3.4               | 4.17              | 6.52              | 5                 | 13.6              | 0.207             | 0.034             | 6.31              | 9.53              | 3.7               |
| Magnesium              | mg/L     | -         | 23.9             | 23.6             | 3.1               | 3.84              | 5.11              | 5.93              | 7.5               | 7.54              | 5.96              | 9.96              | 7.64              | 5.54              |
| Manganese              | mg/L     | 0.05      | 0.343            | 0.351            | 0.54              | 0.537             | 0.562             | 0.457             | 0.577             | 0.344             | 0.202             | 0.38              | 0.282             | 0.196             |
| Nitrate                | mg/L     | 10        | < 0.3            | < 0.05           | 0.17              | 0.6               | 0.3               | 0.1               | 0.2               | 0.3               | 0.19              | 0.18              | 0.24              | 0.11              |
| Nitrite                | mg/L     | 1         | < 0.3            | < 0.05           | 0.011             | 0.2               | < 0.1             | < 0.1             | < 0.1             | 0.4               | < 0.05            | 0.05              | < 0.05            | < 0.05            |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.42             | 7.47             | 7.44              | 7.54              | 7.39              | 7.27              | 7.45              | 7.65              | 7.73              | 7.72              | 7.56              | 7.43              |
| Phenols                | mg/L     | -         | < 0.001          | < 0.001          | < 0.0010          | < 0.001           | < 0.001           | < 0.001           | 0.017             | 0.001             | < 0.001           | < 0.002           | < 0.002           | < 0.001           |
| Phosphorus             | mg/L     | -         | < 0.1            | < 0.1            | < 0.10            | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             |
| Potassium              | mg/L     | -         | 95               | 103              | 6.9               | 12.2              | 14.5              | 11.1              | 13.6              | 25.5              | 28.1              | 27.7              | 23.2              | 14.8              |
| Sodium                 | mg/L     | 200       | 116              | 118              | 7.3               | 6                 | 10.8              | 6.1               | 25.2              | 21.6              | 5                 | 15.6              | 15.5              | 9.7               |
| Sulphate               | mg/L     | 500       | < 5              | < 1              | 17                | 10                | 12                | 11                | 12                | 12                | 5                 | 16                | 18                | 33                |
| Dissolved Solids       | mg/L     | 500       | 1301             | 1513             | 321               | 273               | 397               | 430               | 512               | 460               | 383               | 523               | 518               | 444               |
| Tot Kjeh N             | mg/L     | -         | 72.6             | 74.8             | 3.8               | 4                 | 17.7              | 9.9               | 10.4              | 33.9              | 10.9              | 15                | 30.5              | 17.7              |
| Ammonia (NH3-N)        | mg/L     | -         | 60.5             | 67.7             | 2.2               | 3.32              | 11.8              | 8.96              | 8.65              | 30.9              | 10.3              | 15.5              | 25.7              | 19.4              |
| Ammonia - Unionized    | mg/L     | -         |                  |                  |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | 848              | 891              | 200               | 245               | 290               | 356               | 410               | 299               | 282               | 396               | 314               | 328               |
| BOD                    | mg/L     | -         |                  |                  | --                | --                | --                | --                | --                | --                |                   |                   |                   |                   |
| Cyanide (free)         | mg/L     | -         |                  |                  | --                | --                | --                | --                | --                | --                |                   |                   |                   |                   |
| Total Suspended Solids | mg/L     | -         |                  |                  | --                | --                | --                | --                | --                | --                |                   |                   |                   |                   |
| Aluminum               | mg/L     | 0.1       | 0.14             | 0.11             | < 0.0050          | 0.03              | 0.03              | 0.04              | 0.04              | 0.06              | 0.05              | 0.08              | 0.07              | 0.08              |
| Antimony               | mg/L     | 0.006     | 0.0002           | 0.0002           | < 0.00050         | < 0.0001          | < 0.0001          | 0.0001            | < 0.0001          | < 0.0001          | 0.0001            | < 0.0001          | < 0.0001          | < 0.0001          |
| Arsenic                | mg/L     | 0.025     | 0.0005           | 0.0006           | < 0.0010          | 0.0004            | 0.0004            | 0.0004            | 0.0007            | 0.0007            | 0.0002            | 0.0004            | 0.0003            | 0.0002            |
| Barium                 | mg/L     | 1         | 0.494            | 0.574            | 0.031             | 0.046             | 0.062             | 0.053             | 0.069             | 0.097             | 0.075             | 0.096             | 0.083             | 0.056             |
| Beryllium              | mg/L     | -         | < 0.002          | < 0.002          | < 0.00050         | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           |
| Boron                  | mg/L     | 5         | 0.196            | 0.278            | 0.027             | 0.026             | 0.079             | 0.091             | 0.128             | 0.15              | 0.151             | 0.152             | 0.132             | 0.11              |
|                        |          |           |                  |                  |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cadmium                | mg/L     | 0.005     | < 0.000029       | < 0.000029       | < 0.00010         | < 0.00002         | 0.00003           | < 0.00002         | < 0.00002         | < 0.000020        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        |
| Chromium (total)       | mg/L     | 0.05      | 0.003            | 0.002            | < 0.0050          | < 0.0002          | 0.0013            | 0.0019            | < 0.0002          | 0.002             | < 0.001           | < 0.001           | < 0.001           | < 0.001           |
| Chromium (VI)          | mg/L     | -         | < 0.001          | < 0.001          |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cobalt                 | mg/L     | -         | < 0.005          | 0.006            | 0.00077           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |
| Copper                 | mg/L     | 1         | 0.0004           | 0.0002           | 0.0016            | 0.0017            | 0.0016            | 0.0032            | 0.0024            | 0.0025            | 0.0012            | 0.0038            | 0.0015            | 0.0041            |
| Lead                   | mg/L     | 0.01      | < 0.00009        | < 0.00009        | 0.00095           | 0.00002           | 0.00004           | 0.00006           | 0.00002           | < 0.00002         | 0.00004           | 0.00002           | 0.00002           | 0.00007           |
| Mercury                | mg/L     | 0.001     | < 0.00002        | < 0.00002        | < 0.00001         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L     | -         | < 0.0002         | < 0.0002         | < 0.00050         | 0.0002            | 0.0001            | < 0.0001          | 0.0001            | 0.0002            | 0.0001            | 0.0001            | 0.0001            | 0.0002            |
| Nickel                 | mg/L     | -         | < 0.01           | < 0.01           | < 0.0010          | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            |
| Selenium               | mg/L     | 0.01      | 0.003            | 0.002            | < 0.0020          | < 0.001           | < 0.001           | < 0.001           | < 0.001           | 0.002             | < 0.001           | < 0.001           | < 0.001           | < 0.001           |
| Silver                 | mg/L     | -         | < 0.0001         | < 0.0001         | < 0.00010         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          |
| Strontium              | mg/L     | -         | 0.935            | 1                | 0.18              | --                | --                | 0.328             | 0.377             | 0.292             | 0.237             | 0.424             | 0.289             | 0.321             |
| Thallium               | mg/L     | -         | < 0.005          | < 0.00005        | < 0.000050        | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         |
| Vanadium               | mg/L     | -         | 0.0061           | 0.0066           | < 0.00050         | 0.0031            | 0.0037            | 0.0039            | 0.0027            | 0.0039            | 0.0005            | 0.0011            | 0.0011            | 0.0008            |
| Zinc                   | mg/L     | 5         | < 0.005          | < 0.005          | 0.0078            | < 0.005           | < 0.005           | 0.012             | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |

ODWQS - Ontario Drinking Water Quality

Standards

Bold and highlighted indicates exceedance



Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW3A<br>20-Apr-22 | MW3A<br>19-Apr-23 | MW5<br>23-May-12 | MW5<br>22-May-13 | MW5<br>23-Apr-14 | MW5<br>15-Apr-15 | MW5<br>27-Apr-16 | MW5<br>17-Apr-17 | MW5<br>25-Apr-18 | MW5<br>11-Apr-19 | MW5<br>22-Apr-20 | MW5<br>19-Apr-21 |
|------------------------|----------|-----------|-------------------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Total Alkalinity       | mg/L     | 500       | 332               | 242               | 450              | 446              | 500              | 562              | 575              | 717              | 396              | 829              | 914              | 844              |
| Calcium                | mg/L     | -         | 114               | 90.8              | 180              | 195              | 234              | 184              | 236              | 79.6             | 189              | 273              | 339              | 374              |
| Chloride               | mg/L     | 250       | 18.3              | 10.5              | 5                | 101              | 348              | 458              | 424              | 58.3             | 50               | 91.7             | 72               | 90.5             |
| COD                    | mg/L     | -         | 31                | 19                | 13               | 28               | 15               | 21               | 34               | 16               | 59               | 160              | 424              | 225              |
| Specific Conductivity  | umhos/cm | -         | 746               | 546               | 870              | 1190             | 1910             | 2320             | 2370             | 1510             | 1070             | 1840             | 2040             | 1930             |
| DOC                    | mg/L     | 5         | 11.6              | 5.2               | 2.9              | 14.2             | 5.3              | 3.3              | 1.8              | 6.5              | 19               | 75               | 25.8             | 20.5             |
| Fluoride               | mg/L     | 1.5       | < 0.1             | < 0.1             | < 0.10           | 0.2              | <0.1             | < 0.1            | < 0.1            | 0.7              | < 0.1            | 9.3              | 21.8             | < 0.1            |
| Iron                   | mg/L     | 0.3       | 4.55              | 1.61              | < 0.10           | 0.006            | 0.007            | 0.021            | 0.01             | 0.006            | 0.322            | 8.51             | 92.4             | 103              |
| Magnesium              | mg/L     | -         | 5.97              | 3.44              | 8.8              | 11.5             | 11.5             | 8.32             | 10.7             | 2.91             | 9.67             | 32.8             | 28.8             | 24.5             |
| Manganese              | mg/L     | 0.05      | 0.219             | 0.139             | < 0.0020         | 0.009            | 0.007            | 0.005            | 0.003            | < 0.001          | 4.01             | 6.8              | 7.7              | 8.65             |
| Nitrate                | mg/L     | 10        | 0.23              | 0.35              | 1.2              | 0.9              | 1.3              | 1.8              | 2.2              | 3.1              | < 0.05           | < 0.05           | < 0.05           | 0.06             |
| Nitrite                | mg/L     | 1         | < 0.05            | 0.06              | < 0.010          | < 0.1            | <0.1             | < 0.1            | < 0.1            | 0.6              | < 0.05           | < 0.05           | < 0.05           | < 0.05           |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.53              | 7.75              | 7.74             | 7.26             | 7.29             | 7.32             | 7.6              | 7.81             | 7.79             | 7.76             | 7.07             | 6.92             |
| Phenols                | mg/L     | -         | < 0.001           | < 0.001           | < 0.0010         | < 0.001          | < 0.001          | < 0.001          | 0.016            | < 0.001          | < 0.001          | 0.089            | 0.106            | 0.004            |
| Phosphorus             | mg/L     | -         | < 0.1             | < 0.1             | < 0.10           | < 0.1            | <0.1             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | <0.1             | < 0.1            | < 0.1            |
| Potassium              | mg/L     | -         | 12.8              | 7.9               | 2.1              | 2.2              | 3.1              | 2.9              | 3.2              | 1.9              | 1.9              | 2.2              | 16.8             | 10.9             |
| Sodium                 | mg/L     | 200       | 13.2              | 5.1               | 3.7              | 26.8             | 169              | 310              | 304              | 296              | 58.7             | 79.1             | 93.8             | 90.9             |
| Sulphate               | mg/L     | 500       | 16                | 24                | 27               | 32               | 25               | 26               | 36               | 16               | 113              | 4                | 4                | 57               |
| Dissolved Solids       | mg/L     | 500       | 379               | 298               | 507              | 640              | 1100             | 1340             | 1370             | 901              | 665              | 1005             | 1133             | 1166             |
| Tot Kjel N             | mg/L     | -         | 10.9              | 8.5               | 0.44             | 0.7              | 0.6              | 0.6              | 0.5              | 0.5              | 1.9              | 1.9              | 2.5              | 7.1              |
| Ammonia (NH3-N)        | mg/L     | -         | 8.99              | 7.19              | < 0.050          | 0.023            | <0.01            | 0.07             | 0.07             | 0.12             | 0.19             | 0.12             | 0.96             | 2.88             |
| Ammonia - Unionized    | mg/L     | -         |                   |                   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Hardness (CaCO3)       | mg/L     | 100       | 310               | 241               | 500              | 536              | 631              | 495              | 633              | 211              | 512              | 817              | 966              | 1040             |
| BOD                    | mg/L     | -         |                   |                   | --               | --               | --               | --               | --               | --               |                  |                  |                  |                  |
| Cyanide (free)         | mg/L     | -         |                   |                   | --               | --               | --               | --               | --               | --               |                  |                  |                  |                  |
| Total Suspended Solids | mg/L     | -         |                   |                   | --               | --               | --               | --               | --               | --               |                  |                  |                  |                  |
| Aluminum               | mg/L     | 0.1       | 0.06              | 0.02              | < 0.0050         | 0.05             | 0.05             | 0.04             | 0.05             | 0.05             | 0.1              | 0.12             | 0.13             | 0.15             |
| Antimony               | mg/L     | 0.006     | < 0.0001          | < 0.0001          | < 0.00050        | < 0.0001         | <0.0001          | < 0.0001         | < 0.0001         | 0.0001           | 0.0003           | 0.0003           | 0.0002           | 0.0003           |
| Arsenic                | mg/L     | 0.025     | 0.0002            | 0.0002            | < 0.0010         | 0.0004           | 0.0003           | 0.0003           | 0.0004           | 0.0004           | 0.0011           | 0.0053           | 0.0144           | 0.0109           |
| Barium                 | mg/L     | 1         | 0.05              | 0.029             | 0.17             | 0.235            | 0.397            | 0.387            | 0.358            | 0.147            | 0.166            | 0.411            | 1.07             | 0.825            |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.002           | < 0.00050        | < 0.002          | <0.002           | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          |
| Boron                  | mg/L     | 5         | 0.111             | 0.066             | 0.057            | 0.053            | 0.064            | 0.087            | 0.06             | 0.045            | 0.832            | 0.88             | 0.398            | 1.5              |
|                        |          |           |                   |                   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Cadmium                | mg/L     | 0.005     | < 0.000015        | < 0.000010        | < 0.00010        | < 0.00002        | <0.00002         | < 0.00002        | < 0.00002        | < 0.000020       | < 0.000015       | < 0.000015       | < 0.000029       | < 0.000029       |
| Chromium (total)       | mg/L     | 0.05      | < 0.001           | < 0.001           | < 0.0050         | < 0.0002         | 0.0051           | < 0.0002         | < 0.0002         | 0.016            | 0.001            | 0.002            | 0.003            | 0.002            |
| Chromium (VI)          | mg/L     | -         | < 0.001           | < 0.001           |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Cobalt                 | mg/L     | -         | < 0.005           | 0.007             | < 0.00050        | < 0.005          | <0.005           | < 0.005          | < 0.005          | < 0.005          | 0.026            | 0.019            | 0.063            | 0.05             |
| Copper                 | mg/L     | 1         | 0.0029            | 0.0016            | 0.0031           | 0.0049           | 0.004            | 0.0046           | 0.0049           | 0.0058           | 0.0053           | 0.0027           | 0.0016           | 0.0016           |
| Lead                   | mg/L     | 0.01      | 0.00002           | < 0.00002         | < 0.00050        | < 0.00002        | 0.00012          | 0.00002          | 0.00002          | < 0.00002        | 0.00006          | 0.00003          | < 0.00009        | 0.00014          |
| Mercury                | mg/L     | 0.001     | < 0.00002         | < 0.00002         | < 0.00001        | < 0.00002        | <0.00002         | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        |
| Molybdenum             | mg/L     | -         | 0.0001            | 0.0002            | < 0.00050        | 0.0001           | 0.0001           | < 0.0001         | 0.0002           | 0.0032           | 0.0017           | 0.0035           | 0.0016           | 0.0009           |
| Nickel                 | mg/L     | -         | < 0.01            | < 0.01            | < 0.0010         | < 0.01           | <0.01            | < 0.01           | < 0.01           | < 0.01           | 0.01             | 0.02             | 0.02             | 0.02             |
| Selenium               | mg/L     | 0.01      | < 0.001           | < 0.001           | < 0.0020         | < 0.001          | <0.001           | < 0.001          | < 0.001          | 0.002            | 0.002            | < 0.001          | 0.001            | < 0.001          |
| Silver                 | mg/L     | -         | < 0.0001          | < 0.0001          | < 0.00010        | < 0.00002        | <0.00002         | < 0.00002        | < 0.00002        | < 0.00002        | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         |
| Strontium              | mg/L     | -         | 0.291             | 0.223             | 0.3              | --               | --               | 0.369            | 0.462            | 0.138            | 0.275            | 0.466            | 0.757            | 0.804            |
| Thallium               | mg/L     | -         | < 0.005           | < 0.00005         | < 0.000050       | < 0.00005        | <0.00005         | 0.00008          | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        |
| Vanadium               | mg/L     | -         | 0.0009            | 0.0005            | 0.0011           | 0.0051           | 0.0043           | 0.0051           | 0.0026           | 0.0042           | 0.0001           | 0.0061           | 0.0067           | 0.0076           |
| Zinc                   | mg/L     | 5         | < 0.005           | < 0.005           | 0.0084           | < 0.005          | <0.005           | < 0.005          | < 0.005          | < 0.005          | 0.007            | < 0.005          | < 0.005          | < 0.005          |

ODWQS - Ontario Drinking Water Quality

Standards

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW5<br>20-Apr-22 | MW5<br>19-Apr-23 | MW5A<br>23-May-12 | MW5A<br>22-May-13 | MW5A<br>23-Apr-14 | MW5A<br>15-Apr-15 | MW5A<br>27-Apr-16 | MW5A<br>17-Apr-17 | MW5A<br>12-Apr-19 | MW5A<br>22-Apr-20 | MW5A<br>19-Apr-21 | MW5A<br>20-Apr-22 |
|------------------------|----------|-----------|------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L     | 500       | 968              | 886              | 330               | 338               | 319               | 309               | 282               | 300               | Well Obstructed   |                   | 808               | 861               |
| Calcium                | mg/L     | -         | 314              | 293              | 140               | 194               | 122               | 141               | 129               | 118               |                   |                   | 271               | 255               |
| Chloride               | mg/L     | 250       | 42.8             | 41.5             | 70                | 545               | 76.9              | 118               | 104               | 54.5              |                   |                   | 178               | 201               |
| COD                    | mg/L     | -         | 173              | 334              | 34                | 34                | 28                | 36                | 31                | 27                |                   |                   | 332               | 278               |
| Specific Conductivity  | umhos/cm | -         | 1980             | 1703             | 850               | 2250              | 847               | 961               | 890               | 780               |                   |                   | 2060              | 2280              |
| DOC                    | mg/L     | 5         | 12.3             | 18.9             | 10                | 6.4               | 10.7              | 8.5               | 7.5               | 9.1               |                   |                   | 22.5              | 71.7              |
| Fluoride               | mg/L     | 1.5       | < 0.1            | < 1              | < 0.10            | 0.2               | 0.2               | < 0.1             | < 0.1             | 0.3               |                   |                   | < 0.1             | < 0.5             |
| Iron                   | mg/L     | 0.3       | 109              | 49.5             | 2.1               | 5.04              | 2.65              | 3.45              | 0.04              | 0.487             |                   |                   | 64.4              | 59                |
| Magnesium              | mg/L     | -         | 30.3             | 27.5             | 9.4               | 13.2              | 7.96              | 9.34              | 8.43              | 7.37              |                   |                   | 40.6              | 41.7              |
| Manganese              | mg/L     | 0.05      | 3.35             | 3.13             | 0.39              | 0.525             | 0.217             | 0.5               | 0.001             | 0.077             |                   |                   | 1.08              | 0.971             |
| Nitrate                | mg/L     | 10        | < 0.05           | < 0.05           | < 0.10            | < 0.1             | < 0.1             | < 0.1             | 0.2               | 0.2               |                   |                   | 0.11              | < 0.3             |
| Nitrite                | mg/L     | 1         | < 0.05           | < 0.05           | < 0.010           | < 0.1             | < 0.1             | < 0.1             | < 0.1             | 0.3               |                   |                   | 0.07              | < 0.3             |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.16             | 7.36             | 7.57              | 7.4               | 7.61              | 7.49              | 8.01              | 7.81              |                   |                   | 7.05              | 7.3               |
| Phenols                | mg/L     | -         | 0.01             | 0.072            | < 0.0010          | < 0.001           | < 0.001           | < 0.001           | 0.004             | < 0.001           |                   |                   | 0.092             | 0.016             |
| Phosphorus             | mg/L     | -         | < 0.1            | < 0.1            | < 0.10            | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             |                   |                   | < 0.1             | 0.1               |
| Potassium              | mg/L     | -         | 111              | 59.1             | 3.2               | 4.5               | 3.3               | 3.5               | 3.2               | 3                 |                   |                   | 21.5              | 44.8              |
| Sodium                 | mg/L     | 200       | 58.1             | 47.5             | 28                | 200               | 50.1              | 62.4              | 48.8              | 29.8              |                   |                   | 183               | 191               |
| Sulphate               | mg/L     | 500       | 9                | 2                | 13                | 20                | 14                | 16                | 14                | 14                |                   |                   | 10                | < 5               |
| Dissolved Solids       | mg/L     | 500       | 1150             | 1081             | 465               | 1190              | 469               | 539               | 477               | 410               |                   |                   | 1199              | 1251              |
| Tot Kjeh N             | mg/L     | -         | 16.4             | 20.6             | 0.66              | 0.9               | 0.7               | 0.9               | 0.5               | 0.5               |                   |                   | 7.6               | 34.8              |
| Ammonia (NH3-N)        | mg/L     | -         | 11.7             | 20.2             | < 0.050           | 0.193             | 0.12              | 0.17              | 0.05              | 0.1               |                   |                   | 7.7               | 24.9              |
| Ammonia - Unionized    | mg/L     | -         |                  |                  |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | 910              | 845              | 390               | 539               | 338               | 391               | 358               | 325               |                   |                   | 844               | 809               |
| BOD                    | mg/L     | -         |                  |                  | --                | --                | --                | --                | --                | --                |                   |                   |                   |                   |
| Cyanide (free)         | mg/L     | -         |                  |                  | --                | --                | --                | --                | --                | --                |                   |                   |                   |                   |
| Total Suspended Solids | mg/L     | -         |                  |                  | --                | --                | --                | --                | --                | --                |                   |                   |                   |                   |
| Aluminum               | mg/L     | 0.1       | 0.14             | 0.09             | < 0.0050          | 0.05              | 0.03              | 0.04              | 0.04              | 0.06              |                   |                   | 0.13              | 0.19              |
| Antimony               | mg/L     | 0.006     | 0.0002           | 0.0003           | < 0.00050         | < 0.0001          | < 0.0001          | < 0.0001          | 0.0001            | < 0.0001          |                   |                   | 0.0007            | 0.0007            |
| Arsenic                | mg/L     | 0.025     | 0.0133           | 0.007            | < 0.0010          | 0.0006            | 0.0005            | 0.0007            | 0.0002            | 0.0004            |                   |                   | 0.0036            | 0.0041            |
| Barium                 | mg/L     | 1         | 2.19             | 1.33             | 0.17              | 0.391             | 0.154             | 0.208             | 0.141             | 0.124             |                   |                   | 0.819             | 1.14              |
| Beryllium              | mg/L     | -         | < 0.002          | < 0.002          | < 0.00050         | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           |                   |                   | < 0.002           | < 0.002           |
| Boron                  | mg/L     | 5         | 1.64             | 0.49             | 0.036             | 0.014             | 0.03              | 0.034             | 0.006             | 0.031             |                   |                   | 1.64              | 2.39              |
|                        |          |           |                  |                  |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cadmium                | mg/L     | 0.005     | < 0.000015       | < 0.000012       | < 0.00010         | 0.0001            | < 0.00002         | < 0.00002         | < 0.00002         | < 0.000020        |                   |                   | < 0.000029        | < 0.000029        |
| Chromium (total)       | mg/L     | 0.05      | 0.002            | 0.003            | < 0.0050          | < 0.0002          | 0.0007            | 0.0017            | < 0.0002          | 0.001             |                   |                   | 0.008             | 0.008             |
| Chromium (VI)          | mg/L     | -         | < 0.001          | < 0.001          |                   |                   |                   |                   |                   |                   |                   |                   |                   | < 0.001           |
| Cobalt                 | mg/L     | -         | 0.006            | 0.008            | 0.00077           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |                   |                   | 0.009             | 0.013             |
| Copper                 | mg/L     | 1         | 0.0012           | 0.0003           | < 0.0010          | 0.001             | 0.0008            | 0.0007            | 0.0013            | 0.0015            |                   |                   | 0.0023            | 0.0018            |
| Lead                   | mg/L     | 0.01      | 0.00006          | < 0.00004        | < 0.00050         | 0.00005           | 0.00012           | 0.00003           | 0.00002           | < 0.00002         |                   |                   | 0.00014           | 0.00083           |
| Mercury                | mg/L     | 0.001     | < 0.00002        | < 0.00002        | < 0.00001         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |                   |                   | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L     | -         | 0.0004           | 0.0002           | < 0.00050         | 0.0001            | 0.0001            | < 0.0001          | 0.0001            | 0.0001            |                   |                   | 0.0012            | 0.001             |
| Nickel                 | mg/L     | -         | < 0.01           | < 0.01           | < 0.0010          | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            |                   |                   | 0.02              | 0.03              |
| Selenium               | mg/L     | 0.01      | 0.002            | < 0.001          | < 0.0020          | < 0.001           | < 0.001           | < 0.001           | < 0.001           | 0.002             |                   |                   | < 0.001           | 0.003             |
| Silver                 | mg/L     | -         | < 0.0001         | < 0.0001         | < 0.00010         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |                   |                   | < 0.0001          | < 0.0001          |
| Strontium              | mg/L     | -         | 0.898            | 0.774            | 0.28              | --                | --                | 0.309             | 0.28              | 0.221             |                   |                   | 0.99              | 0.825             |
| Thallium               | mg/L     | -         | < 0.005          | < 0.00005        | < 0.000050        | < 0.00005         | < 0.00005         | 0.00008           | < 0.00005         | < 0.00005         |                   |                   | < 0.00005         | 0.007             |
| Vanadium               | mg/L     | -         | 0.009            | 0.0043           | < 0.00050         | 0.0033            | 0.0022            | 0.0035            | 0.0012            | 0.0018            |                   |                   | 0.0078            | 0.0109            |
| Zinc                   | mg/L     | 5         | < 0.005          | < 0.005          | 0.0058            | < 0.005           | 0.006             | < 0.005           | < 0.005           | < 0.005           |                   |                   | < 0.005           | < 0.005           |

ODWQS - Ontario Drinking Water Quality

Standards

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW5A<br>19-Apr-23 | MW6<br>24-May-12 | MW6<br>22-May-13 | MW6<br>23-Apr-14 | MW6<br>16-Apr-15 | MW6<br>28-Apr-16 | MW6<br>17-Apr-17 | MW6<br>24-Apr-18 | MW6<br>11-Apr-19 | MW6<br>23-Apr-20 | MW6<br>20-Apr-21 | MW6<br>21-Apr-22 |
|------------------------|----------|-----------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Total Alkalinity       | mg/L     | 500       | 1070              | 2100             | 2030             | 2170             | 2150             | 2270             | 2390             | 2540             | 2320             | 1610             | 1760             | 1350             |
| Calcium                | mg/L     | -         | 255               | 470              | 383              | 399              | 414              | 418              | 495              | 502              | 443              | 334              | 363              | 362              |
| Chloride               | mg/L     | 250       | 276               | 220              | 207              | 278              | 311              | 308              | 351              | 374              | 375              | 208              | 228              | 179              |
| COD                    | mg/L     | -         | 393               | 330              | 2350             | 248              | 463              | 577              | 418              | 441              | 443              | 352              | 432              | 305              |
| Specific Conductivity  | umhos/cm | -         | 2618              | 4100             | 4020             | 3960             | 4450             | 4760             | 5070             | 5280             | 5160             | 3730             | 3880             | 3640             |
| DOC                    | mg/L     | 5         | 11.1              | 110              | 110.3            | 117              | 86.2             | 51               | 92.3             | 98.3             | 71               | 75.7             | 28.3             | 18.5             |
| Fluoride               | mg/L     | 1.5       | < 0.1             | 0.12             | 0.3              | 0.3              | 0.2              | < 1              | 2.6              | < 1              | < 1              | < 1              | < 0.1            | < 1              |
| Iron                   | mg/L     | 0.3       | 74.6              | 4.3              | 3.17             | 5.85             | 5.64             | 2.25             | 2.01             | 8.39             | 4.28             | 2.78             | 7.4              | 8.07             |
| Magnesium              | mg/L     | -         | 48                | 56               | 47.9             | 51.9             | 55.6             | 62.2             | 67.5             | 77.1             | 62.8             | 57.6             | 60               | 56.4             |
| Manganese              | mg/L     | 0.05      | 1.1               | 1                | 0.854            | 1.02             | 1.1              | 1.08             | 1.4              | 1.46             | 1.15             | 1.04             | 1.21             | 1.3              |
| Nitrate                | mg/L     | 10        | < 0.05            | < 0.10           | < 0.1            | <0.1             | < 0.1            | < 1              | 1.2              | < 0.5            | < 0.5            | 0.65             | < 0.05           | < 0.5            |
| Nitrite                | mg/L     | 1         | < 0.05            | < 0.010          | < 0.1            | <0.1             | < 0.1            | < 1              | 2.2              | < 0.5            | < 0.5            | < 0.5            | 0.06             | < 0.5            |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.27              | 7.32             | 7.21             | 7.11             | 7.13             | 7.15             | 7.14             | 7.54             | 7.58             | 7.34             | 7.41             | 7.42             |
| Phenols                | mg/L     | -         | 0.006             | 0.0028           | 0.003            | 0.004            | < 0.001          | 0.022            | 0.114            | < 0.001          | 0.027            | < 0.002          | 0.002            | < 0.001          |
| Phosphorus             | mg/L     | -         | < 0.1             | 1.1              | 0.8              | 1.1              | 0.9              | 0.3              | 0.1              | 1                | 0.9              | 0.2              | 0.8              | 0.8              |
| Potassium              | mg/L     | -         | 78.2              | 120              | 111              | 114              | 119              | 137              | 155              | 164              | 165              | 129              | 112              | 110              |
| Sodium                 | mg/L     | 200       | 244               | 250              | 217              | 255              | 282              | 318              | 323              | 407              | 376              | 254              | 241              | 215              |
| Sulphate               | mg/L     | 500       | 6                 | < 1              | 2                | 2                | 2                | < 10             | < 10             | < 10             | < 10             | < 10             | 2                | < 10             |
| Dissolved Solids       | mg/L     | 500       | 1685              | 2560             | 2410             | 2610             | 2670             | 2830             | 3080             | 3317             | 3095             | 2143             | 2266             | 1735             |
| Tot Kjeh N             | mg/L     | -         | 53.5              | 120              | 205              | 169              | 151              | 219              | 204              | 206              | 205              | 183              | 184              | 169              |
| Ammonia (NH3-N)        | mg/L     | -         | 45.6              | 140              | 178              | 156              | 148              | 171              | 182              | 199              | 209              | 152              | 159              | 109              |
| Ammonia - Unionized    | mg/L     | -         |                   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Hardness (CaCO3)       | mg/L     | 100       | 835               | 1400             | 1150             | 1210             | 1260             | 1300             | 1510             | 1570             | 1370             | 1070             | 1150             | 1140             |
| BOD                    | mg/L     | -         |                   | --               | --               | --               | --               | --               | --               |                  |                  |                  |                  |                  |
| Cyanide (free)         | mg/L     | -         |                   | --               | --               | --               | --               | --               | --               |                  |                  |                  |                  |                  |
| Total Suspended Solids | mg/L     | -         |                   | --               | --               | --               | --               | --               | --               |                  |                  |                  |                  |                  |
| Aluminum               | mg/L     | 0.1       | 0.1               | 0.015            | 0.1              | 0.07             | 0.08             | 0.08             | 0.16             | 0.44             | 0.16             | 0.13             | 0.25             | 0.16             |
| Antimony               | mg/L     | 0.006     | 0.0006            | < 0.00050        | 0.0007           | 0.0006           | 0.0006           | 0.0006           | 0.0006           | 0.0006           | 0.0004           | 0.0003           | 0.0006           | 0.0004           |
| Arsenic                | mg/L     | 0.025     | 0.0046            | 0.0016           | 0.0049           | 0.0012           | 0.0027           | 0.0037           | 0.006            | 0.0017           | 0.0019           | 0.001            | 0.0011           | 0.0012           |
| Barium                 | mg/L     | 1         | 1.58              | 0.2              | 0.162            | 0.167            | 0.173            | 0.146            | 0.224            | 0.266            | 0.222            | 0.139            | 0.17             | 0.168            |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.00050        | < 0.002          | <0.002           | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.02           | < 0.002          |
| Boron                  | mg/L     | 5         | 2.97              | 0.79             | 0.804            | 1.01             | 1.2              | 1.23             | 1.42             | 1.48             | 1.57             | 2.04             | 2.02             | 1.96             |
|                        |          |           |                   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Cadmium                | mg/L     | 0.005     | < 0.000029        | < 0.00010        | < 0.00002        | <0.00002         | < 0.00002        | < 0.00002        | < 0.000020       | < 0.000059       | < 0.000015       | < 0.000029       | < 0.000059       | < 0.000029       |
| Chromium (total)       | mg/L     | 0.05      | 0.007             | 0.0056           | < 0.0002         | 0.0091           | < 0.0002         | < 0.0002         | < 0.001          | 0.004            | 0.005            | 0.002            | < 0.01           | 0.002            |
| Chromium (VI)          | mg/L     | -         | < 0.001           |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | < 0.001          |
| Cobalt                 | mg/L     | -         | 0.031             | 0.0054           | 0.008            | 0.006            | 0.007            | 0.009            | 0.009            | 0.012            | 0.007            | 0.005            | < 0.05           | < 0.005          |
| Copper                 | mg/L     | 1         | 0.0003            | 0.0013           | 0.0007           | 0.0025           | 0.002            | 0.0025           | 0.0035           | 0.0009           | 0.0004           | 0.0004           | 0.0004           | 0.0079           |
| Lead                   | mg/L     | 0.01      | < 0.00009         | < 0.00050        | 0.00005          | 0.00015          | 0.00004          | 0.00005          | < 0.00002        | 0.0004           | 0.00004          | < 0.00009        | < 0.0002         | 0.00029          |
| Mercury                | mg/L     | 0.001     | < 0.00002         | < 0.00001        | < 0.00002        | <0.00002         | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        |
| Molybdenum             | mg/L     | -         | 0.0013            | < 0.00050        | 0.0005           | 0.0003           | 0.0002           | 0.0004           | 0.0004           | 0.0007           | 0.0005           | 0.0002           | < 0.0004         | 0.001            |
| Nickel                 | mg/L     | -         | 0.03              | 0.0089           | < 0.01           | 0.01             | 0.01             | 0.02             | 0.02             | 0.02             | 0.02             | < 0.01           | < 0.1            | 0.01             |
| Selenium               | mg/L     | 0.01      | 0.003             | < 0.0020         | < 0.001          | <0.001           | 0.004            | 0.002            | < 0.001          | 0.023            | 0.006            | 0.002            | < 0.002          | 0.004            |
| Silver                 | mg/L     | -         | < 0.0001          | < 0.00010        | < 0.00002        | <0.00002         | < 0.00002        | < 0.00002        | < 0.00002        | < 0.0002         | < 0.0002         | < 0.0001         | < 0.0002         | < 0.0001         |
| Strontium              | mg/L     | -         | 0.948             | 1.5              | --               | --               | 1.52             | 1.52             | 1.62             | 1.87             | 1.65             | 1.27             | 1.4              | 1.39             |
| Thallium               | mg/L     | -         | < 0.00005         | < 0.000050       | < 0.00005        | <0.00005         | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.005          |
| Vanadium               | mg/L     | -         | 0.0115            | 0.00053          | 0.0192           | 0.0179           | 0.0155           | 0.0113           | 0.0211           | 0.0009           | 0.0005           | 0.0004           | < 0.0007         | 0.0007           |
| Zinc                   | mg/L     | 5         | < 0.005           | 0.0079           | < 0.005          | <0.005           | 0.006            | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.05           | < 0.005          |

ODWQS - Ontario Drinking Water Quality

Standards

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW6<br>19-Apr-23 | MW6A<br>24-May-12 | MW6A<br>22-May-13 | MW6A<br>23-Apr-14 | MW6A<br>16-Apr-15 | MW6A<br>28-Apr-16 | MW6A<br>17-Apr-17 | MW6A<br>24-Apr-18 | MW6A<br>11-Apr-19 | MW6A<br>23-Apr-20 | MW6A<br>20-Apr-21 | MW6A<br>21-Apr-22 |
|------------------------|----------|-----------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L     | 500       | 1330             | 2100              | 1990              | 1840              | 2070              | 2190              | 2230              | 2190              | 2040              | 1430              | 1500              | 1320              |
| Calcium                | mg/L     | -         | 360              | 420               | 384               | 344               | 395               | 395               | 455               | 404               | 376               | 311               | 361               | 308               |
| Chloride               | mg/L     | 250       | 180              | 220               | 210               | 195               | 306               | 266               | 26.9              | 279               | 282               | 156               | 158               | 126               |
| COD                    | mg/L     | -         | 326              | 440               | 617               | 214               | 587               | 339               | 406               | 520               | 395               | 837               | 468               | 259               |
| Specific Conductivity  | umhos/cm | -         | 3145             | 4300              | 3950              | 3340              | 4360              | 4460              | 4520              | 4310              | 4510              | 3180              | 3310              | 2990              |
| DOC                    | mg/L     | 5         | 62.8             | 110               | 123.4             | 97.7              | 84.8              | 49                | 87.7              | 24.4              | 26.7              | 59.2              | 69.7              | 16.4              |
| Fluoride               | mg/L     | 1.5       | < 0.1            | 0.12              | 0.3               | 0.2               | 0.2               | < 1               | 0.4               | < 1               | < 1               | < 0.1             | < 1               | < 1               |
| Iron                   | mg/L     | 0.3       | 9.6              | 28                | 2.96              | 42                | 12.2              | 6.03              | 12.3              | 0.228             | 21.9              | 18.9              | 24.6              | 29.3              |
| Magnesium              | mg/L     | -         | 56.3             | 58                | 52.5              | 47.4              | 54.5              | 61                | 65.2              | 56.3              | 52.6              | 49.4              | 52.1              | 37.4              |
| Manganese              | mg/L     | 0.05      | 1.44             | 1.5               | 1.49              | 1.47              | 1.25              | 1.28              | 1.7               | 1.49              | 1.56              | 1.46              | 1.75              | 1.65              |
| Nitrate                | mg/L     | 10        | 0.14             | < 0.10            | 0.2               | 0.2               | < 0.1             | < 1               | < 0.1             | < 0.5             | < 0.5             | < 0.05            | < 0.5             | < 0.5             |
| Nitrite                | mg/L     | 1         | < 0.05           | 0.092             | < 0.1             | < 0.1             | < 0.1             | < 1               | 0.2               | < 0.5             | < 0.5             | < 0.05            | < 0.5             | < 0.5             |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.53             | 7.33              | 7.25              | 7.08              | 7.18              | 7.17              | 7.17              | 7.58              | 7.58              | 7.29              | 7.21              | 7.43              |
| Phenols                | mg/L     | -         | < 0.001          | 0.0093            | 0.003             | 0.003             | < 0.001           | 0.034             | < 0.001           | < 0.001           | < 0.002           | < 0.002           | 0.002             | < 0.001           |
| Phosphorus             | mg/L     | -         | 0.8              | 0.97              | < 0.1             | 0.6               | 0.9               | 0.4               | 0.2               | < 0.1             | < 0.1             | 0.1               | < 0.1             | 0.3               |
| Potassium              | mg/L     | -         | 100              | 130               | 108               | 97.4              | 117               | 129               | 133               | 124               | 136               | 94                | 89.7              | 67.2              |
| Sodium                 | mg/L     | 200       | 205              | 260               | 211               | 198               | 278               | 286               | 279               | 286               | 298               | 181               | 190               | 127               |
| Sulphate               | mg/L     | 500       | < 1              | < 1               | 4                 | 13                | 7                 | < 10              | < 1               | < 10              | < 10              | 6                 | < 10              | < 10              |
| Dissolved Solids       | mg/L     | 500       | 1870             | 2600              | 2380              | 2210              | 2610              | 2670              | 2500              | 2682              | 2650              | 1811              | 1916              | 1457              |
| Tot Kjel N             | mg/L     | -         | 146              | 130               | 195               | 128               | 182               | 200               | 172               | 186               | 178               | 152               | 157               | 94.7              |
| Ammonia (NH3-N)        | mg/L     | -         | 126              | 150               | 164               | 128               | 150               | 157               | 150               | 167               | 197               | 120               | 126               | 94.5              |
| Ammonia - Unionized    | mg/L     | -         |                  |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | 1130             | 1300              | 1180              | 1050              | 1210              | 1240              | 1410              | 1240              | 1160              | 981               | 1120              | 924               |
| BOD                    | mg/L     | -         |                  | --                | --                | --                | --                | --                | --                |                   |                   |                   |                   |                   |
| Cyanide (free)         | mg/L     | -         |                  | --                | --                | --                | --                | --                | --                |                   |                   | 156               |                   |                   |
| Total Suspended Solids | mg/L     | -         |                  | --                | --                | --                | --                | --                | --                |                   |                   |                   |                   |                   |
| Aluminum               | mg/L     | 0.1       | 0.11             | 0.029             | 0.08              | 0.08              | 0.09              | 0.08              | 0.15              | 0.13              | 0.15              | 0.13              | 0.31              | 0.15              |
| Antimony               | mg/L     | 0.006     | 0.0003           | < 0.00050         | 0.0006            | 0.0006            | 0.0007            | 0.0005            | 0.0005            | 0.0003            | 0.0004            | 0.0003            | 0.0006            | 0.0003            |
| Arsenic                | mg/L     | 0.025     | 0.0009           | 0.0014            | 0.0042            | 0.0018            | 0.0031            | 0.0023            | 0.0058            | < 0.0005          | 0.0023            | 0.0011            | 0.0014            | 0.0007            |
| Barium                 | mg/L     | 1         | 0.166            | 0.28              | 0.178             | 0.231             | 0.198             | 0.169             | 0.235             | 0.183             | 0.24              | 0.167             | 0.19              | 0.175             |
| Beryllium              | mg/L     | -         | < 0.002          | < 0.00050         | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.02            | < 0.002           |
| Boron                  | mg/L     | 5         | 1.83             | 1.6               | 1.46              | 1.52              | 1.45              | 1.52              | 1.65              | 1.53              | 1.74              | 1.8               | 1.79              | 1.24              |
|                        |          |           |                  |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cadmium                | mg/L     | 0.005     | < 0.000029       | < 0.00010         | 0.00003           | < 0.00002         | < 0.00002         | < 0.00002         | < 0.000020        | < 0.000059        | < 0.000015        | < 0.000029        | < 0.000029        | < 0.000029        |
| Chromium (total)       | mg/L     | 0.05      | 0.002            | 0.0053            | < 0.0002          | 0.0072            | < 0.0002          | < 0.0002          | 0.002             | 0.003             | 0.003             | 0.002             | < 0.01            | 0.001             |
| Chromium (VI)          | mg/L     | -         | < 0.001          |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | < 0.001           |
| Cobalt                 | mg/L     | -         | 0.012            | 0.0052            | 0.005             | 0.006             | 0.007             | 0.008             | 0.008             | 0.014             | 0.009             | < 0.005           | < 0.05            | < 0.005           |
| Copper                 | mg/L     | 1         | 0.0003           | 0.0018            | 0.0021            | 0.0025            | 0.0021            | 0.0023            | 0.0035            | 0.0011            | 0.0006            | 0.0011            | 0.002             | 0.0005            |
| Lead                   | mg/L     | 0.01      | < 0.00009        | < 0.00050         | 0.00009           | 0.00025           | 0.00006           | 0.00003           | < 0.00002         | < 0.0002          | 0.00004           | < 0.00009         | 0.00033           | 0.00014           |
| Mercury                | mg/L     | 0.001     | < 0.00002        | 0.00005           | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L     | -         | < 0.0002         | < 0.00050         | 0.0006            | 0.0006            | 0.0002            | 0.0002            | 0.0007            | 0.0006            | 0.0004            | 0.0061            | 0.0008            | < 0.0002          |
| Nickel                 | mg/L     | -         | < 0.01           | 0.0082            | < 0.01            | < 0.01            | 0.01              | 0.01              | 0.01              | 0.02              | 0.01              | < 0.01            | < 0.1             | < 0.01            |
| Selenium               | mg/L     | 0.01      | 0.003            | < 0.0020          | < 0.001           | < 0.001           | 0.003             | 0.002             | < 0.001           | 0.007             | 0.006             | 0.002             | 0.002             | 0.003             |
| Silver                 | mg/L     | -         | < 0.0001         | < 0.00010         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.0002          | < 0.0002          | < 0.0001          | < 0.0001          | < 0.0001          |
| Strontium              | mg/L     | -         | 1.46             | 1.7               | --                | --                | 1.54              | 1.57              | 1.65              | 1.51              | 1.63              | 1.29              | 1.46              | 1.16              |
| Thallium               | mg/L     | -         | < 0.00005        | < 0.000050        | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.005           |
| Vanadium               | mg/L     | -         | 0.0006           | 0.00091           | 0.0254            | 0.0128            | 0.016             | 0.0098            | 0.0137            | 0.0003            | 0.0006            | 0.0004            | 0.0009            | 0.0004            |
| Zinc                   | mg/L     | 5         | < 0.005          | 0.007             | < 0.005           | 0.015             | < 0.005           | < 0.005           | 0.005             | 0.056             | 0.005             | < 0.005           | < 0.05            | < 0.005           |

ODWQS - Ontario Drinking Water Quality  
Standards

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW6A<br>19-Apr-23 | MW7<br>17-Apr-17 | MW7<br>25-Apr-18 | MW7<br>11-Apr-19 | MW7<br>23-Apr-20 | MW7<br>19-Apr-21 | MW7<br>21-Apr-22 | MW7<br>19-Apr-23 |
|------------------------|----------|-----------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Total Alkalinity       | mg/L     | 500       | 1260              | 2840             | 2710             | 2570             | 2290             | 2410             | 2240             | 2510             |
| Calcium                | mg/L     | -         | 274               | 206              | 198              | 178              | 175              | 166              | 169              | 165              |
| Chloride               | mg/L     | 250       | 109               | 594              | 519              | 651              | 687              | 678              | 629              | 629              |
| COD                    | mg/L     | -         | 195               | 5800             | 4120             | 1140             | 1070             | 890              | 757              | 641              |
| Specific Conductivity  | umhos/cm | -         | 2284              | 7030             | 6610             | 6950             | 6650             | 6790             | 6850             | 6089             |
| DOC                    | mg/L     | 5         | 9.9               | 130              | 105              | 120              | 94               | 23.8             | 68.6             | 25.3             |
| Fluoride               | mg/L     | 1.5       | < 0.1             | 6.5              | < 1              | < 3              | < 1              | < 0.1            | < 3              | < 1              |
| Iron                   | mg/L     | 0.3       | 26.6              | 13.3             | 22.2             | 15.8             | 0.833            | 22.8             | 23.6             | 0.577            |
| Magnesium              | mg/L     | -         | 26.3              | 79.4             | 79.6             | 78.9             | 79.8             | 80.6             | 76.3             | 78               |
| Manganese              | mg/L     | 0.05      | 1.32              | 0.15             | 0.139            | 0.108            | 0.117            | 0.12             | 0.117            | 0.118            |
| Nitrate                | mg/L     | 10        | < 0.05            | 2.5              | < 0.5            | < 1              | 0.72             | < 0.05           | < 1              | < 0.5            |
| Nitrite                | mg/L     | 1         | < 0.05            | 4.5              | < 0.5            | < 1              | < 0.5            | 0.08             | < 1              | < 0.5            |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.51              | 7.2              | 7.67             | 7.58             | 7.49             | 7.14             | 7.54             | 7.6              |
| Phenols                | mg/L     | -         | < 0.001           | 0.032            | 0.014            | 0.015            | 0.009            | 0.01             | 0.008            | < 0.01           |
| Phosphorus             | mg/L     | -         | 0.2               | 0.6              | 1                | 0.7              | < 0.1            | 0.8              | 0.8              | < 0.1            |
| Potassium              | mg/L     | -         | 44                | 294              | 291              | 306              | 283              | 285              | 275              | 269              |
| Sodium                 | mg/L     | 200       | 86.1              | 513              | 565              | 541              | 510              | 542              | 495              | 497              |
| Sulphate               | mg/L     | 500       | 3                 | 32               | 13               | 28               | 19               | 7                | < 30             | < 10             |
| Dissolved Solids       | mg/L     | 500       | 1425              | 4150             | 3890             | 3865             | 3659             | 3818             | 2987             | 3694             |
| Tot Kjeh N             | mg/L     | -         | 84.8              | 554              | 669              | 471              | 497              | 526              | 455              | 534              |
| Ammonia (NH3-N)        | mg/L     | -         | 78.7              | 527              | 448              | 408              | 413              | 477              | 423              | 427              |
| Ammonia - Unionized    | mg/L     | -         |                   |                  |                  |                  |                  |                  |                  |                  |
| Hardness (CaCO3)       | mg/L     | 100       | 792               | 841              | 822              | 769              | 765              | 746              | 736              | 686              |
| BOD                    | mg/L     | -         |                   | --               |                  |                  |                  |                  |                  |                  |
| Cyanide (free)         | mg/L     | -         |                   | --               |                  |                  | 687              |                  |                  |                  |
| Total Suspended Solids | mg/L     | -         |                   | --               |                  |                  |                  |                  |                  |                  |
| Aluminum               | mg/L     | 0.1       | 0.09              | 0.1              | 0.28             | 0.1              | 0.09             | 0.1              | 0.09             | 0.08             |
| Antimony               | mg/L     | 0.006     | 0.0002            | 0.001            | 0.001            | 0.0008           | 0.001            | 0.001            | 0.0013           | 0.0008           |
| Arsenic                | mg/L     | 0.025     | 0.0006            | 0.0139           | 0.0027           | 0.004            | 0.002            | 0.003            | 0.003            | 0.0029           |
| Barium                 | mg/L     | 1         | 0.147             | 0.658            | 0.64             | 0.562            | 0.466            | 0.51             | 0.519            | 0.273            |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.02           | < 0.002          | < 0.002          |
| Boron                  | mg/L     | 5         | 0.77              | 4.35             | 4.3              | 4.34             | 4.16             | 4.09             | 3.75             | 3.77             |
|                        |          |           |                   |                  |                  |                  |                  |                  |                  |                  |
| Cadmium                | mg/L     | 0.005     | < 0.000029        | < 0.000020       | < 0.000059       | < 0.000015       | < 0.000059       | < 0.000059       | < 0.000059       | < 0.000059       |
| Chromium (total)       | mg/L     | 0.05      | < 0.001           | < 0.001          | 0.011            | 0.011            | 0.008            | 0.01             | 0.01             | 0.006            |
| Chromium (VI)          | mg/L     | -         | < 0.001           |                  |                  |                  |                  |                  | < 0.001          | < 0.001          |
| Cobalt                 | mg/L     | -         | 0.008             | 0.022            | 0.02             | 0.015            | 0.015            | < 0.05           | 0.016            | 0.019            |
| Copper                 | mg/L     | 1         | 0.0004            | 0.0059           | 0.0006           | 0.0005           | < 0.0003         | 0.0014           | 0.0008           | < 0.0003         |
| Lead                   | mg/L     | 0.01      | < 0.00009         | < 0.00002        | 0.00078          | 0.00037          | < 0.0002         | 0.00031          | 0.00041          | 0.00019          |
| Mercury                | mg/L     | 0.001     | < 0.00002         | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        |
| Molybdenum             | mg/L     | -         | < 0.0002          | 0.001            | 0.0008           | 0.001            | 0.0008           | 0.0007           | 0.0007           | 0.0006           |
| Nickel                 | mg/L     | -         | < 0.01            | 0.02             | 0.03             | 0.02             | 0.02             | < 0.1            | 0.02             | 0.04             |
| Selenium               | mg/L     | 0.01      | 0.002             | < 0.001          | 0.024            | 0.009            | 0.004            | 0.004            | 0.008            | 0.005            |
| Silver                 | mg/L     | -         | < 0.0001          | 0.00003          | < 0.0002         | < 0.0001         | < 0.0002         | < 0.0002         | < 0.0002         | < 0.0002         |
| Strontium              | mg/L     | -         | 0.895             | 1.2              | 1.13             | 1.1              | 1.02             | 0.99             | 0.948            | 0.914            |
| Thallium               | mg/L     | -         | < 0.00005         | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | 0.014            | < 0.00005        |
| Vanadium               | mg/L     | -         | 0.0005            | 0.028            | 0.0054           | 0.0059           | 0.0011           | 0.0053           | 0.005            | 0.005            |
| Zinc                   | mg/L     | 5         | < 0.005           | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.05           | 0.016            | < 0.005          |

ODWQS - Ontario Drinking Water Quality

Standards

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW10       | MW10       | MW10      | MW10      | MW10      | MW10      | MW10      | MW10      | MW10      | MW10       | MW10       | MW10       |
|------------------------|----------|-----------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|
|                        |          |           | 24-May-12  | 01-Oct-12  | 22-May-13 | 23-Apr-14 | 16-Oct-14 | 15-Apr-15 | 07-Oct-15 | 27-Apr-16 | 03-Oct-16 | 17-Apr-17  | 24-Oct-17  | 25-Apr-18  |
| Total Alkalinity       | mg/L     | 500       | 1900       | 1800       | 1920      | 2060      | 1870      | 1990      | 1590      | 1710      | 1750      | 1810       | 1930       | 1960       |
| Calcium                | mg/L     | -         | 260        | 280        | 244       | 250       | 252       | 267       | 274       | 251       | 296       | 275        | 314        | 271        |
| Chloride               | mg/L     | 250       | 210        | 210        | 232       | 288       | 237       | 274       | 196       | 209       | 203       | 214        | 235        | 26.1       |
| COD                    | mg/L     | -         | 320        | 320        | 298       | 282       | 273       | 288       | 227       | 235       | 216       | 237        | 294        | 313        |
| Specific Conductivity  | umhos/cm | -         | 4200       | 4000       | 4190      | 3930      | 3690      | 4430      | 3410      | 3690      | 3740      | 3920       | 4170       | 4180       |
| DOC                    | mg/L     | 5         | 94         | 100        | 117.2     | 126       | 112       | 97.1      | 27.3      | 73        | 27.1      | 85.4       | 27.5       | 93.7       |
| Fluoride               | mg/L     | 1.5       | < 0.10     | 0.22       | 0.3       | 0.2       | 0.1       | 0.3       | 0.5       | 0.1       | 0.3       | < 0.1      | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | 32         | 27         | 27.9      | 26.9      | 23.8      | 28.7      | 12.7      | 11.9      | 15.6      | 17         | 18.8       | 0.274      |
| Magnesium              | mg/L     | -         | 60         | 55         | 54.6      | 57        | 52.9      | 58.3      | 40        | 45.6      | 40.4      | 47.5       | 57.9       | 53.3       |
| Manganese              | mg/L     | 0.05      | 0.77       | 0.87       | 0.771     | 0.734     | 0.792     | 0.782     | 0.665     | 0.671     | 0.752     | 0.779      | 1.02       | 0.818      |
| Nitrate                | mg/L     | 10        | < 0.10     | < 0.10     | 0.2       | <0.1      | 0.2       | < 0.1     | 0.5       | < 0.1     | 0.4       | 0.1        | < 0.05     | < 0.05     |
| Nitrite                | mg/L     | 1         | 0.015      | < 0.010    | < 0.1     | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.29       | 7.15       | 7.27      | 7.14      | 7.1       | 7.05      | 7.4       | 7.27      | 7.13      | 7.34       | 6.97       | 7.51       |
| Phenols                | mg/L     | -         | 0.029      | 0.005      | 0.005     | 0.006     | 0.004     | < 0.001   | < 0.001   | 0.018     | 0.028     | 0.028      | 0.023      | 0.006      |
| Phosphorus             | mg/L     | -         | 0.33       | 0.57       | 0.5       | 0.4       | 0.4       | 0.5       | 0.3       | 0.4       | 0.4       | 0.4        | 0.4        | < 0.1      |
| Potassium              | mg/L     | -         | 190        | 190        | 168       | 177       | 168       | 177       | 180       | 172       | 171       | 192        | 189        | 171        |
| Sodium                 | mg/L     | 200       | 210        | 190        | 208       | 242       | 188       | 248       | 182       | 195       | 192       | 219        | 241        | 235        |
| Sulphate               | mg/L     | 500       | < 1        | < 1        | 3         | 4         | 1         | 2         | < 1       | 1         | < 1       | < 1        | 3          | < 1        |
| Dissolved Solids       | mg/L     | 500       | 2390       | 2280       | 2450      | 2530      | 2300      | 2500      | 2060      | 2150      | 2180      | 2270       | 2462       | 2211       |
| Tot Kjel N             | mg/L     | -         | 180        | 170        | 287       | 231       | 198       | 224       | 203       | 203       | 178       | 205        | 209        | 216        |
| Ammonia (NH3-N)        | mg/L     | -         | 210        | 190        | 277       | 190       | 198       | 192       | 170       | 182       | 160       | 181        | 188        | 216        |
| Ammonia - Unionized    | mg/L     | -         |            |            |           |           |           |           |           |           |           |            |            |            |
| Hardness (CaCO3)       | mg/L     | 100       | 900        | 920        | 834       | 860       | 848       | 908       | 848       | 814       | 906       | 883        | 1020       | 897        |
| BOD                    | mg/L     | -         | --         | --         | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |
| Cyanide (free)         | mg/L     | -         | --         | --         | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |
| Total Suspended Solids | mg/L     | -         | --         | --         | --        | --        | --        | --        | --        | 0.582     | 0.583     | --         | --         |            |
| Aluminum               | mg/L     | 0.1       | 0.073      | 0.087      | 0.12      | 0.13      | 0.11      | 0.13      | 0.12      | 0.12      | 0.15      | 0.17       | 0.18       | 0.1        |
| Antimony               | mg/L     | 0.006     | 0.00063    | < 0.00050  | 0.0006    | 0.0006    | 0.0004    | 0.0005    | 0.0004    | 0.0004    | 0.0004    | 0.0004     | 0.0003     | 0.0005     |
| Arsenic                | mg/L     | 0.025     | 0.0012     | < 0.0010   | 0.0032    | <0.0001   | 0.0038    | 0.003     | 0.0025    | 0.0029    | 0.0014    | 0.0032     | 0.002      | 0.0011     |
| Barium                 | mg/L     | 1         | 0.6        | 0.59       | 0.568     | 0.535     | 0.469     | 0.558     | 0.55      | 0.557     | 0.678     | 0.747      | 0.852      | 0.587      |
| Beryllium              | mg/L     | -         | < 0.00050  | < 0.00050  | < 0.002   | <0.002    | <0.002    | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | 2          | 1.6        | 2.03      | 2.22      | 1.72      | 2.34      | 0.923     | 1.45      | 1.09      | 1.85       | 2.17       | 2.07       |
| Cadmium                | mg/L     | 0.005     | < 0.00010  | < 0.00010  | 0.00041   | <0.00002  | <0.000016 | < 0.00002 | 0.00002   | < 0.00002 | 0.00002   | < 0.000020 | < 0.000014 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | < 0.0050   | < 0.0050   | < 0.0002  | 0.0111    | <0.0002   | < 0.0002  | 0.0345    | < 0.0002  | < 0.0002  | 0.002      | 0.003      | 0.003      |
| Chromium (VI)          | mg/L     | -         |            |            |           |           |           |           |           |           |           |            |            |            |
| Cobalt                 | mg/L     | -         | 0.0068     | 0.0069     | 0.01      | 0.008     | <0.005    | 0.01      | 0.005     | 0.015     | 0.005     | 0.005      | 0.005      | 0.01       |
| Copper                 | mg/L     | 1         | 0.0012     | < 0.0010   | 0.0019    | 0.0026    | 0.0021    | 0.0012    | 0.0012    | 0.0013    | 0.0012    | 0.0022     | 0.0008     | 0.0003     |
| Lead                   | mg/L     | 0.01      | < 0.00050  | < 0.00050  | 0.00014   | 0.00009   | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  |
| Mercury                | mg/L     | 0.001     | 0.00002    | < 0.00001  | < 0.00002 | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | < 0.00050  | < 0.00050  | 0.0004    | 0.0004    | 0.001     | < 0.0001  | 0.0002    | 0.0002    | 0.0001    | 0.0002     | 0.0002     | 0.0002     |
| Nickel                 | mg/L     | -         | 0.0094     | 0.0056     | < 0.01    | 0.01      | <0.01     | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | 0.01       | 0.01       |
| Selenium               | mg/L     | 0.01      | < 0.0020   | < 0.0020   | < 0.001   | <0.001    | 0.004     | 0.002     | 0.003     | <0.001    | <0.001    | < 0.001    | < 0.001    | 0.02       |
| Silver                 | mg/L     | -         | < 0.00010  | < 0.00010  | < 0.00002 | 0.00003   | 0.00004   | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.0001   |
| Strontium              | mg/L     | -         | 1.4        | 1.4        | --        | --        | 1.25      | 1.39      | 1.11      | 1.08      | 1.07      | 1          | 1.24       | 1.09       |
| Thallium               | mg/L     | -         | < 0.000050 | < 0.000050 | < 0.00005 | <0.00005  | <0.00005  | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | 0.0045     | 0.0045     | 0.0137    | 0.0243    | 0.0393    | 0.0196    | 0.0156    | 0.0137    | 0.0117    | 0.0187     | 0.0096     | 0.0055     |
| Zinc                   | mg/L     | 5         | 0.0068     | < 0.0050   | < 0.005   | 0.006     | 0.005     | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | 0.006      |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW10<br>15-Oct-18 | MW10<br>11-Apr-19 | MW10<br>21-Oct-19 | MW10<br>23-Apr-20 | MW10<br>19-Oct-20 | MW10<br>19-Apr-21 | MW10<br>27-Oct-21 | MW10<br>21-Apr-22 | MW10<br>26-Oct-22 | MW10<br>19-Apr-23 | MW10<br>11-Oct-23 | MW11A<br>24-May-12 |
|------------------------|----------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|
| Total Alkalinity       | mg/L     | 500       | 1760              | 1770              | 1600              | 1390              | 1730              | 1420              | 1660              | 1690              | DRY               | 1470              | 1390              | 270                |
| Calcium                | mg/L     | -         | 287               | 312               | 267               | 263               | 315               | 263               | 322               | 321               |                   | 300               | 236               | 98                 |
| Chloride               | mg/L     | 250       | 246               | 251               | 243               | 272               | 299               | 232               | 257               | 271               |                   | 226               | 248               | 44                 |
| COD                    | mg/L     | -         | 269               | 280               | 270               | 266               | 290               | 244               | 248               | 256               |                   | 223               | 224               | 88                 |
| Specific Conductivity  | umhos/cm | -         | 3780              | 4130              | 3950              | 3820              | 4210              | 3650              | 3800              | 4060              |                   | 3393              | 3630              | 660                |
| DOC                    | mg/L     | 5         | 88.5              | 27.7              | 93.1              | 76.1              | 19.3              | 32                | 76.7              | 69                |                   | 10.8              | 25.7              | 13                 |
| Fluoride               | mg/L     | 1.5       | < 1               | < 1               | < 1               | < 1               | < 1               | < 0.1             | < 1               | < 1               |                   | < 0.5             | <0.1              | < 0.10             |
| Iron                   | mg/L     | 0.3       | 6.01              | 16                | 18.1              | 0.262             | 16.3              | 15.8              | 13.3              | 9.86              |                   | 9.13              | 7.83              | 2.1                |
| Magnesium              | mg/L     | -         | 47.3              | 47.4              | 46.4              | 45                | 53.8              | 43.3              | 39.6              | 46.1              |                   | 43.3              | 37.7              | 2.5                |
| Manganese              | mg/L     | 0.05      | 0.885             | 0.872             | 0.722             | 0.765             | 1.08              | 0.77              | 0.831             | 0.851             |                   | 0.886             | 0.726             | 0.29               |
| Nitrate                | mg/L     | 10        | 0.58              | < 0.5             | < 0.5             | 0.8               | 0.73              | < 0.05            | < 0.5             | < 0.5             |                   | < 0.3             | <0.05             | < 0.10             |
| Nitrite                | mg/L     | 1         | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.5             | 0.06              | < 0.5             | < 0.5             |                   | < 0.3             | <0.05             | < 0.010            |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.41              | 7.52              | 7.33              | 7.3               | 7.1               | 7.13              | 7.46              | 7.48              |                   | 7.5               | 7.27              | 7.68               |
| Phenols                | mg/L     | -         | 0.018             | < 0.002           | < 0.002           | < 0.002           | 0.005             | 0.005             | < 0.002           | < 0.001           |                   | < 0.001           | <0.001            | < 0.0010           |
| Phosphorus             | mg/L     | -         | 0.1               | 0.4               | < 0.1             | < 0.1             | 0.4               | 0.2               | 0.3               | 0.3               |                   | 0.3               | 0.3               | < 0.10             |
| Potassium              | mg/L     | -         | 174               | 193               | 188               | 183               | 187               | 172               | 204               | 185               |                   | 181               | 145               | 0.95               |
| Sodium                 | mg/L     | 200       | 209               | 221               | 217               | 219               | 246               | 210               | 209               | 226               |                   | 209               | 171               | 36                 |
| Sulphate               | mg/L     | 500       | < 10              | < 10              | < 10              | < 10              | < 10              | < 1               | < 10              | < 10              |                   | < 5               | <2                | < 1                |
| Dissolved Solids       | mg/L     | 500       | 2284              | 2408              | 2192              | 2055              | 2159              | 2016              | 2282              | 2066              |                   | 2044              | 2040              | 352                |
| Tot Kjel N             | mg/L     | -         | 205               | 195               | 197               | 218               | 216               | 220               | 173               | 198               |                   | 171               | 187               | 2.4                |
| Ammonia (NH3-N)        | mg/L     | -         | 201               | 234               | 206               | 185               | 207               | 189               | 187               | 175               |                   | 152               | 175               | < 0.050            |
| Ammonia - Unionized    | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                    |
| Hardness (CaCO3)       | mg/L     | 100       | 912               | 975               | 858               | 842               | 1010              | 835               | 968               | 992               |                   | 927               | 745               | 250                |
| BOD                    | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | --                 |
| Cyanide (free)         | mg/L     | -         |                   |                   |                   | 272               | 299               |                   |                   |                   |                   |                   |                   | --                 |
| Total Suspended Solids | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | --                 |
| Aluminum               | mg/L     | 0.1       | 0.1               | 0.14              | 0.14              | 0.11              | 0.18              | 0.26              | 0.17              | 0.17              |                   | 0.15              | 0.16              | 0.028              |
| Antimony               | mg/L     | 0.006     | 0.0003            | 0.0004            | 0.0004            | 0.0003            | 0.0007            | 0.0004            | 0.0003            | 0.0004            |                   | 0.0003            | 0.0003            | < 0.00050          |
| Arsenic                | mg/L     | 0.025     | 0.001             | 0.0013            | 0.0007            | 0.0007            | 0.0008            | 0.0007            | 0.0006            | 0.0009            |                   | 0.0007            | 0.0007            | < 0.0010           |
| Barium                 | mg/L     | 1         | 0.786             | 0.94              | 0.58              | 0.682             | 0.915             | 0.71              | 0.985             | 0.96              |                   | 0.91              | 0.718             | 0.028              |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.02            | < 0.002           | < 0.002           |                   | < 0.002           | <0.0001           | < 0.00050          |
| Boron                  | mg/L     | 5         | 1.31              | 1.46              | 1.23              | 1.56              | 1.86              | 1.43              | 0.948             | 1.35              |                   | 1.43              | 0.891             | 0.014              |
| Cadmium                | mg/L     | 0.005     | < 0.000015        | < 0.000015        | < 0.000059        | < 0.000029        | < 0.000059        | < 0.000029        | < 0.000059        | < 0.000029        |                   | < 0.000029        | <0.000030         | < 0.00010          |
| Chromium (total)       | mg/L     | 0.05      | 0.002             | 0.003             | 0.002             | < 0.001           | 0.002             | < 0.01            | 0.003             | 0.004             |                   | 0.003             | 0.003             | < 0.0050           |
| Chromium (VI)          | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   | < 0.001           |                   | < 0.001           | <0.01             |                    |
| Cobalt                 | mg/L     | -         | < 0.005           | < 0.005           | 0.007             | 0.005             | 0.007             | < 0.05            | 0.008             | 0.005             |                   | 0.011             | 0.0053            | < 0.00050          |
| Copper                 | mg/L     | 1         | 0.0002            | 0.003             | 0.0019            | 0.0003            | 0.003             | 0.0008            | 0.0005            | 0.0004            |                   | 0.0002            | 0.002             | < 0.0010           |
| Lead                   | mg/L     | 0.01      | < 0.00002         | 0.00006           | < 0.0002          | < 0.00009         | 0.00018           | < 0.00009         | < 0.0002          | < 0.00009         |                   | < 0.00009         | 0.00009           | < 0.00050          |
| Mercury                | mg/L     | 0.001     | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |                   | < 0.00002         | 0.00002           | < 0.00001          |
| Molybdenum             | mg/L     | -         | 0.0003            | 0.0002            | < 0.0004          | 0.0002            | < 0.0004          | < 0.0002          | < 0.0004          | < 0.0002          |                   | < 0.0002          | <0.0002           | < 0.00050          |
| Nickel                 | mg/L     | -         | 0.01              | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.1             | < 0.01            | 0.01              |                   | < 0.01            | 0.0073            | < 0.0010           |
| Selenium               | mg/L     | 0.01      | 0.002             | 0.005             | 0.004             | 0.003             | 0.003             | 0.002             | 0.003             | 0.005             |                   | 0.003             | <0.001            | < 0.0020           |
| Silver                 | mg/L     | -         | 0.0002            | < 0.0001          | < 0.0002          | < 0.0001          | < 0.0002          | < 0.0001          | < 0.0002          | < 0.0001          |                   | < 0.0001          | <0.0001           | < 0.00010          |
| Strontium              | mg/L     | -         | 1.15              | 1.22              | 1.1               | 1                 | 1.21              | 1                 | 1.12              | 1.01              |                   | 0.972             | 0.85              | 0.19               |
| Thallium               | mg/L     | -         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | 0.00021           | < 0.00005         | 0.0001            | 0.007             |                   | < 0.00005         | <0.00005          | < 0.000050         |
| Vanadium               | mg/L     | -         | 0.0043            | 0.0062            | 0.0057            | 0.0054            | 0.0056            | 0.0055            | 0.0067            | 0.0073            |                   | 0.0061            | 0.0063            | 0.0027             |
| Zinc                   | mg/L     | 5         | 0.005             | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.05            | < 0.005           | < 0.005           |                   | < 0.005           | <0.005            | < 0.0050           |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW11A      | MW11A     | MW11A     | MW11A     | MW11A     | MW11A     | MW11A     | MW11A     | MW11A     | MW11A      | MW11A      | MW11A      |
|------------------------|----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|
|                        |          |           | 01-Oct-12  | 22-May-13 | 01-Oct-13 | 23-Apr-14 | 16-Oct-14 | 16-Apr-15 | 07-Oct-15 | 28-Apr-16 | 03-Oct-16 | 17-Apr-17  | 23-Oct-17  | 25-Apr-18  |
| Total Alkalinity       | mg/L     | 500       | 220        | 246       | 252       | 280       | 257       | 305       | 239       | 326       | 242       | 267        | 221        | 282        |
| Calcium                | mg/L     | -         | 85         | 109       | 177       | 134       | 99        | 128       | 113       | 145       | 113       | 133        | 182        | 123        |
| Chloride               | mg/L     | 250       | 61         | 4.8       | 184       | 140       | 113       | 126       | 66.5      | 149       | 86.7      | 135        | 181        | 83.6       |
| COD                    | mg/L     | -         | 72         | 225       | 37        | 25        | 29        | 31        | 63        | 45        | 13        | 42         | 73         | 29         |
| Specific Conductivity  | umhos/cm | -         | 610        | 644       | 1120      | 962       | 852       | 957       | 619       | 1070      | 736       | 964        | 1090       | 802        |
| DOC                    | mg/L     | 5         | 8.9        | 17.9      | 5.6       | 10.3      | 11.9      | 11.3      | 8.7       | 5.1       | 7.9       | 4.7        | 7.3        | 7.2        |
| Fluoride               | mg/L     | 1.5       | < 0.10     | 0.2       | 0.1       | 0.2       | 0.2       | 0.2       | 0.1       | < 0.1     | < 0.1     | 0.4        | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | 1.5        | 1.62      | 3         | 2.02      | 1.54      | 2.41      | 2.05      | 2.61      | 0.898     | 0.128      | 3.33       | 1.23       |
| Magnesium              | mg/L     | -         | 3          | 3.06      | 4.64      | 3.73      | 2.78      | 3.29      | 3.63      | 5.12      | 3.57      | 4.15       | 7.22       | 3.62       |
| Manganese              | mg/L     | 0.05      | 0.19       | 0.241     | 0.406     | 0.269     | 0.185     | 0.26      | 0.232     | 0.298     | 0.119     | 0.347      | 0.373      | 0.194      |
| Nitrate                | mg/L     | 10        | < 0.10     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.05     | < 0.05     |
| Nitrite                | mg/L     | 1         | < 0.010    | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.49       | 7.63      | 7.48      | 7.66      | 7.87      | 7.49      | 7.55      | 7.54      | 7.63      | 7.84       | 7.42       | 7.77       |
| Phenols                | mg/L     | -         | < 0.0010   | < 0.001   | 0.002     | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.026     | 0.021     | 0.003      | 0.009      | < 0.001    |
| Phosphorus             | mg/L     | -         | < 0.10     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 1.2        | 1         | 1.6       | 1.3       | 1.5       | 1.1       | 1.2       | 1.6       | 1.6       | 1          | 2.5        | 1.4        |
| Sodium                 | mg/L     | 200       | 29         | 21.2      | 54.5      | 58.7      | 83.3      | 80.3      | 21.4      | 46.8      | 51.6      | 48.2       | 37.4       | 39.7       |
| Sulphate               | mg/L     | 500       | < 1        | 17        | 16        | 12        | 5         | 12        | 4         | 7         | 7         | 9          | 10         | 4          |
| Dissolved Solids       | mg/L     | 500       | 317        | 305       | 592       | 521       | 461       | 536       | 356       | 554       | 410       | 493        | 556        | 426        |
| Tot Kjel N             | mg/L     | -         | 1.4        | 1.3       | 0.66      | 0.9       | 0.3       | 0.6       | 0.7       | 0.8       | 0.7       | 0.6        | 1.6        | 0.6        |
| Ammonia (NH3-N)        | mg/L     | -         | 0.14       | 0.107     | 0.09      | 0.48      | 0.12      | 0.11      | 0.14      | 0.24      | 0.15      | 0.15       | 0.17       | 0.14       |
| Ammonia - Unionized    | mg/L     | -         |            |           |           |           |           |           |           |           |           |            |            |            |
| Hardness (CaCO3)       | mg/L     | 100       | 220        | 286       | 462       | 350       | 259       | 333       | 298       | 384       | 298       | 351        | 485        | 322        |
| BOD                    | mg/L     | -         | --         | --        | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |
| Cyanide (free)         | mg/L     | -         | --         | --        | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |
| Total Suspended Solids | mg/L     | -         | --         | --        | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |
| Aluminum               | mg/L     | 0.1       | 0.022      | 0.05      | 0.06      | 0.05      | 0.05      | 0.05      | 0.05      | 0.05      | 0.05      | 0.58       | 0.09       | 0.09       |
| Antimony               | mg/L     | 0.006     | < 0.00050  | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001  | 0.0002    | < 0.0001   | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | < 0.0010   | 0.0004    | 0.0016    | 0.0003    | 0.0009    | 0.0003    | 0.0006    | 0.0008    | 0.0003    | 0.0008     | 0.0012     | 0.0001     |
| Barium                 | mg/L     | 1         | 0.025      | 0.029     | 0.053     | 0.035     | 0.037     | 0.039     | 0.028     | 0.039     | 0.031     | 0.053      | 0.057      | 0.033      |
| Beryllium              | mg/L     | -         | < 0.00050  | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | 0.02       | < 0.005   | < 0.005   | 0.017     | 0.016     | 0.016     | 0.013     | < 0.005   | 0.017     | 0.026      | 0.019      | 0.014      |
| Cadmium                | mg/L     | 0.005     | < 0.00010  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | 0.00002   | < 0.00002 | < 0.00002 | < 0.00002 | < 0.000020 | < 0.000014 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | < 0.0050   | < 0.0002  | 0.0299    | 0.0018    | 0.0038    | 0.0018    | 0.0023    | < 0.0002  | < 0.0002  | 0.003      | < 0.001    | < 0.001    |
| Chromium (VI)          | mg/L     | -         |            |           |           |           |           |           |           |           |           |            |            |            |
| Cobalt                 | mg/L     | -         | < 0.00050  | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0043     | 0.0006    | 0.0011    | 0.0011    | 0.0013    | 0.0029    | 0.0002    | 0.0011    | 0.0008    | 0.0048     | 0.0002     | 0.0003     |
| Lead                   | mg/L     | 0.01      | < 0.00050  | 0.00007   | 0.00018   | 0.00009   | < 0.00002 | 0.00013   | 0.00002   | 0.00005   | 0.00004   | 0.00097    | < 0.00002  | 0.00003    |
| Mercury                | mg/L     | 0.001     | < 0.00001  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | 0.00063    | 0.0002    | 0.0001    | 0.0001    | 0.0002    | < 0.0001  | < 0.0001  | 0.0002    | 0.0001    | 0.0002     | 0.0001     | 0.0002     |
| Nickel                 | mg/L     | -         | < 0.0010   | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | < 0.0020   | < 0.001   | < 0.001   | < 0.001   | 0.004     | < 0.001   | 0.001     | < 0.001   | < 0.001   | 0.003      | < 0.001    | 0.005      |
| Silver                 | mg/L     | -         | < 0.00010  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.0001   |
| Strontium              | mg/L     | -         | 0.2        | --        | --        | --        | 0.238     | 0.296     | 0.238     | 0.332     | 0.246     | 0.327      | 0.366      | 0.262      |
| Thallium               | mg/L     | -         | < 0.000050 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | 0.0021     | 0.0044    | 0.0091    | 0.0036    | 0.0074    | 0.0042    | 0.0026    | 0.0017    | 0.0022    | 0.006      | 0.0013     | 0.0014     |
| Zinc                   | mg/L     | 5         | 0.0065     | < 0.005   | < 0.005   | < 0.005   | < 0.005   | 0.033     | < 0.005   | 0.005     | < 0.005   | 0.005      | < 0.005    | < 0.005    |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW11A        | MW11A        | MW11A        | MW11A        | MW11A        | MW11A        | MW11A        | MW11A        | MW11A        | MW11A        | MW11A        | MW11A        |
|------------------------|----------|-----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                        |          |           | 15-Oct-18    | 11-Apr-19    | 21-Oct-19    | 22-Apr-20    | 19-Oct-20    | 19-Apr-21    | 27-Oct-21    | 20-Apr-22    | 26-Oct-22    | 26-Oct-22    | 19-Apr-23    | 12-Oct-23    |
| Total Alkalinity       | mg/L     | 500       | 296          | 229          | 218          | 209          | 259          | 204          | 303          | 302          | 278          | 273          | 259          | 242          |
| Calcium                | mg/L     | -         | 148          | 114          | 111          | 113          | 158          | 110          | 158          | 156          | 224          | 224          | 141          | 106          |
| Chloride               | mg/L     | 250       | 107          | 57           | 45.3         | 96.9         | 148          | 26.5         | 128          | 94.7         | 237          | 242          | 119          | 124          |
| COD                    | mg/L     | -         | 43           | 51           | 31           | 34           | 22           | 33           | 28           | 31           | 23           | 23           | 30           | 30           |
| Specific Conductivity  | umhos/cm | -         | 899          | 655          | 597          | 717          | 1010         | 503          | 957          | 874          | 1450         | 1440         | 915          | 831          |
| DOC                    | mg/L     | 5         | <b>9.4</b>   | <b>14.7</b>  | <b>10.3</b>  | <b>6.3</b>   | 4.4          | <b>13.9</b>  | <b>7.8</b>   | <b>5.4</b>   | 1.8          | 1.8          | <b>6.1</b>   | <b>7.7</b>   |
| Fluoride               | mg/L     | 1.5       | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | <0.1         |
| Iron                   | mg/L     | 0.3       | <b>2.53</b>  | <b>1.9</b>   | <b>0.941</b> | 0.062        | <b>1.66</b>  | <b>2.44</b>  | <b>2.79</b>  | <b>2</b>     | <b>4.6</b>   | <b>4.61</b>  | <b>3.07</b>  | <b>1.35</b>  |
| Magnesium              | mg/L     | -         | 5.22         | 3.26         | 3.4          | 3.45         | 4.55         | 3.28         | 4.68         | 4.89         | 7.01         | 7.17         | 4.35         | 3.84         |
| Manganese              | mg/L     | 0.05      | <b>0.238</b> | <b>0.194</b> | <b>0.1</b>   | <b>0.105</b> | <b>0.148</b> | <b>0.229</b> | <b>0.241</b> | <b>0.104</b> | <b>0.382</b> | <b>0.392</b> | <b>0.207</b> | <b>0.086</b> |
| Nitrate                | mg/L     | 10        | < 0.05       | < 0.05       | 0.07         | 0.05         | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | <0.05        |
| Nitrite                | mg/L     | 1         | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | <0.05        |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.6          | 7.81         | 7.7          | 7.67         | 7.46         | 7.57         | 7.62         | 7.42         | 7.37         | 7.41         | 7.64         | 7.08         |
| Phenols                | mg/L     | -         | 0.005        | < 0.002      | < 0.002      | < 0.002      | < 0.001      | 0.002        | < 0.002      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | <0.001       |
| Phosphorus             | mg/L     | -         | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | <0.1         |
| Potassium              | mg/L     | -         | 2.1          | 1            | 1.5          | 0.9          | 1.8          | 1            | 1.6          | 1.4          | 2.7          | 2.7          | 2.1          | 1.5          |
| Sodium                 | mg/L     | 200       | 36.6         | 20.1         | 22.6         | 26.5         | 60.7         | 11.3         | 60.3         | 57.8         | 41.2         | 40.5         | 52.2         | 36.5         |
| Sulphate               | mg/L     | 500       | 7            | 7            | 4            | 5            | 8            | 2            | 5            | 4            | 6            | 6            | 4            | 5            |
| Dissolved Solids       | mg/L     | 500       | 486          | 342          | 320          | 371          | <b>539</b>   | 277          | <b>543</b>   | 500          | <b>690</b>   | <b>691</b>   | 484          | 438          |
| Tot Kjel N             | mg/L     | -         | 0.6          | 0.8          | 0.5          | 0.5          | 0.5          | 0.6          | 0.5          | 2.7          | 0.8          | 0.8          | 1.2          | 1.6          |
| Ammonia (NH3-N)        | mg/L     | -         | 0.17         | 0.14         | 0.12         | 0.07         | 0.06         | 0.11         | 0.12         | 2.49         | 0.19         | 0.17         | 0.85         | 1.52         |
| Ammonia - Unionized    | mg/L     | -         |              |              |              |              |              |              |              |              |              |              |              |              |
| Hardness (CaCO3)       | mg/L     | 100       | <b>391</b>   | <b>298</b>   | <b>291</b>   | <b>297</b>   | <b>415</b>   | <b>288</b>   | <b>414</b>   | <b>410</b>   | <b>589</b>   | <b>589</b>   | <b>371</b>   | <b>281</b>   |
| BOD                    | mg/L     | -         |              |              |              |              |              |              |              |              |              |              |              |              |
| Cyanide (free)         | mg/L     | -         |              |              |              |              |              |              |              |              |              |              |              |              |
| Total Suspended Solids | mg/L     | -         |              |              |              |              |              |              |              |              |              |              |              |              |
| Aluminum               | mg/L     | 0.1       | 0.08         | 0.08         | 0.08         | 0.06         | 0.06         | 0.07         | 0.1          | 0.09         | 0.07         | 0.07         | 0.05         | 0.08         |
| Antimony               | mg/L     | 0.006     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | <0.0001      |
| Arsenic                | mg/L     | 0.025     | 0.0001       | 0.0002       | 0.0001       | < 0.0001     | 0.0002       | 0.0002       | 0.0001       | 0.0001       | 0.0001       | 0.0001       | 0.0001       | 0.0001       |
| Barium                 | mg/L     | 1         | 0.048        | 0.025        | 0.027        | 0.022        | 0.042        | 0.024        | 0.047        | 0.039        | 0.066        | 0.067        | 0.046        | 0.031        |
| Beryllium              | mg/L     | -         | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | <0.0001      |
| Boron                  | mg/L     | 5         | 0.016        | 0.013        | 0.018        | 0.013        | 0.022        | 0.012        | 0.025        | 0.026        | 0.015        | 0.014        | 0.022        | 0.014        |
| Cadmium                | mg/L     | 0.005     | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000012   | < 0.000012   | < 0.000010   | <0.000015    |
| Chromium (total)       | mg/L     | 0.05      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | <0.001       |
| Chromium (VI)          | mg/L     | -         |              |              |              |              |              |              |              | < 0.001      | < 0.001      | < 0.001      | < 0.001      | <0.01        |
| Cobalt                 | mg/L     | -         | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | 0.0002       |
| Copper                 | mg/L     | 1         | 0.0003       | < 0.0001     | 0.0009       | 0.0005       | 0.0019       | 0.0006       | 0.0005       | 0.0004       | 0.0002       | 0.0003       | 0.0003       | 0.0007       |
| Lead                   | mg/L     | 0.01      | 0.00002      | 0.00002      | 0.00002      | < 0.00002    | 0.00007      | 0.00003      | 0.00002      | 0.00002      | < 0.00004    | < 0.00004    | < 0.00002    | 0.00003      |
| Mercury                | mg/L     | 0.001     | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | <0.00002     |
| Molybdenum             | mg/L     | -         | 0.0001       | < 0.0001     | 0.0001       | 0.0001       | < 0.0001     | < 0.0001     | < 0.0001     | 0.0001       | < 0.0001     | < 0.0001     | < 0.0001     | 0.0002       |
| Nickel                 | mg/L     | -         | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       | <0.0002      |
| Selenium               | mg/L     | 0.01      | 0.002        | < 0.001      | < 0.001      | < 0.001      | 0.002        | < 0.001      | 0.002        | 0.002        | 0.005        | 0.006        | 0.003        | <0.001       |
| Silver                 | mg/L     | -         | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | <0.0001      |
| Strontium              | mg/L     | -         | 0.325        | 0.248        | 0.258        | 0.237        | 0.375        | 0.228        | 0.409        | 0.362        | 0.609        | 0.599        | 0.395        | 0.38         |
| Thallium               | mg/L     | -         | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.005      | < 0.005      | < 0.005      | < 0.00005    | <0.00005     |
| Vanadium               | mg/L     | -         | 0.0016       | 0.0023       | 0.0013       | 0.001        | 0.0015       | 0.0028       | 0.0018       | 0.0015       | 0.0011       | 0.0011       | 0.0018       | 0.0016       |
| Zinc                   | mg/L     | 5         | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | <0.005       |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance



Ground Water Quality - General  
Parameters

|                        |          |           | DUP                |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|------------------------|----------|-----------|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Parameters             | Units    | ODWQS     | MW11A<br>12-Oct-23 | MW12<br>23-May-12 | MW12<br>01-Oct-12 | MW12<br>23-May-13 | MW12<br>01-Oct-13 | MW12<br>23-Apr-14 | MW12<br>15-Oct-14 | MW12<br>15-Apr-15 | MW12<br>07-Oct-15 | MW12<br>28-Apr-16 | MW12<br>03-Oct-16 | MW12<br>17-Apr-17 |
| Total Alkalinity       | mg/L     | 500       | 249                | 220               | 250               | 230               | 243               | 227               | 263               | 239               | 262               | 233               | 242               | 224               |
| Calcium                | mg/L     | -         | 99.1               | 83                | 94                | 92.3              | 89.9              | 81.3              | 107               | 102               | 107               | 88                | 101               | 90.7              |
| Chloride               | mg/L     | 250       | 52.8               | 5                 | 4                 | 3.8               | 3.5               | 5.2               | 4.8               | 4.7               | 3.6               | 4.2               | 3.9               | 5.7               |
| COD                    | mg/L     | -         | 33                 | 15                | 11                | 8                 | 11                | <5                | 10                | 6                 | < 5               | < 5               | < 5               | 9                 |
| Specific Conductivity  | umhos/cm | -         | 902                | 440               | 470               | 471               | 489               | 438               | 535               | 496               | 480               | 479               | 497               | 463               |
| DOC                    | mg/L     | 5         | 7.3                | 1.5               | 1.6               | 4.1               | 3.8               | 3.3               | 4.3               | 2.2               | 2.7               | 1.8               | 3.4               | 2.3               |
| Fluoride               | mg/L     | 1.5       | <0.1               | < 0.10            | < 0.10            | < 0.1             | 0.1               | <0.1              | 0.1               | < 0.1             | 0.1               | < 0.1             | < 0.1             | 0.3               |
| Iron                   | mg/L     | 0.3       | 1.21               | < 0.10            | < 0.10            | < 0.005           | < 0.005           | <0.005            | 0.01              | 0.059             | 0.018             | 0.008             | 0.008             | 0.008             |
| Magnesium              | mg/L     | -         | 3.71               | 3.8               | 4.8               | 5.61              | 4.61              | 3.83              | 5.63              | 5.23              | 5.39              | 5.58              | 7.29              | 5.22              |
| Manganese              | mg/L     | 0.05      | 0.082              | < 0.0020          | < 0.0020          | < 0.001           | < 0.001           | <0.001            | 0.034             | 0.002             | 0.073             | < 0.001           | 0.002             | 0.001             |
| Nitrate                | mg/L     | 10        | <0.05              | 0.49              | 0.41              | 0.5               | 0.4               | 0.5               | 0.4               | 0.5               | 0.3               | 0.5               | 0.5               | 0.6               |
| Nitrite                | mg/L     | 1         | <0.05              | < 0.010           | < 0.010           | < 0.1             | < 0.1             | <0.1              | <0.1              | < 0.1             | < 0.1             | < 0.1             | < 0.1             | 0.2               |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.14               | 7.77              | 7.54              | 7.73              | 7.75              | 7.9               | 7.75              | 7.67              | 7.67              | 7.89              | 7.84              | 8.01              |
| Phenols                | mg/L     | -         | <0.001             | < 0.0010          | < 0.0010          | < 0.001           | 0.002             | < 0.001           | < 0.001           | < 0.001           | < 0.001           | 0.001             | 0.016             | < 0.001           |
| Phosphorus             | mg/L     | -         | <0.1               | < 0.10            | < 0.10            | < 0.1             | < 0.1             | <0.1              | <0.1              | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             |
| Potassium              | mg/L     | -         | 1.2                | 1.3               | 1.4               | 1.3               | 1.1               | 1.3               | 1.5               | 1.4               | 1.4               | 1.3               | 1.2               | 1.2               |
| Sodium                 | mg/L     | 200       | 35.3               | 2.4               | 2.2               | 2.9               | 1.9               | 2.1               | 2.8               | 2.8               | 2.3               | 2.7               | 2.9               | 2.6               |
| Sulphate               | mg/L     | 500       | 6                  | 5                 | 5                 | 6                 | 7                 | 7                 | 9                 | 12                | 7                 | 9                 | 12                | 13                |
| Dissolved Solids       | mg/L     | 500       | 478                | 235               | 268               | 252               | 256               | 239               | 290               | 273               | 285               | 253               | 276               | 257               |
| Tot Kjel N             | mg/L     | -         | 0.5                | 0.33              | 0.43              | 0.31              | 0.4               | 0.4               | <0.1              | 0.3               | 0.4               | 1.4               | 2.8               | 0.2               |
| Ammonia (NH3-N)        | mg/L     | -         | 0.5                | < 0.050           | 0.03              | < 0.01            | < 0.01            | 0.12              | 0.02              | 0.08              | < 0.01            | 0.13              | 0.16              | 0.02              |
| Ammonia - Unionized    | mg/L     | -         |                    |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | 263                | 220               | 250               | 254               | 244               | 219               | 289               | 275               | 289               | 243               | 282               | 248               |
| BOD                    | mg/L     | -         |                    | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                |
| Cyanide (free)         | mg/L     | -         |                    | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                |
| Total Suspended Solids | mg/L     | -         |                    | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                |
| Aluminum               | mg/L     | 0.1       | 0.07               | < 0.0050          | < 0.0050          | 0.03              | 0.03              | 0.02              | 0.03              | 0.03              | 0.03              | 0.03              | 0.03              | 0.06              |
| Antimony               | mg/L     | 0.006     | <0.0001            | < 0.00050         | < 0.00050         | < 0.0001          | < 0.0001          | <0.0001           | <0.0001           | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          |
| Arsenic                | mg/L     | 0.025     | 0.0001             | < 0.0010          | < 0.0010          | < 0.0001          | 0.0002            | <0.0001           | 0.0001            | < 0.0001          | 0.0001            | < 0.0001          | < 0.0001          | < 0.0001          |
| Barium                 | mg/L     | 1         | 0.029              | 0.051             | 0.067             | 0.064             | 0.056             | 0.047             | 0.077             | 0.069             | 0.07              | 0.061             | 0.082             | 0.065             |
| Beryllium              | mg/L     | -         | <0.0001            | < 0.00050         | < 0.00050         | < 0.002           | < 0.002           | <0.002            | <0.002            | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           |
| Boron                  | mg/L     | 5         | 0.011              | 0.015             | 0.017             | 0.015             | < 0.005           | 0.013             | 0.014             | 0.017             | 0.012             | < 0.005           | 0.012             | 0.017             |
| Cadmium                | mg/L     | 0.005     | <0.000015          | < 0.00010         | < 0.00010         | < 0.00002         | < 0.00002         | <0.00002          | <0.00002          | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.000020        |
| Chromium (total)       | mg/L     | 0.05      | <0.001             | < 0.0050          | < 0.0050          | < 0.0002          | 0.0268            | <0.0002           | 0.0082            | 0.0018            | 0.0022            | < 0.0002          | < 0.0002          | 0.001             |
| Chromium (VI)          | mg/L     | -         | <0.01              |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cobalt                 | mg/L     | -         | 0.0002             | < 0.00050         | < 0.00050         | < 0.005           | < 0.005           | <0.005            | <0.005            | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |
| Copper                 | mg/L     | 1         | 0.0005             | 0.0016            | 0.0014            | 0.0008            | 0.0013            | 0.0013            | 0.0015            | 0.0017            | 0.0015            | 0.0012            | 0.0271            | 0.0016            |
| Lead                   | mg/L     | 0.01      | 0.00002            | < 0.00050         | < 0.00050         | < 0.00002         | 0.00008           | 0.00009           | 0.00003           | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |
| Mercury                | mg/L     | 0.001     | 0.00003            | < 0.00001         | < 0.00001         | < 0.00002         | < 0.00002         | <0.00002          | <0.00002          | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L     | -         | 0.0001             | < 0.00050         | < 0.00050         | 0.0001            | 0.0002            | 0.0001            | 0.0002            | < 0.0001          | 0.0002            | 0.0001            | 0.0001            | 0.0002            |
| Nickel                 | mg/L     | -         | <0.0002            | < 0.0010          | < 0.0010          | < 0.01            | < 0.01            | <0.01             | <0.01             | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            |
| Selenium               | mg/L     | 0.01      | <0.001             | < 0.0020          | < 0.0020          | < 0.001           | < 0.001           | <0.001            | 0.001             | < 0.001           | < 0.001           | < 0.001           | < 0.001           | 0.002             |
| Silver                 | mg/L     | -         | <0.0001            | < 0.00010         | < 0.00010         | < 0.00002         | < 0.00002         | <0.00002          | <0.00002          | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | 0.00003           |
| Strontium              | mg/L     | -         | 0.366              | 0.14              | 0.17              | --                | --                | --                | 0.201             | 0.193             | 0.204             | 0.166             | 0.175             | 0.147             |
| Thallium               | mg/L     | -         | <0.00005           | < 0.000050        | < 0.000050        | < 0.00005         | < 0.00005         | <0.00005          | <0.00005          | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         |
| Vanadium               | mg/L     | -         | 0.0016             | 0.0016            | < 0.00050         | 0.0014            | 0.0061            | 0.0014            | 0.0081            | 0.0027            | 0.0008            | 0.0007            | 0.001             | 0.0012            |
| Zinc                   | mg/L     | 5         | <0.005             | 0.0084            | < 0.0050          | < 0.005           | < 0.005           | <0.005            | 0.008             | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW12       | MW12       | MW12       | MW12       | MW12       | MW12       | MW12       | MW12       | MW12       | MW12       | MW12       | MW12       |
|------------------------|----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|                        |          |           | 23-Oct-17  | 25-Apr-18  | 15-Oct-18  | 11-Apr-19  | 21-Oct-19  | 22-Apr-20  | 19-Oct-20  | 19-Apr-21  | 27-Oct-21  | 20-Apr-22  | 20-Apr-22  | 26-Oct-22  |
| Total Alkalinity       | mg/L     | 500       | 281        | 230        | 235        | 214        | 217        | 234        | 227        | 206        | 239        | 229        | 226        | 341        |
| Calcium                | mg/L     | -         | 114        | 91.1       | 89.4       | 89.4       | 95.5       | 94.8       | 101        | 97.8       | 93.8       | 83.6       | 84.2       | 117        |
| Chloride               | mg/L     | 250       | 1.6        | 3.4        | 3.7        | 5.9        | 5.2        | 6.3        | 3.9        | 7.4        | 3.8        | 4.3        | 4          | 1.6        |
| COD                    | mg/L     | -         | 19         | < 5        | < 5        | < 5        | 9          | < 5        | < 5        | 5          | < 5        | 6          | 8          | 12         |
| Specific Conductivity  | umhos/cm | -         | 541        | 434        | 466        | 477        | 457        | 496        | 483        | 464        | 454        | 467        | 463        | 654        |
| DOC                    | mg/L     | 5         | 3.3        | 2.7        | 3.2        | 2.9        | 2.9        | 3.3        | 2.2        | 3.5        | 2.9        | 2.3        | 2.2        | 3.7        |
| Fluoride               | mg/L     | 1.5       | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | 0.015      | < 0.005    | 0.018      | < 0.005    | 0.036      | 0.015      | < 0.005    | < 0.005    | 0.006      | < 0.005    | < 0.005    | 0.091      |
| Magnesium              | mg/L     | -         | 8.25       | 5.36       | 5.09       | 5.38       | 6.16       | 6.05       | 6.19       | 5.13       | 6.13       | 5.34       | 5.35       | 7.73       |
| Manganese              | mg/L     | 0.05      | 0.007      | < 0.001    | 0.001      | < 0.001    | 0.003      | 0.004      | < 0.001    | 0.001      | 0.001      | < 0.001    | < 0.001    | 0.009      |
| Nitrate                | mg/L     | 10        | 0.2        | 0.41       | 0.3        | 0.39       | 0.38       | 0.44       | 0.33       | 0.34       | 0.22       | 0.44       | 0.42       | 0.18       |
| Nitrite                | mg/L     | 1         | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.7        | 7.89       | 7.83       | 8.03       | 7.9        | 7.92       | 7.7        | 7.85       | 7.84       | 7.74       | 7.71       | 7.67       |
| Phenols                | mg/L     | -         | 0.002      | < 0.001    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.001    | < 0.001    | < 0.002    | < 0.001    | < 0.001    | < 0.001    |
| Phosphorus             | mg/L     | -         | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 1.4        | 1.3        | 1          | 1.3        | 1.2        | 1.2        | 1.1        | 1.2        | 1.2        | 1.1        | 1.1        | 1.6        |
| Sodium                 | mg/L     | 200       | 3          | 2.8        | 1.9        | 3.3        | 2.4        | 2.3        | 2.8        | 3.3        | 3.6        | 2.8        | 2.9        | 4          |
| Sulphate               | mg/L     | 500       | 6          | 7          | 9          | 12         | 8          | 7          | 10         | 11         | 7          | 9          | 8          | 5          |
| Dissolved Solids       | mg/L     | 500       | 303        | 249        | 251        | 246        | 248        | 259        | 261        | 250        | 259        | 246        | 241        | 342        |
| Tot Kjel N             | mg/L     | -         | 0.7        | 0.3        | 0.3        | 0.5        | 1          | 0.2        | 0.2        | 0.3        | 0.2        | 1          | 0.2        | 0.3        |
| Ammonia (NH3-N)        | mg/L     | -         | 0.05       | 0.1        | 0.12       | 0.04       | 0.04       | 0.04       | 0.01       | 0.06       | 0.04       | 0.94       | 0.11       | < 0.01     |
| Ammonia - Unionized    | mg/L     | -         |            |            |            | 0.0007     | 0.0332     | 0.0005     | 0.0001     | 0.0007     | 0.0005     | 0.0090     | 0.0010     | <0.0001    |
| Hardness (CaCO3)       | mg/L     | 100       | <b>319</b> | <b>250</b> | <b>244</b> | <b>246</b> | <b>264</b> | <b>262</b> | <b>279</b> | <b>266</b> | <b>260</b> | <b>231</b> | <b>232</b> | <b>325</b> |
| BOD                    | mg/L     | -         | --         |            |            |            |            |            |            |            |            |            |            |            |
| Cyanide (free)         | mg/L     | -         | --         |            |            |            |            |            |            |            |            |            |            |            |
| Total Suspended Solids | mg/L     | -         | --         |            |            |            |            |            |            |            |            |            |            |            |
| Aluminum               | mg/L     | 0.1       | 0.06       | 0.05       | 0.06       | 0.05       | 0.06       | 0.05       | 0.03       | 0.06       | 0.06       | 0.05       | 0.06       | 0.03       |
| Antimony               | mg/L     | 0.006     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | 0.0003     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Barium                 | mg/L     | 1         | 0.106      | 0.066      | 0.068      | 0.068      | 0.079      | 0.069      | 0.075      | 0.07       | 0.075      | 0.063      | 0.064      | 0.089      |
| Beryllium              | mg/L     | -         | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | 0.018      | 0.014      | 0.009      | 0.015      | 0.012      | 0.013      | 0.014      | 0.015      | 0.018      | 0.012      | 0.012      | 0.015      |
| Cadmium                | mg/L     | 0.005     | < 0.000014 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | 0.00006    | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000010 |
| Chromium (total)       | mg/L     | 0.05      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | 0.001      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Chromium (VI)          | mg/L     | -         |            |            |            |            |            |            |            |            |            | < 0.001    | < 0.001    | < 0.001    |
| Cobalt                 | mg/L     | -         | < 0.005    | 0.012      | 0.006      | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0007     | 0.0012     | 0.0014     | 0.0012     | 0.0021     | 0.0021     | 0.0015     | 0.0027     | 0.0013     | 0.0011     | 0.001      | 0.0015     |
| Lead                   | mg/L     | 0.01      | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | 0.00003    | 0.00003    | 0.00002    | 0.00006    | < 0.00002  | < 0.00002  | 0.00003    | 0.00002    |
| Mercury                | mg/L     | 0.001     | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | 0.0001     | 0.0001     | 0.0002     | 0.0002     | 0.0001     | 0.0002     | 0.0002     | 0.0001     | 0.0001     | 0.0002     | 0.0002     | 0.0001     |
| Nickel                 | mg/L     | -         | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Silver                 | mg/L     | -         | < 0.00002  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | 0.0005     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Strontium              | mg/L     | -         | 0.189      | 0.156      | 0.149      | 0.162      | 0.171      | 0.167      | 0.171      | 0.173      | 0.172      | 0.148      | 0.148      | 0.227      |
| Thallium               | mg/L     | -         | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.005    | < 0.005    | < 0.005    |
| Vanadium               | mg/L     | -         | 0.0004     | < 0.0001   | 0.0001     | 0.0001     | 0.0002     | 0.0001     | 0.0001     | 0.0001     | 0.0001     | 0.0001     | 0.0001     | 0.0001     |
| Zinc                   | mg/L     | 5         | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | DUP               |                   |                   |
|------------------------|----------|-----------|-------------------|-------------------|-------------------|
|                        |          |           | MW12<br>19-Apr-23 | MW12<br>19-Apr-23 | MW12<br>11-Oct-23 |
| Total Alkalinity       | mg/L     | 500       | 230               | 227               | 256               |
| Calcium                | mg/L     | -         | 92.9              | 93.1              | 73.8              |
| Chloride               | mg/L     | 250       | 4                 | 3.5               | 2.6               |
| COD                    | mg/L     | -         | 6                 | 5                 | 9                 |
| Specific Conductivity  | umhos/cm | -         | 479               | 472               | 472               |
| DOC                    | mg/L     | 5         | 2.5               | 3                 | 4.4               |
| Fluoride               | mg/L     | 1.5       | < 0.1             | < 0.1             | <0.1              |
| Iron                   | mg/L     | 0.3       | < 0.005           | < 0.005           | 0.014             |
| Magnesium              | mg/L     | -         | 5.61              | 5.57              | 5.39              |
| Manganese              | mg/L     | 0.05      | < 0.001           | < 0.001           | <0.001            |
| Nitrate                | mg/L     | 10        | 0.38              | 0.33              | 0.38              |
| Nitrite                | mg/L     | 1         | < 0.05            | < 0.05            | <0.05             |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.82              | 7.88              | 7.54              |
| Phenols                | mg/L     | -         | < 0.001           | < 0.001           | <0.001            |
| Phosphorus             | mg/L     | -         | < 0.1             | < 0.1             | <0.1              |
| Potassium              | mg/L     | -         | 1.4               | 1.4               | 1                 |
| Sodium                 | mg/L     | 200       | 2.7               | 2.7               | 2.1               |
| Sulphate               | mg/L     | 500       | 11                | 9                 | 9                 |
| Dissolved Solids       | mg/L     | 500       | 256               | 252               | 244               |
| Tot Kjeh N             | mg/L     | -         | 0.5               | 0.3               | 0.3               |
| Ammonia (NH3-N)        | mg/L     | -         | 0.49              | 0.13              | 0.07              |
| Ammonia - Unionized    | mg/L     | -         |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | <b>255</b>        | <b>256</b>        | <b>207</b>        |
| BOD                    | mg/L     | -         |                   |                   |                   |
| Cyanide (free)         | mg/L     | -         |                   |                   |                   |
| Total Suspended Solids | mg/L     | -         |                   |                   |                   |
| Aluminum               | mg/L     | 0.1       | 0.02              | 0.02              | 0.06              |
| Antimony               | mg/L     | 0.006     | 0.0001            | < 0.0001          | <0.0001           |
| Arsenic                | mg/L     | 0.025     | < 0.0001          | < 0.0001          | <0.0001           |
| Barium                 | mg/L     | 1         | 0.068             | 0.068             | 0.057             |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.002           | <0.0001           |
| Boron                  | mg/L     | 5         | 0.013             | 0.014             | 0.012             |
| Cadmium                | mg/L     | 0.005     | < 0.000010        | < 0.000010        | <0.000015         |
| Chromium (total)       | mg/L     | 0.05      | < 0.001           | < 0.001           | <0.001            |
| Chromium (VI)          | mg/L     | -         | < 0.001           | < 0.001           | <0.01             |
| Cobalt                 | mg/L     | -         | < 0.005           | < 0.005           | 0.0002            |
| Copper                 | mg/L     | 1         | 0.0012            | 0.0012            | 0.0012            |
| Lead                   | mg/L     | 0.01      | < 0.00002         | < 0.00002         | <0.00002          |
| Mercury                | mg/L     | 0.001     | < 0.00002         | < 0.00002         | <0.00002          |
| Molybdenum             | mg/L     | -         | 0.0002            | 0.0001            | 0.0002            |
| Nickel                 | mg/L     | -         | < 0.01            | < 0.01            | <0.0002           |
| Selenium               | mg/L     | 0.01      | < 0.001           | < 0.001           | <0.001            |
| Silver                 | mg/L     | -         | < 0.0001          | < 0.0001          | <0.0001           |
| Strontium              | mg/L     | -         | 0.165             | 0.164             | 0.146             |
| Thallium               | mg/L     | -         | < 0.00005         | < 0.00005         | <0.00005          |
| Vanadium               | mg/L     | -         | 0.0001            | 0.0001            | 0.0001            |
| Zinc                   | mg/L     | 5         | < 0.005           | < 0.005           | <0.005            |

ODWQS - Ontario Drinking Water Quality  
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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW13        | MW13        | MW13         | MW13         | MW13         | MW13        | MW13         | MW13         | MW13         | MW13         | MW13         | MW13         | MW13         |
|------------------------|----------|-----------|-------------|-------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                        |          |           | 23-May-12   | 01-Oct-12   | 22-May-13    | 01-Oct-13    | 23-Apr-14    | 16-Oct-14   | 16-Apr-15    | 07-Oct-15    | 27-Apr-16    | 04-Oct-16    | 17-Apr-17    | 23-Oct-17    | 25-Apr-18    |
| Total Alkalinity       | mg/L     | 500       | 210         | 240         | 179          | 201          | 181          | 204         | 183          | 246          | 187          | 200          | 184          | 196          | 165          |
| Calcium                | mg/L     | -         | 79          | 90          | 67.3         | 81.2         | 75           | 79.3        | 70.8         | 90.1         | 74.9         | 76.8         | 71           | 75           | 67.2         |
| Chloride               | mg/L     | 250       | 15          | 22          | 10.4         | 11.5         | 14           | 8.6         | 7.6          | 14.6         | 7.5          | 3.9          | 4.8          | 4            | 3.4          |
| COD                    | mg/L     | -         | 9.2         | 13          | < 5          | 10           | 5            | 6           | 6            | 6            | < 5          | 14           | 10           | 8            | < 5          |
| Specific Conductivity  | umhos/cm | -         | 450         | 540         | 431          | 450          | 422          | 449         | 385          | 495          | 415          | 416          | 397          | 409          | 326          |
| DOC                    | mg/L     | 5         | 1.9         | 2.9         | 4.8          | 3.4          | 2.6          | 4.3         | 3.9          | 3.2          | 2            | 3.5          | 1.9          | 2.5          | 2.3          |
| Fluoride               | mg/L     | 1.5       | < 0.10      | < 0.10      | 0.2          | 0.1          | 0.2          | 0.2         | 0.2          | 0.1          | < 0.1        | < 0.1        | 0.3          | < 0.1        | < 0.1        |
| Iron                   | mg/L     | 0.3       | <b>1.5</b>  | <b>0.99</b> | <b>0.888</b> | <b>1.14</b>  | <b>1.17</b>  | <b>1.33</b> | <b>0.806</b> | <b>0.853</b> | <b>0.696</b> | 0.214        | <b>1.02</b>  | <b>0.415</b> | <b>0.612</b> |
| Magnesium              | mg/L     | -         | 4.2         | 5.1         | 3.68         | 4.2          | 3.88         | 4.23        | 3.83         | 4.78         | 4.19         | 4.28         | 3.98         | 4.21         | 3.83         |
| Manganese              | mg/L     | 0.05      | <b>0.11</b> | <b>0.11</b> | <b>0.106</b> | <b>0.131</b> | <b>0.127</b> | <b>0.12</b> | <b>0.104</b> | <b>0.124</b> | <b>0.078</b> | <b>0.079</b> | <b>0.091</b> | <b>0.095</b> | <b>0.083</b> |
| Nitrate                | mg/L     | 10        | 0.1         | 0.36        | 0.2          | 0.2          | 0.1          | 0.2         | 0.2          | < 0.1        | 0.1          | 0.1          | 0.1          | 0.08         | 0.14         |
| Nitrite                | mg/L     | 1         | 0.023       | 0.012       | < 0.1        | < 0.1        | < 0.1        | < 0.1       | < 0.1        | < 0.1        | < 0.1        | < 0.1        | 0.2          | 0.05         | < 0.05       |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.81        | 7.53        | 7.72         | 7.81         | 7.95         | 7.87        | 7.85         | 7.67         | 7.98         | 7.95         | 8.04         | 7.81         | 7.91         |
| Phenols                | mg/L     | -         | < 0.0010    | < 0.0010    | < 0.001      | < 0.001      | < 0.001      | < 0.001     | < 0.001      | < 0.001      | 0.018        | 0.005        | < 0.001      | 0.002        | < 0.001      |
| Phosphorus             | mg/L     | -         | < 0.10      | < 0.10      | 0.04         | 0.08         | < 0.1        | < 0.1       | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Potassium              | mg/L     | -         | 4.2         | 4.8         | 3.5          | 4.4          | 2.9          | 4.5         | 2.8          | 4.5          | 2.8          | 4.4          | 2.7          | 3.8          | 2.5          |
| Sodium                 | mg/L     | 200       | 8.5         | 11          | 6.2          | 7.3          | 6            | 10.5        | 7.6          | 14.5         | 9.8          | 12.5         | 8.7          | 8.2          | 8.3          |
| Sulphate               | mg/L     | 500       | 7           | 7           | 40           | 8            | 12           | 6           | 7            | 7            | 15           | 6            | 16           | 8            | 9            |
| Dissolved Solids       | mg/L     | 500       | 246         | 301         | 242          | 239          | 225          | 240         | 213          | 287          | 229          | 231          | 221          | 223          | 195          |
| Tot Kjel N             | mg/L     | -         | 1.4         | 1.4         | 1.2          | 1.47         | 0.1          | 1.3         | 1.2          | 1.8          | 0.7          | 1.4          | 0.8          | 1.2          | 0.6          |
| Ammonia (NH3-N)        | mg/L     | -         | 1.2         | 1.2         | 1.22         | 1.1          | 0.03         | 1.24        | 0.94         | 1.62         | 0.66         | 1.2          | 0.71         | 1.1          | 0.46         |
| Ammonia - Unionized    | mg/L     | -         |             |             |              |              |              |             |              |              |              |              |              |              |              |
| Hardness (CaCO3)       | mg/L     | 100       | <b>210</b>  | <b>250</b>  | <b>183</b>   | <b>220</b>   | <b>203</b>   | <b>216</b>  | <b>193</b>   | <b>245</b>   | <b>204</b>   | <b>210</b>   | <b>194</b>   | <b>205</b>   | <b>184</b>   |
| BOD                    | mg/L     | -         | --          | --          | --           | --           | --           | --          | --           | --           | --           | --           | --           | --           |              |
| Cyanide (free)         | mg/L     | -         | --          | --          | --           | --           | --           | --          | --           | --           | --           | --           | --           | --           |              |
| Total Suspended Solids | mg/L     | -         | --          | --          | --           | --           | --           | --          | --           | --           | --           | --           | --           | --           |              |
| Aluminum               | mg/L     | 0.1       | < 0.0050    | 0.0054      | 0.02         | 0.03         | 0.02         | 0.02        | 0.02         | 0.03         | 0.02         | 0.04         | 0.05         | 0.05         | 0.04         |
| Antimony               | mg/L     | 0.006     | < 0.00050   | < 0.00050   | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001     | < 0.0001     | < 0.0001     | 0.0001       | < 0.0001     | < 0.0001     | < 0.0001     |
| Arsenic                | mg/L     | 0.025     | < 0.0010    | < 0.0010    | 0.0003       | 0.0003       | 0.0001       | 0.0003      | 0.0001       | 0.0003       | 0.0002       | < 0.0001     | 0.0002       | 0.0002       | < 0.0001     |
| Barium                 | mg/L     | 1         | 0.078       | 0.097       | 0.068        | 0.081        | 0.058        | 0.077       | 0.057        | 0.086        | 0.057        | 0.075        | 0.056        | 0.072        | 0.05         |
| Beryllium              | mg/L     | -         | < 0.00050   | < 0.00050   | < 0.002      | < 0.002      | < 0.002      | < 0.002     | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      |
| Boron                  | mg/L     | 5         | 0.029       | 0.045       | < 0.005      | 0.005        | 0.016        | 0.027       | 0.014        | 0.03         | < 0.005      | 0.029        | 0.013        | 0.029        | 0.012        |
| Cadmium                | mg/L     | 0.005     | < 0.00010   | < 0.00010   | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002   | 0.00003      | < 0.00002    | < 0.00002    | < 0.00002    | < 0.000020   | < 0.000014   | < 0.000015   |
| Chromium (total)       | mg/L     | 0.05      | < 0.0050    | < 0.0050    | < 0.0002     | 0.02         | < 0.0002     | 0.0028      | 0.001        | 0.0023       | < 0.0002     | 0.0104       | 0.002        | < 0.001      | < 0.001      |
| Chromium (VI)          | mg/L     | -         |             |             |              |              |              |             |              |              |              |              |              |              |              |
| Cobalt                 | mg/L     | -         | < 0.00050   | < 0.00050   | < 0.005      | < 0.005      | < 0.005      | < 0.005     | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      |
| Copper                 | mg/L     | 1         | < 0.0010    | < 0.0010    | 0.0005       | 0.0003       | 0.0006       | 0.0005      | 0.0015       | 0.0006       | 0.0006       | 0.0005       | 0.001        | 0.0003       | 0.0011       |
| Lead                   | mg/L     | 0.01      | < 0.00050   | < 0.00050   | < 0.00002    | 0.00005      | 0.00008      | < 0.00002   | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | 0.00003      |
| Mercury                | mg/L     | 0.001     | < 0.00001   | < 0.00001   | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002    | < 0.00002    | 0.00005      | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    |
| Molybdenum             | mg/L     | -         | < 0.00050   | < 0.00050   | 0.0002       | 0.0002       | 0.0001       | 0.0002      | < 0.0001     | 0.0002       | 0.0002       | 0.0002       | 0.0002       | 0.0002       | 0.0002       |
| Nickel                 | mg/L     | -         | < 0.0010    | < 0.0010    | < 0.01       | < 0.01       | < 0.01       | < 0.01      | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Selenium               | mg/L     | 0.01      | < 0.0020    | < 0.0020    | < 0.001      | < 0.001      | < 0.001      | < 0.001     | < 0.001      | < 0.001      | < 0.001      | < 0.001      | 0.002        | < 0.001      | < 0.001      |
| Silver                 | mg/L     | -         | < 0.00010   | < 0.00010   | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | 0.00002      | < 0.00002    | < 0.0001     |
| Strontium              | mg/L     | -         | 0.16        | 0.2         | --           | --           | --           | 0.174       | 0.15         | 0.195        | 0.159        | 0.161        | 0.131        | 0.148        | 0.131        |
| Thallium               | mg/L     | -         | < 0.000050  | < 0.000050  | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005   | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    |
| Vanadium               | mg/L     | -         | 0.0015      | < 0.00050   | 0.0016       | 0.0057       | 0.0012       | 0.0043      | 0.0015       | 0.0009       | 0.001        | 0.0006       | 0.001        | 0.0002       | < 0.0001     |
| Zinc                   | mg/L     | 5         | < 0.0050    | < 0.0050    | < 0.005      | < 0.005      | < 0.005      | < 0.005     | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | 0.006        |

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Ground Water Quality - General  
Parameters

| DUP                    |          |           |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|------------------------|----------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Parameters             | Units    | ODWQS     | MW13<br>15-Oct-18 | MW13<br>11-Apr-19 | MW13<br>21-Oct-19 | MW13<br>22-Apr-20 | MW13<br>19-Oct-20 | MW13<br>19-Apr-21 | MW13<br>27-Oct-21 | MW13<br>20-Apr-22 | MW13<br>26-Oct-22 | MW13<br>19-Apr-23 | MW13<br>19-Apr-23 | MW13<br>11-Oct-23 | MW14<br>23-May-12 |
| Total Alkalinity       | mg/L     | 500       | 194               | 162               | 193               | 174               | 168               | 161               | 188               | 178               | 188               | 189               | 189               | 202               | 240               |
| Calcium                | mg/L     | -         | 69.3              | 67.3              | 78.9              | 70.3              | 67.5              | 69.6              | 70.2              | 71.1              | 68                | 62.9              | 63.1              | 55                | 94                |
| Chloride               | mg/L     | 250       | 2.8               | 4.6               | 3                 | 4.9               | 1.6               | 4.4               | 3.5               | 3.9               | 4.5               | 5.4               | 5.3               | 3.5               | 5                 |
| COD                    | mg/L     | -         | 5                 | < 5               | 15                | 8                 | < 5               | 6                 | 7                 | 10                | 6                 | < 5               | < 5               | 5                 | 6.6               |
| Specific Conductivity  | umhos/cm | -         | 390               | 360               | 404               | 381               | 351               | 360               | 359               | 383               | 402               | 387               | 385               | 370               | 460               |
| DOC                    | mg/L     | 5         | 2.9               | 2.5               | 2.8               | 2.6               | 1.9               | 2.7               | 2.7               | 2.2               | 2.3               | 1.2               | 1.8               | 3.8               | 2.2               |
| Fluoride               | mg/L     | 1.5       | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.10            |
| Iron                   | mg/L     | 0.3       | <b>0.813</b>      | <b>0.494</b>      | <b>0.365</b>      | <b>0.594</b>      | 0.245             | <b>0.93</b>       | <b>1.05</b>       | <b>0.926</b>      | <b>0.926</b>      | <b>0.34</b>       | <b>0.341</b>      | <b>0.351</b>      | < 0.10            |
| Magnesium              | mg/L     | -         | 3.7               | 3.74              | 4.25              | 4.27              | 3.69              | 3.99              | 4                 | 4.16              | 4.24              | 4.23              | 4.21              | 3.61              | 2.1               |
| Manganese              | mg/L     | 0.05      | <b>0.1</b>        | <b>0.06</b>       | <b>0.062</b>      | <b>0.07</b>       | <b>0.054</b>      | <b>0.084</b>      | <b>0.107</b>      | <b>0.073</b>      | <b>0.066</b>      | 0.025             | 0.025             | 0.04              | 0.0071            |
| Nitrate                | mg/L     | 10        | < 0.05            | 0.16              | 0.12              | 0.14              | 0.09              | < 0.05            | 0.13              | 0.1               | 0.08              | 0.15              | 0.14              | 0.15              | < 0.10            |
| Nitrite                | mg/L     | 1         | < 0.05            | 0.07              | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.010           |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.81              | 8.02              | 7.89              | 7.86              | 7.79              | 7.85              | 7.89              | 7.51              | 7.75              | 8.02              | 7.93              | 7.07              | 7.77              |
| Phenols                | mg/L     | -         | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.001           | < 0.001           | < 0.002           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.0010          |
| Phosphorus             | mg/L     | -         | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.10            |
| Potassium              | mg/L     | -         | 3.4               | 2.3               | 3.9               | 2.7               | 3.3               | 2.7               | 3.6               | 2.4               | 3                 | 2.1               | 2.1               | 2.3               | 0.29              |
| Sodium                 | mg/L     | 200       | 7.6               | 6.8               | 7.2               | 5.4               | 4.5               | 4.2               | 5.3               | 5.4               | 4.9               | 4.2               | 4.1               | 3.6               | 2.4               |
| Sulphate               | mg/L     | 500       | 6                 | 10                | 4                 | 8                 | 3                 | 7                 | 5                 | 8                 | 5                 | 6                 | 6                 | 4                 | 6                 |
| Dissolved Solids       | mg/L     | 500       | 211               | 194               | 218               | 201               | 185               | 190               | 206               | 204               | 205               | 198               | 199               | 190               | 252               |
| Tot Kjeh N             | mg/L     | -         | 1.1               | 0.8               | 0.8               | 0.7               | 0.9               | 0.8               | 0.9               | 1.1               | 1.3               | 0.5               | 0.6               | 0.4               | 0.34              |
| Ammonia (NH3-N)        | mg/L     | -         | 0.87              | 0.41              | 0.69              | 0.59              | 0.73              | 0.71              | 0.73              | 1.02              | 0.73              | 0.35              | 0.46              | 0.3               | < 0.050           |
| Ammonia - Unionized    | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | <b>188</b>        | <b>184</b>        | <b>215</b>        | <b>193</b>        | <b>184</b>        | <b>190</b>        | <b>192</b>        | <b>195</b>        | <b>187</b>        | <b>175</b>        | <b>175</b>        | <b>152</b>        | <b>240</b>        |
| BOD                    | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | --                |
| Cyanide (free)         | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | --                |
| Total Suspended Solids | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | --                |
| Aluminum               | mg/L     | 0.1       | 0.05              | 0.07              | 0.06              | 0.05              | 0.01              | 0.05              | 0.05              | 0.04              | 0.02              | 0.02              | 0.02              | 0.03              | < 0.0050          |
| Antimony               | mg/L     | 0.006     | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | 0.0001            | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.00050         |
| Arsenic                | mg/L     | 0.025     | 0.0002            | 0.0001            | 0.0001            | 0.0001            | 0.0001            | 0.0001            | 0.0002            | 0.0001            | 0.0002            | < 0.0001          | < 0.0001          | 0.0001            | < 0.0010          |
| Barium                 | mg/L     | 1         | 0.065             | 0.049             | 0.073             | 0.055             | 0.057             | 0.054             | 0.061             | 0.05              | 0.053             | 0.045             | 0.045             | 0.046             | 0.019             |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.0001          | < 0.00050         |
| Boron                  | mg/L     | 5         | 0.028             | 0.011             | 0.025             | 0.015             | 0.026             | 0.014             | 0.027             | 0.012             | 0.023             | 0.008             | 0.009             | 0.018             | < 0.010           |
|                        |          |           |                   |                   |                   |                   |                   |                   |                   |                   |                   | <                 | <                 |                   |                   |
| Cadmium                | mg/L     | 0.005     | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | 0.000010          | 0.000010          | < 0.000015        | < 0.00010         |
| Chromium (total)       | mg/L     | 0.05      | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | 0.002             | 0.002             | < 0.001           | < 0.0050          |
| Chromium (VI)          | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   |
| Cobalt                 | mg/L     | -         | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | 0.0002            | < 0.00050         |
| Copper                 | mg/L     | 1         | 0.0006            | 0.0011            | 0.001             | 0.0006            | 0.0018            | 0.0021            | 0.0011            | 0.0004            | 0.0007            | 0.0006            | 0.0009            | 0.0005            | 0.0018            |
| Lead                   | mg/L     | 0.01      | < 0.00002         | 0.0001            | 0.00011           | < 0.00002         | 0.00007           | 0.00007           | < 0.00002         | < 0.00002         | 0.00003           | < 0.00002         | < 0.00002         | 0.00002           | < 0.00050         |
| Mercury                | mg/L     | 0.001     | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00001         |
| Molybdenum             | mg/L     | -         | 0.0002            | 0.0001            | 0.0002            | 0.0001            | 0.0002            | 0.0001            | 0.0002            | 0.0002            | 0.0002            | 0.0002            | 0.0002            | 0.0002            | < 0.00050         |
| Nickel                 | mg/L     | -         | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.0002          | < 0.0010          |
| Selenium               | mg/L     | 0.01      | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.0020          |
| Silver                 | mg/L     | -         | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.00010         |
| Strontium              | mg/L     | -         | 0.138             | 0.132             | 0.165             | 0.141             | 0.135             | 0.139             | 0.145             | 0.138             | 0.14              | 0.142             | 0.14              | 0.124             | 0.16              |
| Thallium               | mg/L     | -         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.000050        |
| Vanadium               | mg/L     | -         | 0.0001            | 0.0002            | 0.0001            | < 0.0001          | 0.0001            | 0.0001            | 0.0001            | 0.0001            | 0.0001            | < 0.0001          | < 0.0001          | 0.0001            | < 0.00050         |
| Zinc                   | mg/L     | 5         | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | 0.006             | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | 0.0063            |

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Standards  
Bold and highlighted indicates exceedance

## Ground Water Quality - General Parameters

| Parameters             | Units    | ODWQS     | MW14<br>01-Oct-12 | MW14<br>23-May-13 | MW14<br>01-Oct-13 | MW14<br>24-Apr-14 | MW14<br>15-Oct-14 | MW14<br>15-Apr-15 | MW14<br>07-Oct-15 | MW14<br>28-Apr-16 | MW14<br>03-Oct-16 | MW14<br>17-Apr-17 | MW14<br>23-Oct-17 | MW14<br>25-Apr-18 | MW14<br>15-Oct-18 |
|------------------------|----------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L     | 500       | 180               | 190               | 199               | 212               | 211               | 228               | 177               | 187               | 169               | 178               | 189               | 177               | 181               |
| Calcium                | mg/L     | -         | 62                | 81.3              | 86.3              | 94.3              | 87.2              | 97.9              | 73.4              | 81.5              | 72.2              | 81.1              | 81                | 75.9              | 79.3              |
| Chloride               | mg/L     | 250       | 1                 | 3.7               | 10.4              | 19.5              | 17.8              | 8.8               | 1.3               | 9.1               | 0.8               | 11.1              | 5.1               | 3.7               | 12.6              |
| COD                    | mg/L     | -         | 6.6               | 16                | 13                | 12                | 81                | 27                | 6                 | 72                | < 5               | 30                | 43                | 64                | < 5               |
| Specific Conductivity  | umhos/cm | -         | 320               | 400               | 434               | 487               | 476               | 466               | 322               | 403               | 346               | 405               | 393               | 341               | 399               |
| DOC                    | mg/L     | 5         | 1.3               | 7                 | 3.6               | 4.5               | 4.3               | 3.4               | 1.6               | 3.2               | 3.2               | 4                 | 4.1               | 4.2               | 2.7               |
| Fluoride               | mg/L     | 1.5       | 0.12              | 0.2               | 0.1               | 0.2               | 0.2               | < 0.1             | 0.1               | 0.1               | < 0.1             | 0.4               | < 0.1             | < 0.1             | < 0.1             |
| Iron                   | mg/L     | 0.3       | < 0.10            | < 0.005           | < 0.005           | < 0.005           | < 0.005           | 0.017             | 0.01              | < 0.005           | 0.043             | < 0.005           | < 0.005           | 0.118             | 0.011             |
| Magnesium              | mg/L     | -         | 2.3               | 1.9               | 1.97              | 1.97              | 1.89              | 2.02              | 1.78              | 1.82              | 2.12              | 1.82              | 1.98              | 1.62              | 2.12              |
| Manganese              | mg/L     | 0.05      | < 0.0020          | < 0.001           | 0.009             | < 0.001           | 0.004             | < 0.001           | < 0.001           | < 0.001           | 0.002             | < 0.001           | 0.002             | 0.002             | < 0.001           |
| Nitrate                | mg/L     | 10        | < 0.10            | < 0.1             | < 0.1             | < 0.1             | 0.1               | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.05            | 0.07              | < 0.05            |
| Nitrite                | mg/L     | 1         | < 0.010           | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | 0.2               | < 0.05            | < 0.05            | < 0.05            |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.62              | 7.86              | 7.83              | 7.87              | 7.85              | 7.73              | 7.7               | 7.95              | 7.98              | 8.07              | 7.89              | 7.91              | 7.9               |
| Phenols                | mg/L     | -         | < 0.0010          | < 0.001           | 0.002             | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | 0.008             | < 0.001           | 0.002             | < 0.001           | < 0.002           |
| Phosphorus             | mg/L     | -         | < 0.10            | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             |
| Potassium              | mg/L     | -         | 0.2               | 0.2               | 0.3               | 0.2               | 0.3               | 0.2               | 0.2               | 0.2               | 0.1               | 0.2               | 0.2               | 0.2               | 0.1               |
| Sodium                 | mg/L     | 200       | 2                 | 2.3               | 5.2               | 6.1               | 12.4              | 6                 | 3.1               | 4.3               | 2.9               | 3.6               | 5.4               | 3.9               | 3.1               |
| Sulphate               | mg/L     | 500       | 7                 | 10                | 7                 | 10                | 7                 | 5                 | 7                 | 9                 | 7                 | 11                | 7                 | 7                 | 6                 |
| Dissolved Solids       | mg/L     | 500       | 189               | 213               | 230               | 260               | 254               | 257               | 193               | 218               | 187               | 217               | 214               | 199               | 212               |
| Tot Kjel N             | mg/L     | -         | 0.48              | 0.48              | 0.62              | 0.5               | 0.4               | 1.3               | 0.4               | 1                 | 0.7               | 0.6               | 0.9               | 2                 | 0.5               |
| Ammonia (NH3-N)        | mg/L     | -         | 0.03              | < 0.01            | < 0.01            | 0.09              | 0.04              | 0.1               | < 0.01            | 0.07              | 0.11              | 0.02              | 0.01              | 0.1               | 0.04              |
| Ammonia - Unionized    | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | <b>160</b>        | <b>211</b>        | <b>224</b>        | <b>244</b>        | <b>226</b>        | <b>253</b>        | <b>191</b>        | <b>211</b>        | <b>189</b>        | <b>210</b>        | <b>211</b>        | <b>196</b>        | <b>207</b>        |
| BOD                    | mg/L     | -         | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                |                   |
| Cyanide (free)         | mg/L     | -         | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                |                   |
| Total Suspended Solids | mg/L     | -         | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                | --                |                   |
| Aluminum               | mg/L     | 0.1       | < 0.0050          | 0.03              | 0.03              | 0.03              | 0.02              | 0.03              | 0.02              | 0.02              | 0.09              | 0.05              | 0.05              | <b>0.19</b>       | 0.05              |
| Antimony               | mg/L     | 0.006     | < 0.00050         | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | 0.0002            | < 0.0001          | < 0.0001          | 0.0002            | < 0.0001          | < 0.0001          | 0.0002            | < 0.0001          |
| Arsenic                | mg/L     | 0.025     | < 0.0010          | 0.0002            | 0.0003            | < 0.0001          | < 0.0001          | < 0.0001          | 0.0001            | 0.0001            | < 0.0001          | 0.0002            | 0.0002            | < 0.0001          | < 0.0001          |
| Barium                 | mg/L     | 1         | 0.013             | 0.017             | 0.02              | 0.017             | 0.021             | 0.017             | 0.014             | 0.014             | 0.016             | 0.016             | 0.02              | 0.018             | 0.017             |
| Beryllium              | mg/L     | -         | < 0.00050         | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           |
| Boron                  | mg/L     | 5         | < 0.010           | < 0.005           | < 0.005           | < 0.005           | 0.007             | 0.005             | 0.008             | < 0.005           | < 0.005           | 0.005             | 0.009             | < 0.005           | 0.005             |
| Cadmium                | mg/L     | 0.005     | < 0.00010         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | 0.00004           | < 0.00002         | < 0.00002         | < 0.00002         | < 0.000020        | < 0.000014        | < 0.000015        | < 0.000015        |
| Chromium (total)       | mg/L     | 0.05      | < 0.0050          | < 0.0002          | 0.0179            | < 0.0002          | 0.006             | 0.0012            | 0.0014            | < 0.0002          | < 0.0002          | < 0.001           | < 0.001           | < 0.001           | < 0.001           |
| Chromium (VI)          | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cobalt                 | mg/L     | -         | < 0.00050         | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | 0.005             | < 0.005           | < 0.005           | < 0.005           |
| Copper                 | mg/L     | 1         | 0.0012            | 0.0009            | 0.001             | 0.001             | 0.0012            | 0.0011            | 0.0012            | 0.0009            | 0.0008            | 0.0017            | 0.0005            | 0.001             | 0.0008            |
| Lead                   | mg/L     | 0.01      | < 0.00050         | < 0.00002         | 0.00004           | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | 0.00006           | < 0.00002         | < 0.00002         | 0.00013           | < 0.00002         |
| Mercury                | mg/L     | 0.001     | < 0.00001         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L     | -         | < 0.00050         | < 0.0001          | 0.0002            | < 0.0001          | 0.0001            | < 0.0001          | 0.0003            | < 0.0001          | 0.0003            | < 0.0001          | 0.0002            | < 0.0001          | 0.0003            |
| Nickel                 | mg/L     | -         | < 0.0010          | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            |
| Selenium               | mg/L     | 0.01      | < 0.0020          | < 0.001           | < 0.001           | < 0.001           | 0.001             | < 0.001           | < 0.001           | < 0.001           | < 0.001           | 0.002             | < 0.001           | < 0.001           | < 0.001           |
| Silver                 | mg/L     | -         | < 0.00010         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.0001          | < 0.0001          |
| Strontium              | mg/L     | -         | 0.11              | --                | --                | --                | 0.176             | 0.189             | 0.132             | 0.147             | 0.127             | 0.131             | 0.153             | 0.129             | 0.135             |
| Thallium               | mg/L     | -         | < 0.000050        | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         |
| Vanadium               | mg/L     | -         | < 0.00050         | 0.0016            | 0.0053            | 0.0011            | 0.0058            | 0.0023            | 0.0008            | 0.0007            | 0.001             | 0.0012            | 0.0006            | 0.0004            | 0.0003            |
| Zinc                   | mg/L     | 5         | < 0.0050          | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | 0.005             | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW14<br>11-Apr-19 | MW14<br>21-Oct-19 | MW14<br>22-Apr-20 | MW14<br>19-Oct-20 | MW14<br>19-Apr-21 | MW14<br>27-Oct-21 | MW14<br>20-Apr-22 | MW14<br>26-Oct-22 | MW14<br>19-Apr-23 | MW14<br>11-Oct-23 | MW15<br>23-May-12 | MW15<br>01-Oct-12 | MW15<br>23-May-13 |
|------------------------|----------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L     | 500       | 202               | 160               | 161               | 181               | 197               | 211               | 236               | 206               | 206               | 203               | 190               | 230               | 184               |
| Calcium                | mg/L     | -         | 90.8              | 72.5              | 81.4              | 86.8              | 100               | 98.6              | 109               | 93.8              | 95.7              | 60.6              | 71                | 82                | 76.9              |
| Chloride               | mg/L     | 250       | 8.2               | 2.3               | 19.6              | 17.7              | 15.8              | 22                | 16.2              | 24.7              | 21.8              | 7.9               | 2                 | < 1               | 1.7               |
| COD                    | mg/L     | -         | 67                | 33                | 25                | 60                | 13                | 13                | 16                | 45                | 58                | 19                | 17                | 17                | 6                 |
| Specific Conductivity  | umhos/cm | -         | 438               | 327               | 406               | 437               | 474               | 460               | 525               | 497               | 488               | 396               | 360               | 430               | 372               |
| DOC                    | mg/L     | 5         | 3.8               | 2                 | 4.4               | 2.1               | 4.4               | 2.9               | 4.1               | 2                 | 4.1               | 3.2               | 2.5               | 2.5               | 4.5               |
| Fluoride               | mg/L     | 1.5       | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.10            | < 0.10            | 0.2               |
| Iron                   | mg/L     | 0.3       | 0.06              | 0.007             | 0.005             | < 0.005           | 0.022             | 0.121             | 0.029             | 0.024             | < 0.005           | 0.008             | < 0.10            | < 0.10            | < 0.005           |
| Magnesium              | mg/L     | -         | 2.03              | 2.22              | 1.88              | 2.4               | 2.31              | 2.34              | 2.46              | 2.46              | 2.13              | 1.68              | 2                 | 2.5               | 2.23              |
| Manganese              | mg/L     | 0.05      | 0.002             | < 0.001           | < 0.001           | < 0.001           | 0.001             | 0.017             | 0.001             | 0.003             | < 0.001           | < 0.001           | < 0.0020          | 0.006             | < 0.001           |
| Nitrate                | mg/L     | 10        | < 0.05            | 0.07              | 0.06              | 0.05              | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | 0.06              | < 0.10            | < 0.10            | 0.1               |
| Nitrite                | mg/L     | 1         | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.010           | < 0.010           | < 0.1             |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.99              | 7.95              | 7.86              | 7.92              | 7.85              | 7.92              | 7.57              | 7.74              | 7.73              | 7.13              | 7.94              | 7.63              | 7.83              |
| Phenols                | mg/L     | -         | < 0.002           | < 0.002           | < 0.002           | < 0.001           | < 0.001           | < 0.002           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.0010          | < 0.0010          | < 0.001           |
| Phosphorus             | mg/L     | -         | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.10            | < 0.10            | < 0.1             |
| Potassium              | mg/L     | -         | 0.2               | 0.2               | 0.2               | 0.3               | 0.2               | 0.3               | 0.2               | 0.4               | 0.3               | 0.2               | 0.34              | 0.27              | 0.2               |
| Sodium                 | mg/L     | 200       | 3.5               | 2.3               | 4.5               | 4.3               | 5.1               | 6.4               | 4.8               | 4.8               | 5.4               | 3.3               | 1.9               | 1.7               | 2.2               |
| Sulphate               | mg/L     | 500       | 6                 | 4                 | 11                | 7                 | 9                 | 5                 | 7                 | 6                 | 8                 | 7                 | < 1               | < 1               | 2                 |
| Dissolved Solids       | mg/L     | 500       | 232               | 180               | 215               | 227               | 251               | 262               | 282               | 256               | 258               | 204               | 192               | 237               | 196               |
| Tot Kjel N             | mg/L     | -         | 0.9               | 0.5               | 0.5               | 0.7               | 0.5               | 0.7               | 0.5               | 0.6               | 0.6               | 0.4               | 0.11              | 0.57              | 0.2               |
| Ammonia (NH3-N)        | mg/L     | -         | 0.16              | 0.02              | 0.01              | 0.04              | 0.03              | 0.05              | 0.05              | 0.03              | 0.04              | < 0.05            | < 0.050           | 0.04              | < 0.01            |
| Ammonia - Unionized    | mg/L     | -         | 0.0017            | 0.0004            | 0.0001            | 0.0006            | 0.0004            | 0.0007            | 0.0003            | 0.0003            |                   |                   |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | <b>235</b>        | <b>190</b>        | <b>211</b>        | <b>227</b>        | <b>259</b>        | <b>256</b>        | <b>283</b>        | <b>245</b>        | <b>248</b>        | <b>158</b>        | <b>190</b>        | <b>220</b>        | <b>201</b>        |
| BOD                    | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | --                | --                | --                |
| Cyanide (free)         | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | --                | --                | --                |
| Total Suspended Solids | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | --                | --                | --                |
| Aluminum               | mg/L     | 0.1       | 0.08              | 0.06              | 0.06              | 0.02              | 0.07              | <b>0.11</b>       | 0.07              | 0.04              | 0.02              | 0.04              | < 0.0050          | < 0.0050          | 0.03              |
| Antimony               | mg/L     | 0.006     | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | 0.0001            | < 0.0001          | < 0.00050         | < 0.00050         | < 0.0001          |
| Arsenic                | mg/L     | 0.025     | < 0.0001          | < 0.0001          | 0.0001            | 0.0002            | 0.0001            | 0.0001            | 0.0001            | < 0.0001          | 0.0001            | 0.0001            | < 0.0010          | < 0.0010          | 0.0002            |
| Barium                 | mg/L     | 1         | 0.017             | 0.015             | 0.015             | 0.019             | 0.018             | 0.023             | 0.019             | 0.019             | 0.017             | 0.014             | 0.0076            | 0.0092            | 0.008             |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.0001          | < 0.00050         | < 0.00050         | < 0.002           |
| Boron                  | mg/L     | 5         | 0.007             | 0.006             | 0.005             | 0.008             | 0.01              | 0.007             | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.010           | < 0.010           | 0.006             |
|                        |          |           |                   |                   |                   |                   |                   |                   |                   |                   | <                 |                   |                   |                   |                   |
| Cadmium                | mg/L     | 0.005     | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000010        | 0.000010          | < 0.000015        | < 0.00010         | < 0.00010         | < 0.00002         |
| Chromium (total)       | mg/L     | 0.05      | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.0050          | < 0.0050          | < 0.0002          |
| Chromium (VI)          | mg/L     | -         |                   |                   |                   |                   |                   |                   | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   |                   |                   |
| Cobalt                 | mg/L     | -         | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | 0.0001            | < 0.00050         | < 0.00050         | < 0.005           |
| Copper                 | mg/L     | 1         | 0.0012            | 0.0017            | 0.0009            | 0.002             | 0.0025            | 0.0018            | 0.0007            | 0.0009            | 0.0007            | 0.0008            | 0.0022            | 0.0016            | 0.0013            |
| Lead                   | mg/L     | 0.01      | 0.00006           | 0.00004           | < 0.00002         | 0.00006           | 0.00008           | 0.00013           | 0.00003           | 0.00004           | < 0.00002         | < 0.00002         | < 0.00050         | < 0.00050         | < 0.00002         |
| Mercury                | mg/L     | 0.001     | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00001         | < 0.00001         | < 0.00002         |
| Molybdenum             | mg/L     | -         | < 0.0001          | 0.0003            | < 0.0001          | 0.0003            | 0.0001            | 0.0002            | < 0.0001          | 0.0002            | < 0.0001          | 0.0004            | < 0.00050         | < 0.00050         | 0.0001            |
| Nickel                 | mg/L     | -         | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | 0.0005            | < 0.0010          | < 0.0010          | < 0.01            |
| Selenium               | mg/L     | 0.01      | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.0020          | < 0.0020          | < 0.001           |
| Silver                 | mg/L     | -         | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.00010         | < 0.00010         | < 0.00002         |
| Strontium              | mg/L     | -         | 0.164             | 0.13              | 0.142             | 0.172             | 0.184             | 0.186             | 0.191             | 0.179             | 0.181             | 0.132             | 0.14              | 0.18              | --                |
| Thallium               | mg/L     | -         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.005           | < 0.005           | < 0.00005         | < 0.00005         | < 0.000050        | < 0.000050        | < 0.00005         |
| Vanadium               | mg/L     | -         | 0.0003            | 0.0003            | 0.0002            | 0.0004            | 0.0003            | 0.0006            | 0.0004            | 0.0004            | 0.0002            | 0.0004            | < 0.00050         | < 0.00050         | 0.0018            |
| Zinc                   | mg/L     | 5         | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | 0.0083            | < 0.0050          | < 0.005           |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW15      | MW15      | MW15      | MW15      | MW15      | MW15      | MW15      | MW15       | MW15       | MW15       | MW15       | MW15       | MW15       |
|------------------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|
|                        |          |           | 01-Oct-13 | 23-Apr-14 | 15-Oct-14 | 15-Apr-15 | 07-Oct-15 | 28-Apr-16 | 03-Oct-16 | 17-Apr-17  | 23-Oct-17  | 25-Apr-18  | 15-Oct-18  | 11-Apr-19  | 21-Oct-19  |
| Total Alkalinity       | mg/L     | 500       | 227       | 201       | 206       | 194       | 250       | 171       | 194       | 168        | 163        | 187        | 222        | 168        | 213        |
| Calcium                | mg/L     | -         | 96.5      | 75.1      | 80.6      | 76.5      | 101       | 67.9      | 89.6      | 66.1       | 70.4       | 74.2       | 78         | 73.9       | 92.8       |
| Chloride               | mg/L     | 250       | 1.1       | 1.6       | 1.6       | 2.1       | 1.7       | 3.7       | 2.4       | 3.3        | 1.9        | 1.1        | 1.6        | 2.9        | 2.1        |
| COD                    | mg/L     | -         | 14        | 5         | <5        | 10        | 10        | 5         | 13        | 9          | 23         | 5          | 7          | 5          | 8          |
| Specific Conductivity  | umhos/cm | -         | 455       | 391       | 399       | 373       | 433       | 341       | 384       | 332        | 319        | 334        | 366        | 347        | 423        |
| DOC                    | mg/L     | 5         | 4.5       | 3.2       | 4.8       | 8.3       | 3.1       | 2.6       | 4.3       | 2.8        | 3.2        | 2.4        | 3.3        | 3.2        | 3.4        |
| Fluoride               | mg/L     | 1.5       | 0.1       | 0.2       | 0.2       | < 0.1     | 0.1       | 0.1       | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | < 0.005   | <0.005    | <0.005    | < 0.005   | < 0.005   | < 0.005   | 0.419     | < 0.005    | < 0.005    | < 0.005    | 0.006      | 0.009      | 0.008      |
| Magnesium              | mg/L     | -         | 2.78      | 2.1       | 2.25      | 2.19      | 2.91      | 1.97      | 2.48      | 1.87       | 1.96       | 2.18       | 2.1        | 2.13       | 2.58       |
| Manganese              | mg/L     | 0.05      | < 0.001   | <0.001    | 0.002     | < 0.001   | 0.05      | < 0.001   | 0.326     | < 0.001    | 0.002      | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Nitrate                | mg/L     | 10        | 0.1       | 0.1       | 0.1       | 0.1       | < 0.1     | 0.2       | 0.1       | 0.2        | 0.17       | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| Nitrite                | mg/L     | 1         | < 0.1     | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | 0.2        | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.77      | 8.01      | 7.87      | 7.89      | 7.73      | 8.04      | 7.93      | 8.11       | 7.95       | 7.95       | 7.89       | 8.07       | 7.92       |
| Phenols                | mg/L     | -         | 0.002     | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.001     | 0.005     | 0.001      | 0.002      | < 0.001    | < 0.002    | < 0.002    | < 0.002    |
| Phosphorus             | mg/L     | -         | < 0.1     | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 0.6       | 0.2       | 0.2       | 0.1       | 0.2       | 0.2       | 0.2       | 0.1        | 0.3        | 0.3        | 0.1        | 0.2        | 0.2        |
| Sodium                 | mg/L     | 200       | 1.9       | 6.5       | 2.5       | 1.8       | 1.9       | 3.3       | 2         | 3.3        | 2.4        | 3.5        | 1.9        | 1.8        | 2.1        |
| Sulphate               | mg/L     | 500       | 2         | <1        | 1         | 2         | 2         | 1         | 2         | 1          | 3          | < 1        | 2          | 2          | 2          |
| Dissolved Solids       | mg/L     | 500       | 242       | 209       | 213       | 201       | 260       | 182       | 216       | 178        | 178        | 194        | 218        | 184        | 230        |
| Tot Kjeh N             | mg/L     | -         | 0.45      | 0.8       | 0.2       | 0.3       | 0.3       | 0.2       | 0.3       | 0.2        | 0.2        | 0.3        | 0.2        | 0.2        | 0.1        |
| Ammonia (NH3-N)        | mg/L     | -         | < 0.01    | 0.76      | 0.03      | < 0.01    | < 0.01    | 0.08      | 0.06      | < 0.01     | < 0.01     | 0.03       | < 0.01     | 0.03       | 0.01       |
| Ammonia - Unionized    | mg/L     | -         |           |           |           |           |           |           |           |            |            |            |            | 0.0008     | 0.0001     |
| Hardness (CaCO3)       | mg/L     | 100       | 253       | 196       | 211       | 200       | 264       | 178       | 234       | 173        | 184        | 194        | 204        | 194        | 243        |
| BOD                    | mg/L     | -         | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |            |            |            |
| Cyanide (free)         | mg/L     | -         | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |            |            |            |
| Total Suspended Solids | mg/L     | -         | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |            |            |            |
| Aluminum               | mg/L     | 0.1       | 0.03      | 0.02      | 0.02      | 0.02      | 0.03      | 0.02      | 0.38      | 0.05       | 0.05       | 0.06       | 0.02       | 0.05       | 0.06       |
| Antimony               | mg/L     | 0.006     | < 0.0001  | <0.0001   | <0.0001   | < 0.0001  | < 0.0001  | < 0.0001  | 0.0005    | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | 0.0002    | <0.0001   | 0.0002    | < 0.0001  | 0.0002    | 0.0001    | 0.0002    | 0.0002     | < 0.0001   | < 0.0001   | 0.0001     | 0.0001     | 0.0001     |
| Barium                 | mg/L     | 1         | 0.011     | 0.008     | 0.008     | 0.008     | 0.01      | 0.007     | 0.015     | 0.007      | 0.008      | 0.008      | 0.009      | 0.007      | 0.01       |
| Beryllium              | mg/L     | -         | < 0.002   | <0.002    | <0.002    | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | < 0.005   | 0.01      | 0.005     | 0.005     | 0.006     | < 0.005   | < 0.005   | 0.008      | 0.005      | 0.005      | < 0.005    | 0.006      | < 0.005    |
| Cadmium                | mg/L     | 0.005     | < 0.00002 | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | 0.00003   | < 0.000020 | < 0.000014 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | 0.0212    | <0.0002   | 0.0055    | 0.0009    | 0.0017    | < 0.0002  | < 0.0002  | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Chromium (VI)          | mg/L     | -         |           |           |           |           |           |           |           |            |            |            |            |            |            |
| Cobalt                 | mg/L     | -         | < 0.005   | <0.005    | <0.005    | < 0.005   | < 0.005   | < 0.005   | < 0.005   | 0.005      | < 0.005    | < 0.005    | < 0.005    | 0.005      | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0019    | 0.0016    | 0.0017    | 0.0016    | 0.0014    | 0.0016    | 0.0039    | 0.0017     | 0.0011     | 0.0013     | 0.0014     | 0.0015     | 0.0016     |
| Lead                   | mg/L     | 0.01      | 0.00008   | 0.00008   | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | 0.00161   | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | 0.00005    |
| Mercury                | mg/L     | 0.001     | < 0.00002 | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | 0.0001    | 0.0002    | 0.0001    | < 0.0001  | 0.0002    | 0.0001    | 0.0001    | 0.0002     | 0.0002     | 0.0001     | 0.0002     | 0.0002     | 0.0002     |
| Nickel                 | mg/L     | -         | < 0.01    | <0.01     | <0.01     | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | < 0.001   | <0.001    | 0.001     | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.002      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Silver                 | mg/L     | -         | < 0.00002 | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Strontium              | mg/L     | -         | --        | --        | 0.169     | 0.168     | 0.213     | 0.139     | 0.173     | 0.123      | 0.129      | 0.14       | 0.143      | 0.144      | 0.181      |
| Thallium               | mg/L     | -         | < 0.00005 | <0.00005  | <0.00005  | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | 0.0062    | 0.0017    | 0.0058    | 0.0015    | 0.0008    | 0.0006    | 0.0016    | 0.0011     | 0.0003     | 0.0002     | 0.0003     | 0.0002     | 0.0003     |
| Zinc                   | mg/L     | 5         | < 0.005   | <0.005    | <0.005    | < 0.005   | < 0.005   | < 0.005   | 0.006     | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW15<br>22-Apr-20 | MW15<br>19-Oct-20 | MW15<br>19-Apr-21 | MW15<br>27-Oct-21 | MW15<br>20-Apr-22 | MW15<br>26-Oct-22 | MW15<br>19-Apr-23 | MW15<br>11-Oct-23 | MW15A<br>23-May-12 | MW15A<br>01-Oct-12 | MW15A<br>23-May-13 | MW15A<br>01-Oct-13 | MW15A<br>23-Apr-14 |
|------------------------|----------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Total Alkalinity       | mg/L     | 500       | 158               | 172               | 155               | 183               | 175               | 199               | 182               | 204               | 400                | 400                | 394                | 393                | 388                |
| Calcium                | mg/L     | -         | 62.6              | 78.1              | 71.5              | 76.3              | 73.9              | 80.7              | 70.9              | 63.8              | 150                | 150                | 154                | 155                | 147                |
| Chloride               | mg/L     | 250       | 3.2               | 2                 | 2.4               | 2.3               | 1.7               | 1.9               | 1.9               | 2.1               | 67                 | 67                 | 68.7               | 67.8               | 67.8               |
| COD                    | mg/L     | -         | 12                | < 5               | 10                | 15                | 9                 | 10                | 6                 | 15                | 24                 | 22                 | 18                 | 25                 | 17                 |
| Specific Conductivity  | umhos/cm | -         | 325               | 357               | 332               | 341               | 346               | 401               | 357               | 375               | 950                | 940                | 951                | 953                | 931                |
| DOC                    | mg/L     | 5         | 3                 | 2.7               | 3.6               | 3.2               | 3.3               | 3.4               | 3.2               | 9.2               | 6.5                | 7.1                | 11.2               | 11.5               | 8.1                |
| Fluoride               | mg/L     | 1.5       | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | <0.1              | < 0.10             | < 0.10             | 0.2                | 0.1                | 0.2                |
| Iron                   | mg/L     | 0.3       | 0.006             | < 0.005           | < 0.005           | 0.01              | 0.01              | < 0.005           | < 0.005           | 0.005             | 5.3                | 5.3                | 5.39               | 5.46               | 4.84               |
| Magnesium              | mg/L     | -         | 1.77              | 2.12              | 1.97              | 2.08              | 2.09              | 2.39              | 2.01              | 1.95              | 17                 | 17                 | 17.4               | 16.4               | 16.3               |
| Manganese              | mg/L     | 0.05      | < 0.001           | < 0.001           | < 0.001           | 0.001             | 0.001             | 0.001             | < 0.001           | <0.001            | 0.12               | 0.12               | 0.139              | 0.124              | 0.113              |
| Nitrate                | mg/L     | 10        | 0.08              | < 0.05            | 0.11              | < 0.05            | < 0.05            | 0.06              | < 0.05            | <0.05             | < 0.10             | < 0.10             | < 0.1              | < 0.1              | <0.1               |
| Nitrite                | mg/L     | 1         | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | <0.05             | < 0.010            | < 0.010            | < 0.1              | < 0.1              | <0.1               |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.89              | 7.84              | 7.93              | 7.92              | 7.48              | 7.79              | 7.84              | 7.1               | 7.78               | 7.48               | 7.52               | 7.4                | 7.69               |
| Phenols                | mg/L     | -         | < 0.002           | < 0.001           | < 0.001           | < 0.002           | < 0.001           | < 0.001           | < 0.001           | <0.001            | < 0.0010           | < 0.0010           | < 0.001            | 0.002              | < 0.001            |
| Phosphorus             | mg/L     | -         | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | <0.1              | < 0.10             | < 0.10             | 0.09               | < 0.1              | <0.1               |
| Potassium              | mg/L     | -         | 0.2               | 0.2               | 0.1               | 0.4               | 0.2               | 0.3               | 0.2               | <0.1              | 2.8                | 2.7                | 2.8                | 2.8                | 2.8                |
| Sodium                 | mg/L     | 200       | 8.2               | 1.9               | 3.1               | 1.9               | 2.2               | 2                 | 3.5               | 1.6               | 28                 | 28                 | 30.1               | 29.5               | 26.5               |
| Sulphate               | mg/L     | 500       | < 1               | 1                 | < 1               | 1                 | 2                 | 2                 | < 1               | 2                 | 3                  | 5                  | 6                  | 7                  | 4                  |
| Dissolved Solids       | mg/L     | 500       | 171               | 189               | 172               | 194               | 187               | 208               | 188               | 193               | 514                | 531                | 522                | 520                | 503                |
| Tot Kjel N             | mg/L     | -         | 0.2               | 0.3               | 0.2               | 0.4               | 0.2               | 0.3               | 0.6               | 0.2               | 0.62               | 0.78               | 0.82               | 0.75               | 0.7                |
| Ammonia (NH3-N)        | mg/L     | -         | 0.01              | 0.02              | 0.03              | 0.04              | 0.17              | 0.02              | 0.5               | <0.05             | 0.29               | 0.44               | 0.34               | 0.29               | 0.41               |
| Ammonia - Unionized    | mg/L     | -         | 0.0001            | 0.0002            | 0.0004            | 0.0006            | 0.0009            | 0.0002            |                   |                   |                    |                    |                    |                    |                    |
| Hardness (CaCO3)       | mg/L     | 100       | 164               | 204               | 187               | 199               | 193               | 211               | 185               | 168               | 440                | 440                | 458                | 455                | 435                |
| BOD                    | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   | --                 | --                 | --                 | --                 | --                 |
| Cyanide (free)         | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   | --                 | --                 | --                 | --                 | --                 |
| Total Suspended Solids | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   | --                 | --                 | --                 | --                 | --                 |
| Aluminum               | mg/L     | 0.1       | 0.03              | 0.02              | 0.05              | 0.05              | 0.04              | 0.02              | 0.01              | 0.04              | < 0.0050           | < 0.0050           | 0.05               | 0.05               | 0.03               |
| Antimony               | mg/L     | 0.006     | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | <0.0001           | < 0.00050          | 0.00051            | < 0.0001           | < 0.0001           | <0.0001            |
| Arsenic                | mg/L     | 0.025     | 0.0001            | 0.0001            | 0.0001            | 0.0001            | 0.0001            | 0.0001            | 0.0001            | 0.0001            | < 0.0010           | < 0.0010           | 0.0003             | 0.0004             | 0.0003             |
| Barium                 | mg/L     | 1         | 0.007             | 0.008             | 0.007             | 0.009             | 0.008             | 0.008             | 0.007             | 0.007             | 0.27               | 0.27               | 0.295              | 0.292              | 0.262              |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | <0.0001           | < 0.00050          | < 0.00050          | < 0.002            | < 0.002            | <0.002             |
| Boron                  | mg/L     | 5         | 0.007             | < 0.005           | 0.01              | < 0.005           | < 0.005           | < 0.005           | 0.006             | <0.005            | 0.072              | 0.075              | 0.074              | 0.054              | 0.071              |
|                        |          |           |                   |                   |                   |                   |                   |                   | <                 |                   |                    |                    |                    |                    |                    |
| Cadmium                | mg/L     | 0.005     | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000010        | 0.000010          | <0.000015         | < 0.00010          | < 0.00010          | < 0.00002          | < 0.00002          | <0.00002           |
| Chromium (total)       | mg/L     | 0.05      | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | <0.001            | < 0.0050           | < 0.0050           | < 0.0002           | 0.0389             | 0.0006             |
| Chromium (VI)          | mg/L     | -         |                   |                   |                   |                   | < 0.001           | < 0.001           | < 0.001           | <0.001            |                    |                    |                    |                    |                    |
| Cobalt                 | mg/L     | -         | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | 0.0002            | < 0.00050          | < 0.00050          | < 0.005            | < 0.005            | <0.005             |
| Copper                 | mg/L     | 1         | 0.0013            | 0.003             | 0.0034            | 0.0016            | 0.0015            | 0.0018            | 0.0011            | 0.0015            | 0.0014             | < 0.0010           | 0.0004             | 0.0006             | 0.0007             |
| Lead                   | mg/L     | 0.01      | < 0.00002         | 0.00006           | 0.00006           | < 0.00002         | 0.00008           | 0.00002           | < 0.00002         | <0.00002          | < 0.00050          | < 0.00050          | < 0.00002          | 0.00007            | 0.00006            |
| Mercury                | mg/L     | 0.001     | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | <0.00002          | < 0.00001          | < 0.00001          | < 0.00002          | < 0.00002          | <0.00002           |
| Molybdenum             | mg/L     | -         | 0.0003            | 0.0002            | 0.0002            | 0.0002            | 0.0002            | 0.0002            | 0.0001            | 0.0002            | < 0.00050          | < 0.00050          | < 0.0001           | < 0.0001           | <0.0001            |
| Nickel                 | mg/L     | -         | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | <0.0002           | < 0.0010           | < 0.0010           | < 0.01             | < 0.01             | <0.01              |
| Selenium               | mg/L     | 0.01      | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | <0.001            | < 0.0020           | < 0.0020           | < 0.001            | < 0.001            | <0.001             |
| Silver                 | mg/L     | -         | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | <0.0001           | < 0.00010          | < 0.00010          | < 0.00002          | < 0.00002          | <0.00002           |
| Strontium              | mg/L     | -         | 0.126             | 0.148             | 0.14              | 0.155             | 0.139             | 0.164             | 0.141             | 0.137             | 0.94               | 0.97               | --                 | --                 | --                 |
| Thallium               | mg/L     | -         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.005           | < 0.005           | < 0.00005         | <0.00005          | < 0.000050         | < 0.000050         | < 0.00005          | < 0.00005          | <0.00005           |
| Vanadium               | mg/L     | -         | 0.0002            | 0.0003            | 0.0003            | 0.0003            | 0.0003            | 0.0004            | 0.0003            | 0.0003            | < 0.00050          | 0.00064            | 0.0035             | 0.0111             | 0.0027             |
| Zinc                   | mg/L     | 5         | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | <0.005            | 0.0087             | < 0.0050           | < 0.005            | < 0.005            | <0.005             |

ODWQS - Ontario Drinking Water Quality  
Standards  
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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW15A     | MW15A     | MW15A     | MW15A     | MW15A     | MW15A      | MW15A      | MW15A      | MW15A      | MW15A      | MW15A      | MW15A      | MW15A      |
|------------------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|
|                        |          |           | 15-Oct-14 | 15-Apr-15 | 07-Oct-15 | 28-Apr-16 | 03-Oct-16 | 17-Apr-17  | 23-Oct-17  | 25-Apr-18  | 15-Oct-18  | 11-Apr-19  | 21-Oct-19  | 22-Apr-20  | 19-Oct-20  |
| Total Alkalinity       | mg/L     | 500       | 398       | 403       | 414       | 400       | 397       | 403        | 395        | 394        | 388        | 365        | 375        | 369        | 362        |
| Calcium                | mg/L     | -         | 154       | 155       | 159       | 150       | 160       | 156        | 163        | 157        | 152        | 158        | 163        | 155        | 160        |
| Chloride               | mg/L     | 250       | 70.6      | 70        | 67.7      | 68.1      | 66.7      | 67.5       | 55.7       | 59.3       | 71         | 72.6       | 69         | 77.5       | 71.7       |
| COD                    | mg/L     | -         | 13        | 22        | 71        | 31        | 21        | 24         | 44         | 22         | 20         | 20         | 79         | 26         | 17         |
| Specific Conductivity  | umhos/cm | -         | 948       | 952       | 895       | 940       | 956       | 958        | 937        | 900        | 925        | 956        | 959        | 955        | 940        |
| DOC                    | mg/L     | 5         | 11.2      | 4.6       | 5.8       | 6.7       | 8.4       | 8.1        | 9.2        | 8.3        | 8.6        | 8.4        | 8.5        | 8          | 6          |
| Fluoride               | mg/L     | 1.5       | 0.2       | < 0.1     | 0.1       | < 0.1     | < 0.1     | 0.3        | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | 5.61      | 5.56      | 5.79      | 5.27      | 5.52      | 5.55       | 5.52       | 5.25       | 5.37       | 5.46       | 6.2        | 5.25       | 6.07       |
| Magnesium              | mg/L     | -         | 16.7      | 16.1      | 17        | 16.8      | 17.5      | 16.8       | 17.7       | 17         | 15.6       | 16.6       | 16.8       | 17.9       | 16.8       |
| Manganese              | mg/L     | 0.05      | 0.128     | 0.131     | 0.131     | 0.13      | 0.137     | 0.129      | 0.133      | 0.14       | 0.136      | 0.133      | 0.139      | 0.127      | 0.136      |
| Nitrate                | mg/L     | 10        | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | 0.2        | < 0.05     | < 0.05     | < 0.05     | < 0.05     | 0.06       | 0.08       | < 0.05     |
| Nitrite                | mg/L     | 1         | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | 0.3        | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.6       | 7.58      | 7.66      | 7.64      | 7.65      | 7.84       | 7.48       | 7.75       | 7.7        | 7.82       | 7.69       | 7.64       | 7.46       |
| Phenols                | mg/L     | -         | < 0.001   | < 0.001   | < 0.001   | 0.004     | 0.007     | < 0.001    | 0.003      | < 0.001    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.001    |
| Phosphorus             | mg/L     | -         | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 3         | 2.8       | 2.9       | 2.9       | 2.9       | 3          | 3.1        | 3.3        | 2.9        | 3.3        | 3.5        | 3.3        | 3.3        |
| Sodium                 | mg/L     | 200       | 29.8      | 29.8      | 31.2      | 28.7      | 32.6      | 29.2       | 30.8       | 31.5       | 28.2       | 30         | 31.1       | 30.8       | 30         |
| Sulphate               | mg/L     | 500       | 7         | 7         | 8         | 6         | 7         | 7          | 6          | 5          | 7          | 7          | 7          | 7          | 7          |
| Dissolved Solids       | mg/L     | 500       | 527       | 529       | 540       | 519       | 531       | 529        | 520        | 516        | 515        | 513        | 523        | 513        | 513        |
| Tot Kjel N             | mg/L     | -         | 0.8       | 0.8       | 1.4       | 0.9       | 3.5       | 0.8        | 1          | 0.8        | 0.9        | 0.9        | 1.3        | 0.8        | 1          |
| Ammonia (NH3-N)        | mg/L     | -         | 0.46      | 0.29      | 0.55      | 0.46      | 0.51      | 0.49       | 0.63       | 0.49       | 0.5        | 0.43       | 0.61       | 0.5        | 0.59       |
| Ammonia - Unionized    | mg/L     | -         |           |           |           |           |           |            |            |            |            |            |            |            |            |
| Hardness (CaCO3)       | mg/L     | 100       | 454       | 455       | 467       | 445       | 471       | 459        | 480        | 462        | 444        | 463        | 477        | 461        | 470        |
| BOD                    | mg/L     | -         | --        | --        | --        | --        | --        | --         | --         |            |            |            |            |            |            |
| Cyanide (free)         | mg/L     | -         | --        | --        | --        | --        | --        | --         | --         |            |            |            |            |            |            |
| Total Suspended Solids | mg/L     | -         | --        | --        | --        | --        | --        | --         | --         |            |            |            |            |            |            |
| Aluminum               | mg/L     | 0.1       | 0.03      | 0.04      | 0.04      | 0.04      | 0.05      | 0.09       | 0.09       | 0.08       | 0.08       | 0.08       | 0.09       | 0.09       | 0.05       |
| Antimony               | mg/L     | 0.006     | <0.0001   | < 0.0001  | < 0.0001  | < 0.0001  | 0.0002    | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | 0.0003    | 0.0002    | 0.0003    | 0.0003    | < 0.0001  | 0.0003     | 0.0002     | < 0.0001   | < 0.0001   | < 0.0001   | 0.0001     | < 0.0001   | < 0.0001   |
| Barium                 | mg/L     | 1         | 0.292     | 0.293     | 0.296     | 0.269     | 0.311     | 0.305      | 0.332      | 0.316      | 0.313      | 0.319      | 0.352      | 0.32       | 0.329      |
| Beryllium              | mg/L     | -         | <0.002    | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | 0.077     | 0.074     | 0.074     | 0.046     | 0.076     | 0.084      | 0.084      | 0.075      | 0.069      | 0.078      | 0.083      | 0.082      | 0.083      |
| Cadmium                | mg/L     | 0.005     | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.000020 | < 0.000014 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | 0.0093    | 0.0012    | 0.004     | < 0.0002  | < 0.0002  | 0.002      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | 0.001      | < 0.001    |
| Chromium (VI)          | mg/L     | -         |           |           |           |           |           |            |            |            |            |            |            |            |            |
| Cobalt                 | mg/L     | -         | <0.005    | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0006    | 0.0009    | 0.0002    | 0.0006    | 0.0003    | 0.0006     | 0.0001     | 0.0001     | 0.0003     | 0.0004     | 0.0006     | < 0.0001   | 0.0016     |
| Lead                   | mg/L     | 0.01      | <0.00002  | 0.00002   | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | 0.0001     | 0.00002    | 0.00008    |
| Mercury                | mg/L     | 0.001     | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | <0.0001   | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001  | 0.0012     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Nickel                 | mg/L     | -         | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Selenium               | mg/L     | 0.01      | 0.002     | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.002      | < 0.001    | 0.002      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Silver                 | mg/L     | -         | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Strontium              | mg/L     | -         | 1.08      | 1.05      | 1.07      | 1.02      | 1.03      | 0.94       | 1.02       | 0.997      | 0.956      | 1.04       | 1.05       | 1.01       | 1.01       |
| Thallium               | mg/L     | -         | <0.00005  | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | 0.011     | 0.0032    | 0.0018    | 0.0014    | 0.0017    | 0.0026     | 0.0009     | 0.0004     | 0.0005     | 0.0005     | 0.0006     | 0.0005     | 0.0006     |
| Zinc                   | mg/L     | 5         | <0.005    | < 0.005   | < 0.005   | 0.005     | < 0.005   | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW15A<br>19-Apr-21 | MW15A<br>27-Oct-21 | MW15A<br>20-Apr-22 | MW15A<br>26-Oct-22 | MW15A<br>19-Apr-23 | MW15A<br>11-Oct-23 | MW15B<br>23-May-12 | MW15B<br>01-Oct-12 | MW15B<br>23-May-13 | MW15B<br>01-Oct-13 | MW15B<br>23-Apr-14 | MW15B<br>15-Oct-14 | MW15B<br>15-Apr-15 |
|------------------------|----------|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Total Alkalinity       | mg/L     | 500       | 355                | 405                | 382                | 402                | 412                | 444                | 390                | 400                | 383                | 385                | 385                | 385                | 389                |
| Calcium                | mg/L     | -         | 159                | 154                | 155                | 145                | 157                | 129                | 130                | 120                | 135                | 132                | 137                | 133                | 136                |
| Chloride               | mg/L     | 250       | 69.4               | 67.5               | 67.1               | 65.2               | 64.1               | 70.4               | 67                 | 69                 | 69.7               | 69.3               | 69                 | 73.2               | 71.8               |
| COD                    | mg/L     | -         | 24                 | 15                 | 31                 | 20                 | 22                 | 28                 | 27                 | 17                 | 16                 | 20                 | 22                 | 15                 | 16                 |
| Specific Conductivity  | umhos/cm | -         | 931                | 918                | 952                | 979                | 953                | 999                | 910                | 920                | 936                | 917                | 903                | 918                | 912                |
| DOC                    | mg/L     | 5         | 8.2                | 7.9                | 6.1                | 5.1                | 7.3                | 4.8                | 5.4                | 6.7                | 10.8               | 9.6                | 8.4                | 10.6               | 7.4                |
| Fluoride               | mg/L     | 1.5       | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | <0.1               | < 0.10             | 0.11               | 0.2                | 0.2                | 0.2                | 0.2                | 0.2                |
| Iron                   | mg/L     | 0.3       | 5.84               | 5.71               | 5.56               | 5.54               | 5.97               | 4.65               | 1.3                | 1.3                | 1.5                | 0.995              | 1.62               | 1.25               | 1.27               |
| Magnesium              | mg/L     | -         | 16.8               | 16.4               | 16.5               | 17                 | 16.9               | 15.4               | 26                 | 25                 | 25.1               | 25.5               | 22.7               | 26.4               | 24.8               |
| Manganese              | mg/L     | 0.05      | 0.133              | 0.15               | 0.142              | 0.128              | 0.145              | 0.135              | 0.037              | 0.041              | 0.046              | 0.038              | 0.051              | 0.04               | 0.043              |
| Nitrate                | mg/L     | 10        | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | <0.05              | < 0.10             | < 0.10             | < 0.1              | 0.2                | <0.1               | <0.1               | < 0.1              |
| Nitrite                | mg/L     | 1         | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | <0.05              | < 0.010            | < 0.010            | < 0.1              | < 0.1              | <0.1               | <0.1               | < 0.1              |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.68               | 7.81               | 7.6                | 7.51               | 7.71               | 7.31               | 7.91               | 7.54               | 7.55               | 7.6                | 7.73               | 7.53               | 7.58               |
| Phenols                | mg/L     | -         | < 0.001            | < 0.002            | < 0.001            | < 0.001            | < 0.001            | <0.001             | < 0.0010           | < 0.0010           | < 0.001            | 0.002              | < 0.001            | < 0.001            | < 0.001            |
| Phosphorus             | mg/L     | -         | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | <0.1               | < 0.10             | < 0.10             | 0.02               | < 0.1              | <0.1               | <0.1               | < 0.1              |
| Potassium              | mg/L     | -         | 3.5                | 3.5                | 3.4                | 3.6                | 3.6                | 3.1                | 4                  | 4                  | 3.8                | 4                  | 3.7                | 4.4                | 3.9                |
| Sodium                 | mg/L     | 200       | 32.2               | 32.3               | 30.4               | 30.9               | 30                 | 28.2               | 23                 | 26                 | 24                 | 24.4               | 22.8               | 26.3               | 24.5               |
| Sulphate               | mg/L     | 500       | 7                  | 6                  | 5                  | 3                  | 2                  | 1                  | < 1                | < 1                | 2                  | 1                  | 4                  | <1                 | 3                  |
| Dissolved Solids       | mg/L     | 500       | 502                | 529                | 507                | 512                | 529                | 533                | 488                | 506                | 492                | 489                | 492                | 497                | 499                |
| Tot Kjeh N             | mg/L     | -         | 0.8                | 0.9                | 0.9                | 1.1                | 1.7                | 1                  | 0.6                | 1.1                | 0.69               | 0.79               | 0.9                | 0.6                | 0.8                |
| Ammonia (NH3-N)        | mg/L     | -         | 0.59               | 0.62               | 0.59               | 0.65               | 1.36               | 0.64               | 0.33               | 0.47               | 0.36               | 0.4                | 0.4                | 0.44               | 0.36               |
| Ammonia - Unionized    | mg/L     | -         |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| Hardness (CaCO3)       | mg/L     | 100       | 467                | 452                | 455                | 433                | 461                | 386                | 440                | 420                | 440                | 434                | 435                | 441                | 441                |
| BOD                    | mg/L     | -         |                    |                    |                    |                    |                    |                    | --                 | --                 | --                 | --                 | --                 | --                 | --                 |
| Cyanide (free)         | mg/L     | -         |                    |                    |                    |                    |                    |                    | --                 | --                 | --                 | --                 | --                 | --                 | --                 |
| Total Suspended Solids | mg/L     | -         |                    |                    |                    |                    |                    |                    | --                 | --                 | --                 | --                 | --                 | --                 | --                 |
| Aluminum               | mg/L     | 0.1       | 0.09               | 0.09               | 0.08               | 0.04               | 0.05               | 0.09               | < 0.0050           | < 0.0050           | 0.04               | 0.04               | 0.03               | 0.03               | 0.03               |
| Antimony               | mg/L     | 0.006     | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | 0.0001             | < 0.00050          | < 0.00050          | < 0.0001           | < 0.0001           | <0.0001            | <0.0001            | 0.0002             |
| Arsenic                | mg/L     | 0.025     | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | <0.0001            | < 0.0010           | < 0.0010           | 0.0003             | 0.0004             | 0.0003             | 0.0004             | 0.0002             |
| Barium                 | mg/L     | 1         | 0.333              | 0.327              | 0.32               | 0.304              | 0.336              | 0.292              | 0.13               | 0.14               | 0.142              | 0.138              | 0.135              | 0.142              | 0.134              |
| Beryllium              | mg/L     | -         | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | <0.0001            | < 0.00050          | < 0.00050          | < 0.002            | < 0.002            | <0.002             | <0.002             | < 0.002            |
| Boron                  | mg/L     | 5         | 0.08               | 0.079              | 0.072              | 0.08               | 0.077              | 0.076              | 0.11               | 0.11               | 0.098              | 0.088              | 0.09               | 0.116              | 0.104              |
| Cadmium                | mg/L     | 0.005     | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000010         | 0.000010           | <0.000015          | < 0.00010          | < 0.00010          | < 0.00002          | < 0.00002          | <0.00002           | <0.00002           | 0.00005            |
| Chromium (total)       | mg/L     | 0.05      | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | <0.001             | < 0.0050           | < 0.0050           | < 0.0002           | 0.0348             | 0.0003             | 0.0064             | 0.001              |
| Chromium (VI)          | mg/L     | -         |                    |                    | < 0.001            | < 0.001            | < 0.001            | <0.01              |                    |                    |                    |                    |                    |                    |                    |
| Cobalt                 | mg/L     | -         | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | 0.0005             | < 0.00050          | < 0.00050          | < 0.005            | < 0.005            | <0.005             | <0.005             | < 0.005            |
| Copper                 | mg/L     | 1         | 0.0015             | 0.0006             | 0.0003             | 0.0004             | 0.0004             | 0.0006             | 0.0011             | < 0.0010           | 0.0003             | 0.0004             | 0.0005             | 0.0005             | 0.0011             |
| Lead                   | mg/L     | 0.01      | 0.00006            | 0.00003            | < 0.00002          | 0.00003            | < 0.00002          | <0.00004           | < 0.00050          | 0.0011             | 0.00004            | 0.00007            | 0.00003            | <0.00002           | < 0.00002          |
| Mercury                | mg/L     | 0.001     | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | <0.00002           | < 0.00001          | < 0.00001          | < 0.00002          | < 0.00002          | <0.00002           | <0.00002           | < 0.00002          |
| Molybdenum             | mg/L     | -         | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | <0.0001            | < 0.00050          | < 0.00050          | < 0.0001           | < 0.0001           | <0.0001            | <0.0001            | < 0.0001           |
| Nickel                 | mg/L     | -         | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | 0.0009             | < 0.0010           | < 0.0010           | < 0.01             | < 0.01             | <0.01              | <0.01              | < 0.01             |
| Selenium               | mg/L     | 0.01      | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | <0.001             | < 0.0020           | < 0.0020           | < 0.001            | < 0.001            | <0.001             | 0.002              | < 0.001            |
| Silver                 | mg/L     | -         | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | <0.0001            | < 0.00010          | < 0.00010          | < 0.00002          | < 0.00002          | <0.00002           | <0.00002           | < 0.00002          |
| Strontium              | mg/L     | -         | 1.03               | 1.02               | 0.976              | 0.995              | 1.02               | 0.915              | 1.2                | 1.3                | --                 | --                 | --                 | 1.46               | 1.33               |
| Thallium               | mg/L     | -         | < 0.00005          | < 0.00005          | < 0.005            | < 0.005            | < 0.00005          | <0.00005           | < 0.000050         | < 0.000050         | < 0.00005          | < 0.00005          | <0.00005           | <0.00005           | < 0.00005          |
| Vanadium               | mg/L     | -         | 0.0006             | 0.0005             | 0.0005             | 0.0005             | 0.0005             | 0.0005             | < 0.00050          | < 0.00050          | 0.0028             | 0.0097             | 0.0025             | 0.0087             | 0.0029             |
| Zinc                   | mg/L     | 5         | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | <0.005             | < 0.0050           | < 0.0050           | < 0.005            | < 0.005            | <0.005             | <0.005             | < 0.005            |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW15B<br>07-Oct-15 | MW15B<br>28-Apr-16 | MW15B<br>03-Oct-16 | MW15B<br>17-Apr-17 | MW15B<br>23-Oct-17 | MW15B<br>25-Apr-18 | MW15B<br>15-Oct-18 | MW15B<br>11-Apr-19 | MW15B<br>21-Oct-19 | MW15B<br>22-Apr-20 | MW15B<br>19-Oct-20 | MW15B<br>19-Apr-21 | MW15B<br>27-Oct-21 |
|------------------------|----------|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Total Alkalinity       | mg/L     | 500       | 394                | 388                | 381                | 388                | 381                | 407                | 378                | 355                | 367                | 357                | 352                | 348                | 391                |
| Calcium                | mg/L     | -         | 136                | 137                | 135                | 140                | 142                | 143                | 128                | 144                | 141                | 142                | 140                | 147                | 140                |
| Chloride               | mg/L     | 250       | 70.2               | 69.5               | 69.1               | 68.3               | 57.5               | 59.6               | 71                 | 73.1               | 67.9               | 80                 | 73.6               | 71.4               | 71.2               |
| COD                    | mg/L     | -         | 15                 | 20                 | 16                 | 21                 | 35                 | 21                 | 18                 | 20                 | 18                 | 22                 | 19                 | 18                 | 12                 |
| Specific Conductivity  | umhos/cm | -         | 865                | 921                | 920                | 935                | 910                | 895                | 884                | 932                | 927                | 934                | 917                | 919                | 897                |
| DOC                    | mg/L     | 5         | 5.2                | 6.2                | 7.7                | 8.4                | 7.6                | 8.1                | 7.8                | 6.9                | 8.3                | 7.2                | 5.4                | 7.8                | 7.2                |
| Fluoride               | mg/L     | 1.5       | 0.1                | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              |
| Iron                   | mg/L     | 0.3       | 1.2                | 1.58               | 1.09               | 1.63               | 1.32               | 0.803              | 1.24               | 1.53               | 1.54               | 1.57               | 1.79               | 1.66               | 1.4                |
| Magnesium              | mg/L     | -         | 26.7               | 23.6               | 27                 | 23.8               | 27.1               | 24                 | 24.5               | 24.2               | 26.8               | 24.8               | 26.8               | 24.9               | 25.5               |
| Manganese              | mg/L     | 0.05      | 0.039              | 0.051              | 0.043              | 0.052              | 0.045              | 0.059              | 0.04               | 0.048              | 0.046              | 0.052              | 0.049              | 0.054              | 0.048              |
| Nitrate                | mg/L     | 10        | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.05             | < 0.05             | < 0.05             | < 0.05             | 0.07               | 0.05               | < 0.05             | < 0.05             | 0.06               |
| Nitrite                | mg/L     | 1         | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.71               | 7.71               | 7.64               | 7.83               | 7.56               | 7.82               | 7.76               | 7.89               | 7.76               | 7.67               | 7.55               | 7.64               | 7.84               |
| Phenols                | mg/L     | -         | < 0.001            | 0.005              | 0.007              | < 0.001            | 0.005              | < 0.001            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.001            | 0.001              | < 0.002            |
| Phosphorus             | mg/L     | -         | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.01             | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              |
| Potassium              | mg/L     | -         | 4.1                | 3.6                | 4                  | 3.8                | 4.1                | 4                  | 3.8                | 4                  | 4.6                | 3.8                | 4.2                | 4.1                | 4.2                |
| Sodium                 | mg/L     | 200       | 26.2               | 24.1               | 27.9               | 24.8               | 26.1               | 27.2               | 25.4               | 25.5               | 28.9               | 26.5               | 26.5               | 27                 | 27.2               |
| Sulphate               | mg/L     | 500       | 1                  | 4                  | < 1                | 5                  | 3                  | 4                  | < 1                | 4                  | 1                  | 5                  | < 1                | 4                  | 3                  |
| Dissolved Solids       | mg/L     | 500       | 503                | 497                | 494                | 500                | 490                | 507                | 481                | 490                | 493                | 497                | 484                | 488                | 508                |
| Tot Kjel N             | mg/L     | -         | 0.7                | 0.7                | 0.7                | 0.6                | 0.7                | 0.7                | 0.7                | 0.7                | 0.7                | 0.6                | 0.7                | 0.6                | 0.7                |
| Ammonia (NH3-N)        | mg/L     | -         | 0.42               | 0.4                | 0.44               | 0.41               | 0.38               | 0.39               | 0.4                | 0.3                | 0.45               | 0.37               | 0.48               | 0.41               | 0.4                |
| Ammonia - Unionized    | mg/L     | -         |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| Hardness (CaCO3)       | mg/L     | 100       | 449                | 440                | 450                | 448                | 466                | 456                | 421                | 459                | 463                | 457                | 460                | 470                | 455                |
| BOD                    | mg/L     | -         | --                 | --                 | --                 | --                 | --                 |                    |                    |                    |                    |                    |                    |                    |                    |
| Cyanide (free)         | mg/L     | -         | --                 | --                 | --                 | --                 | --                 |                    |                    |                    |                    |                    |                    |                    |                    |
| Total Suspended Solids | mg/L     | -         | --                 | --                 | --                 | --                 | --                 |                    |                    |                    |                    |                    |                    |                    |                    |
| Aluminum               | mg/L     | 0.1       | 0.04               | 0.04               | 0.05               | 0.08               | 0.07               | 0.08               | 0.07               | 0.07               | 0.09               | 0.08               | 0.04               | 0.08               | 0.08               |
| Antimony               | mg/L     | 0.006     | < 0.0001           | < 0.0001           | 0.0001             | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           |
| Arsenic                | mg/L     | 0.025     | 0.0002             | 0.0003             | < 0.0001           | 0.0003             | 0.0003             | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           |
| Barium                 | mg/L     | 1         | 0.133              | 0.131              | 0.145              | 0.155              | 0.153              | 0.152              | 0.145              | 0.153              | 0.172              | 0.156              | 0.157              | 0.159              | 0.15               |
| Beryllium              | mg/L     | -         | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            |
| Boron                  | mg/L     | 5         | 0.11               | 0.068              | 0.113              | 0.097              | 0.118              | 0.093              | 0.103              | 0.099              | 0.123              | 0.099              | 0.119              | 0.102              | 0.107              |
| Cadmium                | mg/L     | 0.005     | < 0.00002          | < 0.00002          | < 0.00002          | < 0.000020         | < 0.000014         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         |
| Chromium (total)       | mg/L     | 0.05      | 0.0029             | < 0.0002           | < 0.0002           | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | 0.001              | < 0.001            | < 0.001            | < 0.001            |
| Chromium (VI)          | mg/L     | -         |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| Cobalt                 | mg/L     | -         | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | 0.008              | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            |
| Copper                 | mg/L     | 1         | 0.0002             | 0.0005             | 0.0002             | < 0.0001           | 0.0001             | 0.0004             | 0.0002             | 0.0002             | 0.0006             | < 0.0001           | 0.001              | 0.0013             | 0.0005             |
| Lead                   | mg/L     | 0.01      | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | 0.00007            | < 0.00002          | 0.00005            | 0.00006            | < 0.00002          |
| Mercury                | mg/L     | 0.001     | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          |
| Molybdenum             | mg/L     | -         | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           |
| Nickel                 | mg/L     | -         | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             |
| Selenium               | mg/L     | 0.01      | < 0.001            | < 0.001            | < 0.001            | 0.002              | < 0.001            | 0.003              | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            |
| Silver                 | mg/L     | -         | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           |
| Strontium              | mg/L     | -         | 1.42               | 1.24               | 1.35               | 1.16               | 1.3                | 1.21               | 1.3                | 1.29               | 1.49               | 1.24               | 1.4                | 1.31               | 1.33               |
| Thallium               | mg/L     | -         | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          |
| Vanadium               | mg/L     | -         | 0.001              | 0.001              | 0.0016             | 0.0019             | 0.0005             | 0.0001             | 0.0002             | 0.0002             | 0.0002             | 0.0002             | 0.0002             | 0.0002             | 0.0002             |
| Zinc                   | mg/L     | 5         | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW15B<br>20-Apr-22 | MW15B<br>26-Oct-22 | MW15B<br>19-Apr-23 | MW15B<br>11-Oct-23 | MW16<br>23-May-12 | MW16<br>01-Oct-12 | MW16<br>22-May-13 | MW16<br>01-Oct-13 | MW16<br>23-Apr-14 | MW16<br>15-Oct-14 | MW16<br>15-Apr-15 | MW16<br>07-Oct-15 | MW16<br>28-Apr-16 |
|------------------------|----------|-----------|--------------------|--------------------|--------------------|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L     | 500       | 367                | 375                | 394                | 405                | 250               | 240               | 241               | 234               | 235               | 225               | 224               | 243               | 240               |
| Calcium                | mg/L     | -         | 143                | 134                | 143                | 109                | 96                | 85                | 94.7              | 96.1              | 88.1              | 87.7              | 86.7              | 95                | 90.5              |
| Chloride               | mg/L     | 250       | 68.3               | 68.5               | 63.6               | 72.3               | 4                 | 2                 | 5.7               | 5.7               | 4.4               | 4.2               | 4.6               | 3.2               | 5.6               |
| COD                    | mg/L     | -         | 23                 | 23                 | 14                 | 19                 | 8                 | 6.8               | < 5               | 5                 | 6                 | 9                 | < 5               | 7                 | 7                 |
| Specific Conductivity  | umhos/cm | -         | 928                | 939                | 920                | 929                | 490               | 460               | 506               | 505               | 487               | 463               | 442               | 448               | 497               |
| DOC                    | mg/L     | 5         | 5.7                | 4.7                | 6.9                | 7.8                | 1.3               | 1.5               | 3.7               | 4                 | 2.7               | 3.6               | 2.5               | 2                 | 1.6               |
| Fluoride               | mg/L     | 1.5       | < 0.1              | < 0.1              | < 0.1              | <0.1               | < 0.10            | < 0.10            | 0.2               | 0.1               | 0.2               | 0.1               | < 0.1             | 0.1               | < 0.1             |
| Iron                   | mg/L     | 0.3       | 2.02               | 1.88               | 1.76               | 1.01               | < 0.10            | < 0.10            | < 0.005           | 0.05              | <0.005            | <0.005            | < 0.005           | 0.006             | < 0.005           |
| Magnesium              | mg/L     | -         | 23.9               | 27.3               | 23.4               | 23.3               | 5.8               | 5.2               | 5.65              | 5.92              | 6.54              | 5.1               | 4.97              | 5.16              | 5.56              |
| Manganese              | mg/L     | 0.05      | 0.055              | 0.078              | 0.056              | 0.044              | < 0.0020          | < 0.0020          | < 0.001           | 0.002             | <0.001            | <0.001            | < 0.001           | < 0.001           | < 0.001           |
| Nitrate                | mg/L     | 10        | < 0.05             | < 0.05             | < 0.05             | <0.05              | 0.84              | 0.53              | 1.2               | 1.3               | 1                 | 0.6               | 0.7               | 0.7               | 0.7               |
| Nitrite                | mg/L     | 1         | < 0.05             | < 0.05             | < 0.05             | <0.05              | < 0.010           | < 0.010           | < 0.1             | < 0.1             | <0.1              | <0.1              | < 0.1             | < 0.1             | < 0.1             |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.66               | 7.6                | 7.76               | 7.38               | 7.82              | 7.77              | 7.86              | 7.82              | 8.02              | 7.83              | 7.91              | 7.82              | 8.02              |
| Phenols                | mg/L     | -         | < 0.001            | < 0.001            | < 0.001            | <0.001             | < 0.0010          | < 0.0010          | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | 0.004             |
| Phosphorus             | mg/L     | -         | < 0.1              | < 0.1              | < 0.1              | <0.1               | < 0.10            | < 0.10            | 0.04              | 0.06              | <0.1              | <0.1              | < 0.1             | < 0.1             | < 0.1             |
| Potassium              | mg/L     | -         | 3.8                | 7.4                | 4                  | 3.5                | 1                 | 0.85              | 0.9               | 0.9               | 1.2               | 1                 | 0.8               | 0.8               | 1                 |
| Sodium                 | mg/L     | 200       | 26.2               | 32.9               | 26                 | 23.4               | 4.5               | 3.9               | 5.2               | 5.4               | 5                 | 4                 | 3.6               | 4.2               | 4.3               |
| Sulphate               | mg/L     | 500       | 4                  | 1                  | 2                  | <1                 | 8                 | 7                 | 15                | 15                | 17                | 11                | 11                | 9                 | 13                |
| Dissolved Solids       | mg/L     | 500       | 490                | 499                | 500                | 493                | 270               | 260               | 277               | 275               | 268               | 251               | 250               | 267               | 268               |
| Tot Kjel N             | mg/L     | -         | 4.1                | 0.8                | 0.7                | 0.7                | < 0.10            | < 2.0             | 0.2               | 0.13              | <0.1              | 1.1               | 0.4               | 0.3               | 0.2               |
| Ammonia (NH3-N)        | mg/L     | -         | 0.79               | 0.5                | 0.5                | 0.42               | < 0.050           | 0.12              | < 0.005           | < 0.01            | <0.01             | 0.09              | 0.03              | 0.03              | 0.02              |
| Ammonia - Unionized    | mg/L     | -         |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | 456                | 447                | 452                | 368                | 260               | 230               | 260               | 265               | 247               | 240               | 237               | 259               | 249               |
| BOD                    | mg/L     | -         |                    |                    |                    |                    | --                | --                | --                | --                | --                | --                | --                | --                | --                |
| Cyanide (free)         | mg/L     | -         |                    |                    |                    |                    | --                | --                | --                | --                | --                | --                | --                | --                | --                |
| Total Suspended Solids | mg/L     | -         |                    |                    |                    |                    | --                | --                | --                | --                | --                | --                | --                | --                | --                |
| Aluminum               | mg/L     | 0.1       | 0.08               | 0.03               | 0.04               | 0.08               | < 0.0050          | < 0.0050          | 0.03              | 0.03              | 0.03              | 0.02              | 0.02              | 0.03              | 0.03              |
| Antimony               | mg/L     | 0.006     | < 0.0001           | < 0.0001           | < 0.0001           | 0.0001             | < 0.00050         | < 0.00050         | < 0.0001          | < 0.0001          | <0.0001           | <0.0001           | 0.0002            | < 0.0001          | < 0.0001          |
| Arsenic                | mg/L     | 0.025     | < 0.0001           | < 0.0001           | < 0.0001           | <0.0001            | < 0.0010          | < 0.0010          | 0.0001            | 0.0002            | <0.0001           | 0.0001            | < 0.0001          | < 0.0001          | < 0.0001          |
| Barium                 | mg/L     | 1         | 0.153              | 0.141              | 0.158              | 0.124              | 0.054             | 0.048             | 0.058             | 0.058             | 0.057             | 0.052             | 0.052             | 0.05              | 0.054             |
| Beryllium              | mg/L     | -         | < 0.002            | < 0.002            | < 0.002            | <0.0001            | < 0.00050         | < 0.00050         | < 0.002           | < 0.002           | <0.002            | <0.002            | < 0.002           | < 0.002           | < 0.002           |
| Boron                  | mg/L     | 5         | 0.094              | 0.148              | 0.097              | 0.107              | 0.012             | 0.013             | < 0.005           | < 0.005           | 0.069             | 0.012             | 0.013             | 0.014             | < 0.005           |
| Cadmium                | mg/L     | 0.005     | < 0.000015         | < 0.000010         | 0.000010           | <0.000015          | < 0.00010         | < 0.00010         | < 0.00002         | < 0.00002         | <0.00002          | <0.00002          | < 0.00002         | < 0.00002         | < 0.00002         |
| Chromium (total)       | mg/L     | 0.05      | < 0.001            | < 0.001            | < 0.001            | <0.001             | < 0.0050          | < 0.0050          | < 0.0002          | 0.0239            | 0.0003            | 0.0043            | 0.0013            | 0.0021            | < 0.0002          |
| Chromium (VI)          | mg/L     | -         | < 0.001            | < 0.001            | < 0.001            | <0.1               |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cobalt                 | mg/L     | -         | < 0.005            | < 0.005            | < 0.005            | 0.0004             | < 0.00050         | < 0.00050         | < 0.005           | < 0.005           | <0.005            | <0.005            | < 0.005           | < 0.005           | < 0.005           |
| Copper                 | mg/L     | 1         | 0.0002             | 0.0008             | 0.0001             | 0.0005             | 0.0017            | 0.0013            | 0.001             | 0.0013            | 0.0015            | 0.0019            | 0.0013            | 0.0017            | 0.0013            |
| Lead                   | mg/L     | 0.01      | 0.00003            | < 0.00002          | < 0.00002          | <0.00002           | < 0.00050         | 0.0013            | < 0.00002         | 0.00008           | 0.00006           | <0.00002          | < 0.00002         | < 0.00002         | 0.00006           |
| Mercury                | mg/L     | 0.001     | < 0.00002          | < 0.00002          | < 0.00002          | <0.00002           | < 0.00001         | < 0.00001         | < 0.00002         | < 0.00002         | <0.00002          | <0.00002          | < 0.00002         | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L     | -         | < 0.0001           | < 0.0001           | < 0.0001           | <0.0001            | < 0.00050         | < 0.00050         | < 0.0001          | 0.0003            | 0.0005            | <0.0001           | < 0.0001          | < 0.0001          | 0.0001            |
| Nickel                 | mg/L     | -         | < 0.01             | < 0.01             | < 0.01             | 0.0006             | < 0.0010          | < 0.0010          | < 0.01            | < 0.01            | <0.01             | <0.01             | < 0.01            | < 0.01            | < 0.01            |
| Selenium               | mg/L     | 0.01      | < 0.001            | < 0.001            | < 0.001            | <0.001             | < 0.0020          | < 0.0020          | < 0.001           | < 0.001           | <0.001            | <0.001            | < 0.001           | < 0.001           | < 0.001           |
| Silver                 | mg/L     | -         | < 0.0001           | < 0.0001           | < 0.0001           | <0.0001            | < 0.00010         | < 0.00010         | < 0.00002         | < 0.00002         | <0.00002          | <0.00002          | 0.00005           | < 0.00002         | < 0.00002         |
| Strontium              | mg/L     | -         | 1.24               | 1.32               | 1.24               | 1.21               | 0.17              | 0.16              | --                | --                | --                | 0.165             | 0.165             | 0.182             | 0.172             |
| Thallium               | mg/L     | -         | < 0.005            | < 0.005            | < 0.00005          | <0.00005           | < 0.000050        | < 0.000050        | < 0.00005         | < 0.00005         | <0.00005          | <0.00005          | < 0.00005         | < 0.00005         | < 0.00005         |
| Vanadium               | mg/L     | -         | 0.0002             | 0.0002             | 0.0002             | 0.0002             | < 0.00050         | < 0.00050         | 0.002             | 0.0065            | 0.0015            | 0.0045            | 0.0017            | 0.0007            | 0.0007            |
| Zinc                   | mg/L     | 5         | < 0.005            | < 0.005            | < 0.005            | <0.005             | < 0.0050          | 0.0065            | < 0.005           | < 0.005           | <0.005            | 0.007             | 0.017             | 0.013             | < 0.005           |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW16<br>03-Oct-16 | MW16<br>17-Apr-17 | MW16<br>23-Oct-17 | MW16<br>25-Apr-18 | MW16<br>15-Oct-18 | MW16<br>11-Apr-19 | MW16<br>22-Oct-19 | MW16<br>22-Apr-20 | MW16<br>19-Oct-20 | MW16<br>19-Apr-21 | MW16<br>27-Oct-21 | MW16<br>20-Apr-22 | MW16<br>26-Oct-22 |
|------------------------|----------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L     | 500       | 213               | 218               | 197               | 216               | 207               | 212               | Dry               | 217               | 188               | 192               | Dry               | 204               | 217               |
| Calcium                | mg/L     | -         | 88.8              | 87.1              | 79.5              | 76                | 76.3              | 87.3              |                   | 90.6              | 83.3              | 82.3              |                   | 84.5              | 79.3              |
| Chloride               | mg/L     | 250       | 2.8               | 6                 | 1.6               | 3.1               | 2.2               | 6.2               |                   | 8.1               | 2.8               | 3.4               |                   | 2.6               | 3.3               |
| COD                    | mg/L     | -         | < 5               | 6                 | 19                | 5                 | < 5               | < 5               |                   | 11                | 6                 | 6                 |                   | 9                 | 9                 |
| Specific Conductivity  | umhos/cm | -         | 435               | 444               | 384               | 415               | 415               | 456               |                   | 467               | 399               | 410               |                   | 423               | 454               |
| DOC                    | mg/L     | 5         | 3.2               | 2                 | 1.9               | 2.9               | 1.8               | 2.6               |                   | 3.2               | 1.9               | 3.2               |                   | 2.3               | 2.1               |
| Fluoride               | mg/L     | 1.5       | < 0.1             | 0.4               | < 0.1             | < 0.1             | < 0.1             | < 0.1             |                   | < 0.1             | < 0.1             | < 0.1             |                   | < 0.1             | < 0.1             |
| Iron                   | mg/L     | 0.3       | 0.006             | 0.011             | 0.006             | < 0.005           | < 0.005           | 0.005             |                   | 0.018             | < 0.005           | < 0.005           |                   | 0.005             | < 0.005           |
| Magnesium              | mg/L     | -         | 4.89              | 5.11              | 4.41              | 5.64              | 3.98              | 4.91              |                   | 5.77              | 4.42              | 4.77              |                   | 5.12              | 4.94              |
| Manganese              | mg/L     | 0.05      | < 0.001           | < 0.001           | 0.001             | < 0.001           | < 0.001           | < 0.001           |                   | < 0.001           | < 0.001           | < 0.001           |                   | < 0.001           | < 0.001           |
| Nitrate                | mg/L     | 10        | 0.5               | 0.7               | 0.38              | 0.55              | 0.33              | 0.53              |                   | 0.88              | 0.32              | 0.39              |                   | 0.4               | 0.37              |
| Nitrite                | mg/L     | 1         | < 0.1             | 0.2               | < 0.05            | < 0.05            | < 0.05            | < 0.05            |                   | < 0.05            | < 0.05            | < 0.05            |                   | < 0.05            | < 0.05            |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.94              | 8.09              | 7.93              | 8                 | 8.08              | 8.07              |                   | 7.88              | 7.84              | 7.9               |                   | 7.69              | 7.8               |
| Phenols                | mg/L     | -         | 0.007             | < 0.001           | 0.003             | < 0.001           | < 0.002           | < 0.002           |                   | < 0.002           | < 0.001           | < 0.001           |                   | < 0.001           | < 0.001           |
| Phosphorus             | mg/L     | -         | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             |                   | < 0.1             | < 0.1             | < 0.1             |                   | < 0.1             | < 0.1             |
| Potassium              | mg/L     | -         | 0.7               | 0.9               | 0.7               | 1.4               | 0.7               | 0.8               |                   | 0.9               | 0.8               | 0.9               |                   | 0.9               | 1                 |
| Sodium                 | mg/L     | 200       | 3.6               | 4.1               | 3.5               | 5.4               | 3                 | 3                 |                   | 4.8               | 2.5               | 3.3               |                   | 3.6               | 3                 |
| Sulphate               | mg/L     | 500       | 6                 | 11                | 4                 | 5                 | 4                 | 11                |                   | 10                | 5                 | 6                 |                   | 5                 | 6                 |
| Dissolved Solids       | mg/L     | 500       | 237               | 249               | 212               | 226               | 214               | 240               |                   | 250               | 211               | 216               |                   | 225               | 228               |
| Tot Kjel N             | mg/L     | -         | 0.2               | 0.2               | 0.2               | 0.2               | < 0.1             | 0.2               |                   | 0.2               | 0.2               | 0.2               |                   | 0.2               | 0.4               |
| Ammonia (NH3-N)        | mg/L     | -         | 0.04              | < 0.01            | < 0.01            | 0.02              | < 0.01            | <0.01             |                   | 0.02              | 0.02              | 0.01              |                   | 0.18              | 0.17              |
| Ammonia - Unionized    | mg/L     | -         |                   |                   |                   |                   |                   | <0.0002           |                   | 0.0002            | 0.0002            | 0.0001            |                   | 0.0015            | 0.0018            |
| Hardness (CaCO3)       | mg/L     | 100       | <b>242</b>        | <b>239</b>        | <b>217</b>        | <b>213</b>        | <b>207</b>        | <b>238</b>        |                   | <b>250</b>        | <b>226</b>        | <b>225</b>        |                   | <b>232</b>        | <b>218</b>        |
| BOD                    | mg/L     | -         | --                | --                | --                |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cyanide (free)         | mg/L     | -         | --                | --                | --                |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Total Suspended Solids | mg/L     | -         | --                | --                | --                |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Aluminum               | mg/L     | 0.1       | 0.03              | 0.05              | 0.05              | 0.06              | 0.03              | 0.05              |                   | 0.06              | 0.02              | 0.06              |                   | 0.06              | 0.02              |
| Antimony               | mg/L     | 0.006     | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          |                   | < 0.0001          | < 0.0001          | 0.0002            |                   | < 0.0001          | < 0.0001          |
| Arsenic                | mg/L     | 0.025     | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          |                   | < 0.0001          | < 0.0001          | < 0.0001          |                   | < 0.0001          | < 0.0001          |
| Barium                 | mg/L     | 1         | 0.049             | 0.056             | 0.048             | 0.054             | 0.044             | 0.054             |                   | 0.056             | 0.045             | 0.05              |                   | 0.056             | 0.047             |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           |                   | < 0.002           | < 0.002           | < 0.002           |                   | < 0.002           | < 0.002           |
| Boron                  | mg/L     | 5         | 0.008             | 0.015             | 0.009             | 0.064             | 0.006             | 0.019             |                   | 0.017             | 0.011             | 0.014             |                   | 0.015             | 0.01              |
| Cadmium                | mg/L     | 0.005     | < 0.00002         | < 0.000020        | < 0.000014        | < 0.000015        | < 0.000015        | < 0.000015        |                   | < 0.000015        | < 0.000015        | < 0.000015        |                   | < 0.000015        | < 0.000010        |
| Chromium (total)       | mg/L     | 0.05      | < 0.0002          | 0.001             | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   | 0.001             | < 0.001           | < 0.001           |                   | < 0.001           | 0.001             |
| Chromium (VI)          | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | < 0.001           | < 0.001           |
| Cobalt                 | mg/L     | -         | < 0.005           | < 0.005           | < 0.005           | < 0.005           | 0.013             | < 0.005           |                   | < 0.005           | < 0.005           | < 0.005           |                   | < 0.005           | < 0.005           |
| Copper                 | mg/L     | 1         | 0.0009            | 0.0013            | 0.0005            | 0.0022            | 0.001             | 0.0024            |                   | 0.0015            | 0.0022            | 0.0018            |                   | 0.001             | 0.0011            |
| Lead                   | mg/L     | 0.01      | 0.00003           | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |                   | < 0.00002         | 0.00006           | 0.00003           |                   | < 0.00002         | 0.00011           |
| Mercury                | mg/L     | 0.001     | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |                   | < 0.00002         | < 0.00002         | < 0.00002         |                   | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L     | -         | 0.0001            | 0.0001            | 0.0001            | 0.0004            | 0.0001            | 0.0002            |                   | 0.0001            | 0.0001            | 0.0005            |                   | 0.0017            | 0.0001            |
| Nickel                 | mg/L     | -         | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            |                   | < 0.01            | < 0.01            | < 0.01            |                   | < 0.01            | < 0.01            |
| Selenium               | mg/L     | 0.01      | < 0.001           | 0.002             | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   | < 0.001           | < 0.001           | < 0.001           |                   | < 0.001           | < 0.001           |
| Silver                 | mg/L     | -         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.0001          | < 0.0001          | < 0.0001          |                   | < 0.0001          | < 0.0001          | < 0.0001          |                   | < 0.0001          | < 0.0001          |
| Strontium              | mg/L     | -         | 0.16              | 0.147             | 0.132             | 0.14              | 0.133             | 0.157             |                   | 0.166             | 0.143             | 0.148             |                   | 0.149             | 0.148             |
| Thallium               | mg/L     | -         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         |                   | < 0.00005         | < 0.00005         | < 0.00005         |                   | < 0.005           | < 0.005           |
| Vanadium               | mg/L     | -         | 0.0009            | 0.0014            | 0.0003            | 0.0002            | 0.0002            | 0.0002            |                   | 0.0003            | 0.0003            | < 0.0001          |                   | 0.0003            | 0.0002            |
| Zinc                   | mg/L     | 5         | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |                   | < 0.005           | < 0.005           | < 0.005           |                   | < 0.005           | < 0.005           |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW16      | MW16      |
|------------------------|----------|-----------|-----------|-----------|
|                        |          |           | 19-Apr-23 | 11-Oct-23 |
| Total Alkalinity       | mg/L     | 500       | 234       | 240       |
| Calcium                | mg/L     | -         | 90.6      | 70.5      |
| Chloride               | mg/L     | 250       | 3.7       | 2.9       |
| COD                    | mg/L     | -         | 6         | <5        |
| Specific Conductivity  | umhos/cm | -         | 471       | 449       |
| DOC                    | mg/L     | 5         | 2.8       | 3.7       |
| Fluoride               | mg/L     | 1.5       | < 0.1     | <0.1      |
| Iron                   | mg/L     | 0.3       | 0.006     | 0.007     |
| Magnesium              | mg/L     | -         | 5.68      | 4.67      |
| Manganese              | mg/L     | 0.05      | < 0.001   | <0.001    |
| Nitrate                | mg/L     | 10        | 0.48      | 0.37      |
| Nitrite                | mg/L     | 1         | < 0.05    | <0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.9       | 7.29      |
| Phenols                | mg/L     | -         | < 0.001   | <0.001    |
| Phosphorus             | mg/L     | -         | < 0.1     | <0.1      |
| Potassium              | mg/L     | -         | 1.2       | 0.7       |
| Sodium                 | mg/L     | 200       | 4.7       | 3.6       |
| Sulphate               | mg/L     | 500       | 6         | 4         |
| Dissolved Solids       | mg/L     | 500       | 252       | 232       |
| Tot Kjeh N             | mg/L     | -         | 0.2       | <0.1      |
| Ammonia (NH3-N)        | mg/L     | -         | 0.08      | <0.05     |
| Ammonia - Unionized    | mg/L     | -         |           |           |
| Hardness (CaCO3)       | mg/L     | 100       | 250       | 195       |
| BOD                    | mg/L     | -         |           |           |
| Cyanide (free)         | mg/L     | -         |           |           |
| Total Suspended Solids | mg/L     | -         |           |           |
| Aluminum               | mg/L     | 0.1       | 0.02      | 0.06      |
| Antimony               | mg/L     | 0.006     | < 0.0001  | <0.0001   |
| Arsenic                | mg/L     | 0.025     | < 0.0001  | <0.0001   |
| Barium                 | mg/L     | 1         | 0.064     | 0.045     |
| Beryllium              | mg/L     | -         | < 0.002   | <0.0001   |
| Boron                  | mg/L     | 5         | 0.02      | 0.013     |
|                        |          |           | <         |           |
| Cadmium                | mg/L     | 0.005     | 0.000010  | <0.000015 |
| Chromium (total)       | mg/L     | 0.05      | < 0.001   | <0.001    |
| Chromium (VI)          | mg/L     | -         | < 0.001   | <0.01     |
| Cobalt                 | mg/L     | -         | < 0.005   | 0.0002    |
| Copper                 | mg/L     | 1         | 0.0012    | 0.001     |
| Lead                   | mg/L     | 0.01      | < 0.00002 | <0.00002  |
| Mercury                | mg/L     | 0.001     | < 0.00002 | <0.00002  |
| Molybdenum             | mg/L     | -         | 0.0002    | 0.0001    |
| Nickel                 | mg/L     | -         | < 0.01    | <0.0002   |
| Selenium               | mg/L     | 0.01      | < 0.001   | <0.001    |
| Silver                 | mg/L     | -         | < 0.0001  | <0.0001   |
| Strontium              | mg/L     | -         | 0.164     | 0.145     |
| Thallium               | mg/L     | -         | < 0.00005 | <0.00005  |
| Vanadium               | mg/L     | -         | 0.0003    | 0.0002    |
| Zinc                   | mg/L     | 5         | < 0.005   | <0.005    |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW17       | MW17       | MW17       | MW17       | MW17       | MW17       | MW17       | MW17       | MW17       | MW17       | MW17       | MW17       | MW17       |
|------------------------|----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|                        |          |           | 24-May-12  | 01-Oct-12  | 22-May-13  | 01-Oct-13  | 23-Apr-14  | 15-Oct-14  | 16-Apr-15  | 07-Oct-15  | 28-Apr-16  | 03-Oct-16  | 17-Apr-17  | 23-Oct-17  | 25-Apr-18  |
| Total Alkalinity       | mg/L     | 500       | 240        | 230        | 225        | 248        | 214        | 247        | 244        | 275        | 252        | 249        | 233        | 269        | 293        |
| Calcium                | mg/L     | -         | 110        | 93         | 92.6       | 101        | 91.4       | 104        | 103        | 116        | 103        | 127        | 101        | 108        | 108        |
| Chloride               | mg/L     | 250       | 25         | 28         | 23         | 23.5       | 16.3       | 26.6       | 29.1       | 41.3       | 35.9       | 82.3       | 50.3       | 25.3       | 26.4       |
| COD                    | mg/L     | -         | 11         | 19         | < 5        | 17         | 6          | <5         | 18         | 22         | 23         | 10         | 16         | 35         | 15         |
| Specific Conductivity  | umhos/cm | -         | 680        | 610        | 606        | 638        | 556        | 638        | 622        | 664        | 664        | 835        | 672        | 710        | 678        |
| DOC                    | mg/L     | 5         | 3.5        | 3.9        | <b>5.5</b> | <b>6.7</b> | 3.3        | <b>5.9</b> | 4.5        | <b>5.2</b> | 4.7        | <b>5.6</b> | 4.6        | 4.9        | <b>6.2</b> |
| Fluoride               | mg/L     | 1.5       | < 0.10     | < 0.10     | 0.2        | 0.1        | 0.2        | 0.2        | 0.2        | 0.1        | 0.1        | < 0.1      | 0.3        | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | < 0.10     | < 0.10     | < 0.005    | 0.005      | <0.005     | <0.005     | 0.011      | < 0.005    | < 0.005    | 0.006      | 0.011      | < 0.005    | 0.006      |
| Magnesium              | mg/L     | -         | 14         | 13         | 11.7       | 13.3       | 11.2       | 13.2       | 12.9       | 14.9       | 13.5       | 16.8       | 12.7       | 14.5       | 13.8       |
| Manganese              | mg/L     | 0.05      | < 0.0020   | < 0.0020   | < 0.001    | 0.002      | <0.001     | 0.002      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | 0.001      | < 0.001    |
| Nitrate                | mg/L     | 10        | 1.9        | 2          | 2          | 1.8        | 2.3        | 2.3        | 2.7        | 3.2        | 3.4        | 3.7        | 3.6        | 2.88       | 1.81       |
| Nitrite                | mg/L     | 1         | < 0.010    | < 0.010    | < 0.1      | < 0.1      | <0.1       | <0.1       | < 0.1      | < 0.1      | < 0.1      | < 0.1      | 0.2        | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.82       | 7.77       | 7.91       | 7.74       | 8.02       | 7.86       | 7.85       | 7.79       | 7.98       | 7.91       | 8.03       | 7.78       | 7.97       |
| Phenols                | mg/L     | -         | < 0.0010   | < 0.0010   | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | 0.002      | 0.004      | < 0.001    | 0.007      | < 0.001    |
| Phosphorus             | mg/L     | -         | < 0.10     | < 0.10     | 0.09       | 0.06       | <0.1       | <0.1       | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 3          | 2.8        | 2.7        | 2.7        | 2.7        | 2.8        | 2.5        | 2.8        | 2.9        | 3.1        | 2.8        | 2.7        | 3.4        |
| Sodium                 | mg/L     | 200       | 17         | 14         | 14.1       | 14.8       | 12         | 14         | 12.5       | 14.8       | 13.4       | 25.6       | 24.6       | 33.6       | 32.2       |
| Sulphate               | mg/L     | 500       | 76         | 38         | 46         | 38         | 37         | 30         | 31         | 26         | 25         | 32         | 21         | 38         | 27         |
| Dissolved Solids       | mg/L     | 500       | 404        | 347        | 335        | 350        | 309        | 349        | 349        | 394        | 361        | 453        | 369        | 384        | 386        |
| Tot Kjel N             | mg/L     | -         | 0.28       | 0.45       | 0.5        | 0.42       | 0.9        | 0.2        | 0.8        | 0.8        | 0.7        | 0.6        | 0.5        | 0.4        | 0.4        |
| Ammonia (NH3-N)        | mg/L     | -         | < 0.050    | 0.03       | < 0.005    | 0.2        | <0.01      | 0.04       | 0.03       | 0.01       | 0.04       | 0.05       | 0.02       | < 0.01     | 0.01       |
| Ammonia - Unionized    | mg/L     | -         |            |            |            |            |            |            |            |            |            |            |            |            |            |
| Hardness (CaCO3)       | mg/L     | 100       | <b>330</b> | <b>280</b> | <b>280</b> | <b>308</b> | <b>275</b> | <b>314</b> | <b>310</b> | <b>351</b> | <b>313</b> | <b>386</b> | <b>305</b> | <b>330</b> | <b>327</b> |
| BOD                    | mg/L     | -         | --         | --         | --         | --         | --         | --         | --         | --         | --         | --         | --         | --         |            |
| Cyanide (free)         | mg/L     | -         | --         | --         | --         | --         | --         | --         | --         | --         | --         | --         | --         | --         |            |
| Total Suspended Solids | mg/L     | -         | --         | --         | --         | --         | --         | --         | --         | --         | --         | --         | --         | --         |            |
| Aluminum               | mg/L     | 0.1       | < 0.0050   | < 0.0050   | 0.03       | 0.03       | 0.02       | 0.02       | 0.03       | 0.03       | 0.03       | 0.04       | 0.06       | 0.07       | 0.06       |
| Antimony               | mg/L     | 0.006     | 0.00058    | < 0.00050  | < 0.0001   | < 0.0001   | <0.0001    | <0.0001    | < 0.0001   | < 0.0001   | < 0.0001   | 0.0002     | < 0.0001   | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | < 0.0010   | < 0.0010   | 0.0002     | 0.0002     | 0.0001     | 0.0002     | 0.0001     | 0.0002     | 0.0002     | < 0.0001   | 0.0003     | 0.0002     | < 0.0001   |
| Barium                 | mg/L     | 1         | 0.12       | 0.11       | 0.11       | 0.118      | 0.101      | 0.113      | 0.107      | 0.123      | 0.108      | 0.146      | 0.116      | 0.131      | 0.132      |
| Beryllium              | mg/L     | -         | < 0.00050  | < 0.00050  | < 0.002    | < 0.002    | <0.002     | <0.002     | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | 0.085      | 0.066      | 0.04       | 0.047      | 0.071      | 0.079      | 0.063      | 0.073      | 0.042      | 0.087      | 0.063      | 0.099      | 0.08       |
|                        |          |           |            |            |            |            |            |            |            |            |            |            |            |            |            |
| Cadmium                | mg/L     | 0.005     | < 0.00010  | < 0.00010  | < 0.00002  | < 0.00002  | <0.00002   | <0.00002   | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.000020 | < 0.000014 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | < 0.0050   | < 0.0050   | < 0.0002   | 0.0227     | <0.0002    | 0.0035     | 0.0011     | 0.002      | < 0.0002   | < 0.0002   | < 0.001    | 0.001      | < 0.001    |
| Chromium (VI)          | mg/L     | -         |            |            |            |            |            |            |            |            |            |            |            |            |            |
| Cobalt                 | mg/L     | -         | < 0.00050  | < 0.00050  | < 0.005    | < 0.005    | <0.005     | <0.005     | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | 0.008      |
| Copper                 | mg/L     | 1         | 0.0034     | 0.002      | 0.0021     | 0.0024     | 0.0023     | 0.0022     | 0.0033     | 0.0028     | 0.0029     | 0.0023     | 0.0036     | 0.0018     | 0.0038     |
| Lead                   | mg/L     | 0.01      | < 0.00050  | < 0.00050  | < 0.00002  | 0.00004    | 0.00007    | <0.00002   | < 0.00002  | < 0.00002  | 0.00004    | < 0.00002  | < 0.00002  | < 0.00002  | 0.00003    |
| Mercury                | mg/L     | 0.001     | < 0.00001  | < 0.00001  | < 0.00002  | < 0.00002  | <0.00002   | <0.00002   | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | 0.00068    | 0.00065    | 0.0007     | 0.0006     | 0.0007     | 0.0004     | 0.0004     | 0.0007     | 0.0008     | 0.0006     | 0.0011     | 0.0007     | 0.0011     |
| Nickel                 | mg/L     | -         | < 0.0010   | < 0.0010   | < 0.01     | < 0.01     | <0.01      | <0.01      | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | < 0.0020   | < 0.0020   | < 0.001    | < 0.001    | <0.001     | 0.001      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | 0.002      | < 0.001    | 0.001      |
| Silver                 | mg/L     | -         | < 0.00010  | < 0.00010  | < 0.00002  | < 0.00002  | <0.00002   | <0.00002   | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.0001   |
| Strontium              | mg/L     | -         | 0.21       | 0.19       | --         | --         | --         | 0.228      | 0.235      | 0.26       | 0.234      | 0.281      | 0.204      | 0.227      | 0.231      |
| Thallium               | mg/L     | -         | < 0.000050 | < 0.000050 | < 0.00005  | < 0.00005  | <0.00005   | <0.00005   | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | < 0.00050  | < 0.00050  | 0.0021     | 0.0063     | 0.0012     | 0.0047     | 0.0018     | 0.0008     | 0.0006     | 0.0009     | 0.0012     | 0.0003     | 0.0002     |
| Zinc                   | mg/L     | 5         | 0.0085     | < 0.0050   | < 0.005    | < 0.005    | <0.005     | <0.005     | 0.013      | 0.019      | < 0.005    | < 0.005    | < 0.005    | < 0.005    | 0.007      |

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Ground Water Quality - General  
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| Parameters             | Units    | ODWQS     | MW17<br>15-Oct-18 | MW17<br>11-Apr-19 | MW17<br>22-Oct-19 | MW17<br>22-Apr-20 | MW17<br>19-Oct-20 | MW17<br>19-Apr-21 | MW17<br>27-Oct-21 | MW17<br>20-Apr-22 | MW17<br>26-Oct-22 | MW17<br>19-Apr-23 | MW17<br>12-Oct-23 | MW18<br>23-May-12 | MW18<br>01-Oct-12 |
|------------------------|----------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L     | 500       | 322               | 328               | Dry               | 348               | Dry               | 319               | 377               | 310               | Dry               | 318               | Dry               | 270               | 250               |
| Calcium                | mg/L     | -         | 122               | 128               |                   | 134               |                   | 136               | 146               | 124               |                   | 122               |                   | 96                | 81                |
| Chloride               | mg/L     | 250       | 46.3              | 37                |                   | 31.4              |                   | 26.6              | 31.9              | 19.2              |                   | 19.8              |                   | 10                | 4                 |
| COD                    | mg/L     | -         | 15                | 25                |                   | 18                |                   | 19                | 11                | 19                |                   | 14                |                   | 21                | 20                |
| Specific Conductivity  | umhos/cm | -         | 792               | 814               |                   | 805               |                   | 749               | 788               | 689               |                   | 704               |                   | 700               | 570               |
| DOC                    | mg/L     | 5         | 7.8               | 8.8               |                   | 7.9               |                   | 9.2               | 8.5               | 5.8               |                   | 6.5               |                   | 7.6               | 7.5               |
| Fluoride               | mg/L     | 1.5       | < 0.1             | < 0.1             |                   | < 0.1             |                   | < 0.1             | < 0.1             | < 0.1             |                   | < 0.1             |                   | < 0.10            | < 0.10            |
| Iron                   | mg/L     | 0.3       | < 0.005           | 0.017             |                   | 0.008             |                   | 0.019             | 0.023             | 0.008             |                   | < 0.005           |                   | < 0.10            | < 0.10            |
| Magnesium              | mg/L     | -         | 15.9              | 17.4              |                   | 19                |                   | 17.7              | 19.3              | 15.8              |                   | 15.5              |                   | 7.3               | 7.2               |
| Manganese              | mg/L     | 0.05      | 0.001             | 0.001             |                   | 0.003             |                   | 0.009             | 0.009             | 0.008             |                   | 0.02              |                   | < 0.0020          | 0.0022            |
| Nitrate                | mg/L     | 10        | 1.23              | 0.52              |                   | 0.44              |                   | 0.38              | 0.44              | 0.59              |                   | 0.29              |                   | 8.5               | 2.6               |
| Nitrite                | mg/L     | 1         | < 0.05            | < 0.05            |                   | < 0.05            |                   | < 0.05            | < 0.05            | < 0.05            |                   | < 0.05            |                   | < 0.010           | < 0.010           |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.84              | 7.95              |                   | 7.77              |                   | 7.73              | 7.86              | 7.69              |                   | 7.83              |                   | 7.96              | 7.56              |
| Phenols                | mg/L     | -         | < 0.002           | < 0.002           |                   | < 0.002           |                   | < 0.001           | < 0.002           | < 0.001           |                   | < 0.001           |                   | < 0.0010          | < 0.0010          |
| Phosphorus             | mg/L     | -         | < 0.1             | 0.14              |                   | < 0.1             |                   | < 0.1             | < 0.1             | < 0.1             |                   | < 0.1             |                   | < 0.10            | 0.14              |
| Potassium              | mg/L     | -         | 3                 | 3.6               |                   | 3.4               |                   | 3.5               | 3.7               | 3.5               |                   | 3.9               |                   | 51                | 40                |
| Sodium                 | mg/L     | 200       | 22.8              | 17.5              |                   | 17.3              |                   | 12.5              | 12.7              | 10.6              |                   | 10                |                   | 7.9               | 3.1               |
| Sulphate               | mg/L     | 500       | 38                | 25                |                   | 20                |                   | 17                | 20                | 20                |                   | 23                |                   | 38                | 25                |
| Dissolved Solids       | mg/L     | 500       | 441               | 425               |                   | 434               |                   | 404               | 460               | 381               |                   | 386               |                   | 411               | 334               |
| Tot Kjeh N             | mg/L     | -         | 0.4               | 0.7               |                   | 0.3               |                   | 0.4               | 0.5               | 2.5               |                   | 0.3               |                   | 1.1               | 0.84              |
| Ammonia (NH3-N)        | mg/L     | -         | < 0.01            | < 0.01            |                   | 0.02              |                   | 0.02              | 0.02              | 1.27              |                   | 0.08              |                   | < 0.050           | 0.03              |
| Ammonia - Unionized    | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | --                | --                |
| Hardness (CaCO3)       | mg/L     | 100       | 370               | 392               |                   | 413               |                   | 413               | 444               | 375               |                   | 370               |                   | 270               | 230               |
| BOD                    | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | --                | --                |
| Cyanide (free)         | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | --                | --                |
| Total Suspended Solids | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | --                | --                |
| Aluminum               | mg/L     | 0.1       | 0.07              | 0.08              |                   | 0.08              |                   | 0.08              | 0.08              | 0.06              |                   | 0.03              |                   | < 0.0050          | 0.04              |
| Antimony               | mg/L     | 0.006     | < 0.0001          | < 0.0001          |                   | < 0.0001          |                   | < 0.0001          | 0.0001            | < 0.0001          |                   | < 0.0001          |                   | < 0.00050         | 0.00073           |
| Arsenic                | mg/L     | 0.025     | 0.0001            | 0.0001            |                   | 0.0001            |                   | 0.0001            | 0.0001            | < 0.0001          |                   | < 0.0001          |                   | < 0.0010          | < 0.0010          |
| Barium                 | mg/L     | 1         | 0.141             | 0.147             |                   | 0.155             |                   | 0.143             | 0.154             | 0.137             |                   | 0.137             |                   | 0.091             | 0.074             |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.002           |                   | < 0.002           |                   | < 0.002           | < 0.002           | < 0.002           |                   | < 0.002           |                   | < 0.00050         | < 0.00050         |
| Boron                  | mg/L     | 5         | 0.107             | 0.084             |                   | 0.116             |                   | 0.086             | 0.084             | 0.07              |                   | 0.069             |                   | 0.029             | 0.028             |
|                        |          |           |                   |                   |                   |                   |                   |                   |                   |                   |                   | <                 |                   |                   |                   |
| Cadmium                | mg/L     | 0.005     | < 0.000015        | < 0.000015        |                   | < 0.000015        |                   | < 0.000015        | < 0.000015        | < 0.000015        |                   | 0.000010          |                   | < 0.00010         | < 0.00010         |
| Chromium (total)       | mg/L     | 0.05      | < 0.001           | < 0.001           |                   | 0.001             |                   | < 0.001           | < 0.001           | < 0.001           |                   | < 0.001           |                   | < 0.0050          | < 0.0050          |
| Chromium (VI)          | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   | < 0.001           |                   | < 0.001           |                   |                   |                   |
| Cobalt                 | mg/L     | -         | 0.006             | 0.012             |                   | < 0.005           |                   | < 0.005           | < 0.005           | < 0.005           |                   | < 0.005           |                   | < 0.00050         | < 0.00050         |
| Copper                 | mg/L     | 1         | 0.0033            | 0.0038            |                   | 0.0032            |                   | 0.0059            | 0.0052            | 0.003             |                   | 0.0034            |                   | 0.011             | 0.0097            |
| Lead                   | mg/L     | 0.01      | < 0.00002         | < 0.00002         |                   | < 0.00002         |                   | 0.00008           | < 0.00002         | 0.00002           |                   | < 0.00002         |                   | < 0.00050         | 0.0006            |
| Mercury                | mg/L     | 0.001     | < 0.00002         | < 0.00002         |                   | < 0.00002         |                   | < 0.00002         | < 0.00002         | < 0.00002         |                   | < 0.00002         |                   | < 0.00001         | < 0.00001         |
| Molybdenum             | mg/L     | -         | 0.0008            | 0.0008            |                   | 0.001             |                   | 0.0006            | 0.0007            | 0.0009            |                   | 0.0008            |                   | 0.0019            | 0.0024            |
| Nickel                 | mg/L     | -         | < 0.01            | < 0.01            |                   | < 0.01            |                   | < 0.01            | < 0.01            | < 0.01            |                   | < 0.01            |                   | < 0.0010          | 0.0022            |
| Selenium               | mg/L     | 0.01      | < 0.001           | < 0.001           |                   | < 0.001           |                   | < 0.001           | < 0.001           | < 0.001           |                   | < 0.001           |                   | < 0.0020          | < 0.0020          |
| Silver                 | mg/L     | -         | < 0.0001          | < 0.0001          |                   | < 0.0001          |                   | < 0.0001          | < 0.0001          | < 0.0001          |                   | < 0.0001          |                   | < 0.00010         | < 0.00010         |
| Strontium              | mg/L     | -         | 0.272             | 0.302             |                   | 0.304             |                   | 0.318             | 0.353             | 0.277             |                   | 0.288             |                   | 0.12              | 0.1               |
| Thallium               | mg/L     | -         | < 0.00005         | < 0.00005         |                   | < 0.00005         |                   | < 0.00005         | < 0.00005         | < 0.005           |                   | < 0.00005         |                   | < 0.000050        | < 0.000050        |
| Vanadium               | mg/L     | -         | 0.0002            | 0.0002            |                   | 0.0002            |                   | 0.0002            | 0.0002            | 0.0002            |                   | 0.0002            |                   | < 0.00050         | 0.00053           |
| Zinc                   | mg/L     | 5         | < 0.005           | < 0.005           |                   | < 0.005           |                   | < 0.005           | < 0.005           | < 0.005           |                   | < 0.005           |                   | 0.0091            | 0.03              |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW18      | MW18      | MW18      | MW18      | MW18      | MW18      | MW18      | MW18      | MW18       | MW18       | MW18       | MW18       | MW18       |
|------------------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|
|                        |          |           | 22-May-13 | 01-Oct-13 | 23-Apr-14 | 16-Oct-14 | 16-Apr-15 | 07-Oct-15 | 28-Apr-16 | 04-Oct-16 | 17-Apr-17  | 24-Oct-17  | 24-Apr-18  | 15-Oct-18  | 11-Apr-19  |
| Total Alkalinity       | mg/L     | 500       | 249       | 238       | 252       | 244       | 238       | 260       | 236       | 217       | 229        | 217        | 299        | 247        | 226        |
| Calcium                | mg/L     | -         | 103       | 90.5      | 95.8      | 96.5      | 98.6      | 105       | 96.3      | 87.8      | 92.4       | 90.4       | 91.1       | 86.4       | 85.6       |
| Chloride               | mg/L     | 250       | 7.8       | 3.4       | 5.8       | 4.9       | 9         | 6         | 9.8       | 3.9       | 7.1        | 3.6        | 4.2        | 2.5        | 3.2        |
| COD                    | mg/L     | -         | < 5       | 26        | 17        | 22        | 18        | 29        | 46        | 35        | 19         | 61         | 67         | 35         | 26         |
| Specific Conductivity  | umhos/cm | -         | 643       | 563       | 600       | 648       | 613       | 635       | 592       | 530       | 549        | 538        | 545        | 567        | 518        |
| DOC                    | mg/L     | 5         | 7.6       | 10.9      | 2         | 21.4      | 9.8       | 16.9      | 4.6       | 10.7      | 5.5        | 15         | 10.5       | 15.7       | 11         |
| Fluoride               | mg/L     | 1.5       | 0.2       | 0.1       | <0.1      | 0.2       | < 0.1     | 0.1       | < 0.1     | < 0.1     | 0.3        | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | < 0.005   | < 0.005   | <0.005    | <0.005    | 0.02      | < 0.005   | < 0.005   | 0.111     | 0.006      | 0.015      | 0.01       | 0.027      | < 0.005    |
| Magnesium              | mg/L     | -         | 7.04      | 6.21      | 5.81      | 7.09      | 6.58      | 7.39      | 6.68      | 6.12      | 6.09       | 6.36       | 6.43       | 5.73       | 5.69       |
| Manganese              | mg/L     | 0.05      | < 0.001   | < 0.001   | <0.001    | <0.001    | 0.01      | < 0.001   | < 0.001   | 0.021     | 0.001      | 0.004      | 0.001      | 0.002      | < 0.001    |
| Nitrate                | mg/L     | 10        | 7.1       | 2.6       | 6.1       | 1.6       | 9.4       | 3.2       | 5         | 1.7       | 2.9        | 0.8        | 1.71       | 0.57       | 0.36       |
| Nitrite                | mg/L     | 1         | < 0.1     | < 0.1     | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | 0.2       | 0.2        | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.84      | 7.79      | 7.92      | 7.85      | 7.79      | 7.76      | 7.92      | 7.89      | 7.99       | 7.71       | 8.22       | 7.85       | 8.11       |
| Phenols                | mg/L     | -         | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.004     | 0.01      | < 0.001    | 0.003      | < 0.001    | 0.003      | < 0.002    |
| Phosphorus             | mg/L     | -         | < 0.1     | < 0.1     | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | 0.15       |
| Potassium              | mg/L     | -         | 36        | 32        | 31.4      | 50.5      | 42.8      | 47.8      | 39        | 32.9      | 40.8       | 34.8       | 40.9       | 41.8       | 18.5       |
| Sodium                 | mg/L     | 200       | 8.5       | 4.5       | 4.7       | 4.2       | 4.8       | 5.2       | 6.7       | 3         | 5.5        | 2.6        | 3.9        | 3.4        | 10.5       |
| Sulphate               | mg/L     | 500       | 25        | 28        | 25        | 60        | 36        | 65        | 26        | 33        | 18         | 36         | 21         | 38         | 25         |
| Dissolved Solids       | mg/L     | 500       | 368       | 320       | 347       | 377       | 383       | 407       | 348       | 306       | 321        | 304        | 347        | 326        | 284        |
| Tot Kjel N             | mg/L     | -         | 0.7       | 0.89      | 1.8       | 1.3       | 1.3       | 1.7       | 1.3       | 2.1       | 0.7        | 1.2        | 0.9        | 1.2        | 0.7        |
| Ammonia (NH3-N)        | mg/L     | -         | < 0.005   | < 0.01    | 0.02      | 0.05      | 0.02      | 0.03      | 0.03      | 0.63      | 0.02       | 0.01       | 0.01       | < 0.01     | < 0.01     |
| Ammonia - Unionized    | mg/L     | -         |           |           |           |           |           |           |           |           |            |            |            |            |            |
| Hardness (CaCO3)       | mg/L     | 100       | 287       | 252       | 264       | 271       | 274       | 294       | 268       | 245       | 256        | 252        | 254        | 240        | 237        |
| BOD                    | mg/L     | -         | --        | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |            |            |
| Cyanide (free)         | mg/L     | -         | --        | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |            |            |
| Total Suspended Solids | mg/L     | -         | --        | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |            |            |
| Aluminum               | mg/L     | 0.1       | 0.03      | 0.03      | 0.03      | 0.02      | 0.03      | 0.03      | 0.03      | 0.07      | 0.06       | 0.05       | 0.06       | 0.05       | 0.05       |
| Antimony               | mg/L     | 0.006     | < 0.0001  | < 0.0001  | <0.0001   | 0.0001    | 0.0001    | 0.0001    | < 0.0001  | 0.0005    | < 0.0001   | < 0.0001   | < 0.0001   | 0.0001     | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | 0.0003    | 0.0005    | 0.0003    | 0.0006    | 0.0003    | 0.0004    | 0.0003    | 0.0002    | 0.0004     | 0.0003     | 0.0003     | 0.0004     | 0.0002     |
| Barium                 | mg/L     | 1         | 0.088     | 0.064     | 0.065     | 0.089     | 0.088     | 0.091     | 0.08      | 0.06      | 0.086      | 0.068      | 0.08       | 0.079      | 0.043      |
| Beryllium              | mg/L     | -         | < 0.002   | < 0.002   | <0.002    | <0.002    | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | 0.006     | < 0.005   | 0.026     | 0.03      | 0.025     | 0.025     | < 0.005   | 0.018     | 0.024      | 0.023      | 0.02       | 0.023      | 0.015      |
| Cadmium                | mg/L     | 0.005     | < 0.00002 | < 0.00002 | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.000020 | < 0.000014 | < 0.000015 | < 0.000015 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | < 0.0002  | 0.0222    | <0.0002   | 0.0023    | 0.0009    | 0.0021    | < 0.0002  | < 0.0002  | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Chromium (VI)          | mg/L     | -         |           |           |           |           |           |           |           |           |            |            |            |            |            |
| Cobalt                 | mg/L     | -         | < 0.005   | < 0.005   | <0.005    | <0.005    | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | 0.006      | 0.011      | 0.006      |
| Copper                 | mg/L     | 1         | 0.0059    | 0.0096    | 0.0086    | 0.0137    | 0.0076    | 0.0119    | 0.0067    | 0.0067    | 0.0069     | 0.0071     | 0.0079     | 0.0132     | 0.0084     |
| Lead                   | mg/L     | 0.01      | < 0.00002 | 0.00017   | 0.00006   | <0.00002  | < 0.00002 | < 0.00002 | 0.00003   | 0.00003   | < 0.00002  | < 0.00002  | < 0.00002  | 0.00003    | < 0.00002  |
| Mercury                | mg/L     | 0.001     | < 0.00002 | < 0.00002 | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | 0.0013    | 0.0017    | 0.0014    | 0.0017    | 0.0012    | 0.0018    | 0.0014    | 0.002     | 0.0016     | 0.0016     | 0.0017     | 0.0019     | 0.0011     |
| Nickel                 | mg/L     | -         | < 0.01    | < 0.01    | <0.01     | <0.01     | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | < 0.001   | < 0.001   | <0.001    | 0.002     | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.003      | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Silver                 | mg/L     | -         | < 0.00002 | < 0.00002 | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.0001   | < 0.0001   | < 0.0001   |
| Strontium              | mg/L     | -         | --        | --        | --        | 0.128     | 0.127     | 0.13      | 0.122     | 0.096     | 0.105      | 0.099      | 0.109      | 0.109      | 0.11       |
| Thallium               | mg/L     | -         | < 0.00005 | < 0.00005 | <0.00005  | <0.00005  | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | 0.0023    | 0.0066    | 0.0019    | 0.005     | 0.0023    | 0.0012    | 0.001     | 0.0013    | 0.0017     | 0.0009     | 0.0006     | 0.0008     | 0.0004     |
| Zinc                   | mg/L     | 5         | < 0.005   | < 0.005   | <0.005    | 0.006     | < 0.005   | < 0.005   | 0.005     | < 0.005   | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance



Ground Water Quality - General  
Parameters

|                        |          |           | MW18       | MW18       | MW18       | MW18       | MW18       | MW18       | MW18       | MW18      | MW18      | MW18A      | MW18A      | MW18A     | MW18A     |
|------------------------|----------|-----------|------------|------------|------------|------------|------------|------------|------------|-----------|-----------|------------|------------|-----------|-----------|
| Parameters             | Units    | ODWQS     | 21-Oct-19  | 22-Apr-20  | 19-Oct-20  | 19-Apr-21  | 27-Oct-21  | 20-Apr-22  | 26-Oct-22  | 19-Apr-23 | 11-Oct-23 | 23-May-12  | 01-Oct-12  | 22-May-13 | 01-Oct-13 |
| Total Alkalinity       | mg/L     | 500       | 245        | 244        | 232        | 226        | 265        | 272        | 264        | 267       | 283       | 380        | 360        | 372       | 370       |
| Calcium                | mg/L     | -         | 98.8       | 103        | 94.2       | 94.9       | 101        | 108        | 99.8       | 97.4      | 80.3      | 120        | 140        | 117       | 122       |
| Chloride               | mg/L     | 250       | 2.5        | 6.9        | 3.1        | 5.5        | 5.4        | 5.2        | 3.2        | 3.8       | 2.8       | 83         | 70         | 90.4      | 87        |
| COD                    | mg/L     | -         | 47         | 24         | 77         | 18         | 10         | 25         | 43         | 29        | 39        | 20         | 26         | 7         | 19        |
| Specific Conductivity  | umhos/cm | -         | 553        | 611        | 556        | 562        | 575        | 631        | 599        | 592       | 608       | 970        | 920        | 973       | 963       |
| DOC                    | mg/L     | 5         | 12.2       | 9.4        | 14.8       | 10.1       | 8.8        | 7.8        | 11.2       | 5.9       | 17.6      | 6.7        | 7.1        | 9.5       | 9.5       |
| Fluoride               | mg/L     | 1.5       | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1     | <0.1      | 0.13       | < 0.10     | 0.3       | 0.2       |
| Iron                   | mg/L     | 0.3       | 0.009      | 0.025      | 0.048      | 0.012      | 0.024      | 0.007      | 0.163      | 0.017     | 0.012     | 1.9        | 7.5        | 2.08      | 2.08      |
| Magnesium              | mg/L     | -         | 6.34       | 7.19       | 6.23       | 6.05       | 6.49       | 6.39       | 7.2        | 6.36      | 6.24      | 29         | 11         | 28.4      | 28.9      |
| Manganese              | mg/L     | 0.05      | < 0.001    | < 0.001    | 0.003      | < 0.001    | 0.001      | < 0.001    | 0.024      | 0.006     | 0.001     | 0.084      | 0.35       | 0.095     | 0.097     |
| Nitrate                | mg/L     | 10        | 0.53       | 4.88       | 0.86       | 3.47       | 2.74       | 3.85       | 1.85       | 2.4       | 1.21      | < 0.10     | < 0.10     | < 0.1     | 0.1       |
| Nitrite                | mg/L     | 1         | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05    | <0.05     | < 0.010    | < 0.010    | < 0.1     | < 0.1     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.96       | 7.83       | 7.82       | 7.88       | 7.89       | 7.65       | 7.77       | 7.83      | 7.3       | 7.91       | 7.41       | 7.75      | 7.52      |
| Phenols                | mg/L     | -         | < 0.002    | < 0.002    | < 0.001    | < 0.001    | < 0.002    | < 0.001    | < 0.001    | < 0.001   | <0.001    | < 0.0010   | < 0.0010   | < 0.001   | < 0.001   |
| Phosphorus             | mg/L     | -         | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1     | <0.1      | < 0.10     | < 0.10     | 0.03      | 0.02      |
| Potassium              | mg/L     | -         | 41.1       | 32.4       | 41.7       | 35.2       | 33.7       | 30.6       | 34.8       | 36.9      | 35.4      | 6.8        | 3.4        | 6.5       | 6.7       |
| Sodium                 | mg/L     | 200       | 4          | 8.1        | 3          | 5          | 4.1        | 5.5        | 8.6        | 5.7       | 3.2       | 35         | 34         | 36        | 37.6      |
| Sulphate               | mg/L     | 500       | 26         | 31         | 29         | 22         | 28         | 26         | 28         | 20        | 36        | 2          | 21         | 3         | 3         |
| Dissolved Solids       | mg/L     | 500       | 326        | 336        | 316        | 304        | 338        | 346        | 340        | 331       | 316       | 501        | 519        | 509       | 510       |
| Tot Kjeh N             | mg/L     | -         | 1          | 0.9        | 1.5        | 0.9        | 0.9        | 1.1        | 1.1        | 1         | 1.1       | 1.6        | 1.3        | 1.7       | 1.64      |
| Ammonia (NH3-N)        | mg/L     | -         | 0.04       | 0.03       | 0.04       | 0.03       | 0.06       | 0.79       | 0.19       | 0.36      | <0.05     | 1.1        | 1.3        | 1.24      | 1.14      |
| Ammonia - Unionized    | mg/L     | -         |            |            |            |            |            |            |            |           |           |            |            |           |           |
| Hardness (CaCO3)       | mg/L     | 100       | 273        | 287        | 261        | 262        | 279        | 296        | 279        | 270       | 226       | 410        | 390        | 408       | 424       |
| BOD                    | mg/L     | -         |            |            |            |            |            |            |            |           |           | --         | --         | --        | --        |
| Cyanide (free)         | mg/L     | -         |            |            |            |            |            |            |            |           |           | --         | --         | --        | --        |
| Total Suspended Solids | mg/L     | -         |            |            |            |            |            |            |            |           |           | --         | --         | --        | --        |
| Aluminum               | mg/L     | 0.1       | 0.06       | 0.06       | 0.07       | 0.06       | 0.06       | 0.05       | 0.02       | 0.03      | 0.06      | 0.0081     | 0.0059     | 0.04      | 0.04      |
| Antimony               | mg/L     | 0.006     | 0.0001     | < 0.0001   | 0.0001     | 0.0001     | 0.0001     | < 0.0001   | 0.0001     | < 0.0001  | 0.0002    | < 0.00050  | < 0.00050  | < 0.0001  | < 0.0001  |
| Arsenic                | mg/L     | 0.025     | 0.0003     | 0.0002     | 0.0004     | 0.0003     | 0.0003     | 0.0002     | 0.0003     | 0.0002    | 0.0004    | < 0.0010   | < 0.0010   | 0.0006    | 0.0008    |
| Barium                 | mg/L     | 1         | 0.085      | 0.074      | 0.08       | 0.072      | 0.072      | 0.076      | 0.075      | 0.083     | 0.071     | 0.19       | 0.21       | 0.208     | 0.219     |
| Beryllium              | mg/L     | -         | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002   | <0.0001   | < 0.00050  | < 0.00050  | < 0.002   | < 0.002   |
| Boron                  | mg/L     | 5         | 0.023      | 0.024      | 0.021      | 0.022      | 0.022      | 0.021      | 0.024      | 0.024     | 0.021     | 0.2        | 0.081      | 0.18      | 0.196     |
|                        |          |           |            |            |            |            |            |            |            | <         |           |            |            |           |           |
| Cadmium                | mg/L     | 0.005     | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000010 | 0.000010  | <0.000015 | < 0.00010  | < 0.00010  | < 0.00002 | < 0.00002 |
| Chromium (total)       | mg/L     | 0.05      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | 0.001     | <0.001    | < 0.0050   | < 0.0050   | < 0.0002  | 0.0389    |
| Chromium (VI)          | mg/L     | -         |            |            |            |            |            | < 0.001    | < 0.001    | < 0.001   | <0.01     |            |            |           |           |
| Cobalt                 | mg/L     | -         | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005   | 0.0004    | < 0.00050  | < 0.00050  | < 0.005   | < 0.005   |
| Copper                 | mg/L     | 1         | 0.0122     | 0.0076     | 0.015      | 0.0102     | 0.0075     | 0.0063     | 0.0099     | 0.0076    | 0.0122    | < 0.0010   | < 0.0010   | 0.0002    | 0.0007    |
| Lead                   | mg/L     | 0.01      | 0.00005    | < 0.00002  | 0.0001     | 0.00006    | 0.00003    | 0.00002    | < 0.00002  | < 0.00002 | <0.00002  | < 0.00050  | < 0.00050  | < 0.00002 | 0.00007   |
| Mercury                | mg/L     | 0.001     | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002 | 0.00002   | < 0.00001  | < 0.00001  | < 0.00002 | < 0.00002 |
| Molybdenum             | mg/L     | -         | 0.0017     | 0.0009     | 0.0015     | 0.0011     | 0.001      | 0.001      | 0.0011     | 0.001     | 0.0016    | < 0.00050  | < 0.00050  | < 0.0001  | < 0.0001  |
| Nickel                 | mg/L     | -         | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01    | 0.001     | < 0.0010   | < 0.0010   | < 0.01    | < 0.01    |
| Selenium               | mg/L     | 0.01      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001   | <0.001    | < 0.0020   | < 0.0020   | < 0.001   | < 0.001   |
| Silver                 | mg/L     | -         | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | < 0.00010  | < 0.00010  | < 0.00002 | < 0.00002 |
| Strontium              | mg/L     | -         | 0.128      | 0.13       | 0.113      | 0.115      | 0.13       | 0.134      | 0.139      | 0.122     | 0.105     | 1.5        | 0.34       | --        | --        |
| Thallium               | mg/L     | -         | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.005    | < 0.005    | < 0.00005 | <0.00005  | < 0.000050 | < 0.000050 | < 0.00005 | < 0.00005 |
| Vanadium               | mg/L     | -         | 0.0006     | 0.0006     | 0.0009     | 0.0007     | 0.0007     | 0.0006     | 0.0007     | 0.0006    | 0.0007    | 0.00087    | 0.00091    | 0.0031    | 0.0108    |
| Zinc                   | mg/L     | 5         | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | 0.006      | < 0.005    | < 0.005   | <0.005    | 0.0076     | < 0.0050   | < 0.005   | < 0.005   |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW18A<br>23-Apr-14 | MW18A<br>16-Oct-14 | MW18A<br>16-Apr-15 | MW18A<br>07-Oct-15 | MW18A<br>28-Apr-16 | MW18A<br>04-Oct-16 | MW18A<br>17-Apr-17 | MW18A<br>24-Oct-17 | MW18A<br>24-Apr-18 | MW18A<br>15-Oct-18 | MW18A<br>11-Apr-19 | MW18A<br>21-Oct-19 | MW18A<br>22-Apr-20 |
|------------------------|----------|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Total Alkalinity       | mg/L     | 500       | 376                | 376                | 383                | 395                | 381                | 379                | 381                | 378                | 377                | 376                | 354                | 365                | 349                |
| Calcium                | mg/L     | -         | 119                | 121                | 123                | 114                | 122                | 126                | 125                | 126                | 127                | 119                | 123                | 131                | 121                |
| Chloride               | mg/L     | 250       | 87                 | 89.6               | 88.9               | 87.6               | 86.9               | 91                 | 85.7               | 73.5               | 75.3               | 90.1               | 86.5               | 78.4               | 88.9               |
| COD                    | mg/L     | -         | 14                 | 16                 | 21                 | 19                 | 24                 | 38                 | 24                 | 30                 | 19                 | 18                 | 19                 | 17                 | 23                 |
| Specific Conductivity  | umhos/cm | -         | 936                | 958                | 966                | 927                | 967                | 985                | 971                | 975                | 949                | 963                | 964                | 953                | 950                |
| DOC                    | mg/L     | 5         | 8.1                | 9.9                | 8                  | 4.5                | 5.5                | 7.3                | 7.4                | 7.3                | 8                  | 7.9                | 8                  | 8.4                | 7.3                |
| Fluoride               | mg/L     | 1.5       | 0.2                | 0.2                | 0.2                | 0.2                | 0.1                | 0.2                | 0.1                | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              |
| Iron                   | mg/L     | 0.3       | 2.22               | 2.03               | 2.17               | 0.079              | 2.52               | 1.59               | 2.42               | 2.18               | 1.92               | 2.1                | 2.06               | 2.28               | 2.04               |
| Magnesium              | mg/L     | -         | 27.7               | 29.9               | 27.7               | 30.4               | 29                 | 30.9               | 29.8               | 30.9               | 31.1               | 27.9               | 29.9               | 30.9               | 31.1               |
| Manganese              | mg/L     | 0.05      | 0.104              | 0.099              | 0.111              | 0.063              | 0.123              | 0.111              | 0.111              | 0.113              | 0.111              | 0.104              | 0.102              | 0.109              | 0.103              |
| Nitrate                | mg/L     | 10        | <0.1               | <0.1               | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | 0.06               |
| Nitrite                | mg/L     | 1         | <0.1               | <0.1               | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.73               | 7.74               | 7.64               | 7.71               | 7.7                | 7.77               | 7.9                | 7.57               | 7.8                | 7.75               | 7.94               | 7.83               | 7.74               |
| Phenols                | mg/L     | -         | < 0.001            | < 0.001            | < 0.001            | < 0.001            | 0.005              | 0.005              | < 0.001            | 0.006              | < 0.001            | < 0.002            | < 0.002            | < 0.002            | < 0.002            |
| Phosphorus             | mg/L     | -         | <0.1               | <0.1               | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              |
| Potassium              | mg/L     | -         | 6.7                | 7.5                | 6.7                | 7                  | 7                  | 7.4                | 7.3                | 7.3                | 7.7                | 6.7                | 7.6                | 7.9                | 7.3                |
| Sodium                 | mg/L     | 200       | 35.3               | 37.6               | 36.4               | 38.7               | 36.3               | 38.9               | 37.2               | 38.1               | 41.5               | 36.1               | 39.3               | 40.2               | 39.3               |
| Sulphate               | mg/L     | 500       | 4                  | 3                  | 3                  | 3                  | 3                  | 2                  | 3                  | 3                  | 2                  | 2                  | 3                  | 3                  | 3                  |
| Dissolved Solids       | mg/L     | 500       | 509                | 518                | 520                | 519                | 518                | 527                | 521                | 507                | 515                | 511                | 505                | 514                | 501                |
| Tot Kjel N             | mg/L     | -         | 1.8                | 1.5                | 1.7                | 1.6                | 1.8                | 1.7                | 1.5                | 1.6                | 1.7                | 1.6                | 1.6                | 1.5                | 1.7                |
| Ammonia (NH3-N)        | mg/L     | -         | 1.33               | 1.27               | 1.34               | 1.3                | 1.37               | 1.28               | 1.32               | 1.3                | 1.5                | 1.22               | 1.2                | 1.28               | 1.2                |
| Ammonia - Unionized    | mg/L     | -         |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| Hardness (CaCO3)       | mg/L     | 100       | 411                | 425                | 422                | 409                | 424                | 442                | 435                | 442                | 445                | 412                | 430                | 454                | 430                |
| BOD                    | mg/L     | -         | --                 | --                 | --                 | --                 | --                 | --                 | --                 | --                 |                    |                    |                    |                    |                    |
| Cyanide (free)         | mg/L     | -         | --                 | --                 | --                 | --                 | --                 | --                 | --                 | --                 |                    |                    |                    |                    |                    |
| Total Suspended Solids | mg/L     | -         | --                 | --                 | --                 | --                 | --                 | --                 | --                 | --                 |                    |                    |                    |                    |                    |
| Aluminum               | mg/L     | 0.1       | 0.03               | 0.03               | 0.03               | 0.04               | 0.03               | 0.07               | 0.07               | 0.06               | 0.09               | 0.07               | 0.08               | 0.09               | 0.07               |
| Antimony               | mg/L     | 0.006     | <0.0001            | <0.0001            | 0.0002             | < 0.0001           | < 0.0001           | 0.0002             | < 0.0001           | < 0.0001           | 0.0001             | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           |
| Arsenic                | mg/L     | 0.025     | 0.0007             | 0.0007             | 0.0005             | 0.0005             | 0.0006             | 0.0002             | 0.0004             | 0.0004             | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           |
| Barium                 | mg/L     | 1         | 0.199              | 0.207              | 0.215              | 0.177              | 0.199              | 0.215              | 0.213              | 0.226              | 0.217              | 0.213              | 0.216              | 0.24               | 0.213              |
| Beryllium              | mg/L     | -         | <0.002             | <0.002             | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            |
| Boron                  | mg/L     | 5         | 0.204              | 0.222              | 0.212              | 0.213              | 0.185              | 0.217              | 0.221              | 0.227              | 0.222              | 0.197              | 0.227              | 0.241              | 0.227              |
| Cadmium                | mg/L     | 0.005     | <0.00002           | <0.00002           | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.000020         | < 0.000014         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         |
| Chromium (total)       | mg/L     | 0.05      | 0.0005             | 0.0042             | 0.0007             | 0.0107             | < 0.0002           | 0.269              | 0.001              | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | 0.001              |
| Chromium (VI)          | mg/L     | -         |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| Cobalt                 | mg/L     | -         | <0.005             | <0.005             | < 0.005            | < 0.005            | < 0.005            | < 0.005            | 0.005              | < 0.005            | < 0.005            | < 0.005            | 0.007              | < 0.005            | < 0.005            |
| Copper                 | mg/L     | 1         | 0.0005             | 0.0008             | 0.0015             | 0.0003             | 0.0006             | 0.0003             | 0.001              | 0.0001             | < 0.0001           | 0.0003             | 0.0004             | 0.0006             | < 0.0001           |
| Lead                   | mg/L     | 0.01      | 0.00002            | <0.00002           | < 0.00002          | < 0.00002          | < 0.00002          | 0.00007            | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | 0.00007            | < 0.00002          |
| Mercury                | mg/L     | 0.001     | <0.00002           | <0.00002           | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          |
| Molybdenum             | mg/L     | -         | <0.0001            | 0.0001             | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           |
| Nickel                 | mg/L     | -         | <0.01              | <0.01              | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             |
| Selenium               | mg/L     | 0.01      | 0.003              | 0.003              | 0.001              | 0.001              | < 0.001            | < 0.001            | 0.002              | < 0.001            | 0.006              | < 0.001            | 0.002              | 0.001              | < 0.001            |
| Silver                 | mg/L     | -         | <0.00002           | <0.00002           | < 0.00002          | 0.00004            | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           |
| Strontium              | mg/L     | -         | --                 | 1.77               | 1.59               | 1.7                | 1.62               | 1.66               | 1.55               | 1.61               | 1.67               | 1.55               | 1.73               | 1.77               | 1.66               |
| Thallium               | mg/L     | -         | <0.00005           | <0.00005           | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          |
| Vanadium               | mg/L     | -         | 0.0024             | 0.0078             | 0.0024             | 0.0039             | 0.0011             | < 0.0001           | 0.0017             | 0.0006             | 0.0003             | 0.0003             | 0.0003             | 0.0003             | 0.0003             |
| Zinc                   | mg/L     | 5         | <0.005             | 0.007              | 0.01               | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            |

ODWQS - Ontario Drinking Water Quality

Standards

Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW18A<br>19-Oct-20 | MW18A<br>19-Apr-21 | MW18A<br>27-Oct-21 | MW18A<br>20-Apr-22 | MW18A<br>26-Oct-22 | MW18A<br>19-Apr-23 | MW18A<br>11-Oct-23 | MW18B<br>23-May-12 | MW18B<br>01-Oct-12 | MW18B<br>22-May-13 | MW18B<br>01-Oct-13 | MW18B<br>23-Apr-14 | MW18B<br>16-Oct-14 |
|------------------------|----------|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Total Alkalinity       | mg/L     | 500       | 352                | 354                | 413                | 391                | 419                | 426                | 458                | 370                | 370                | 359                | 363                | 364                | 355                |
| Calcium                | mg/L     | -         | 127                | 131                | 131                | 133                | 129                | 141                | 119                | 140                | 120                | 139                | 150                | 144                | 145                |
| Chloride               | mg/L     | 250       | 80.5               | 81.5               | 80.6               | 81.9               | 82.6               | 81.4               | 92.6               | 66                 | 82                 | 71.3               | 69.1               | 70.8               | 74.8               |
| COD                    | mg/L     | -         | 18                 | 20                 | 18                 | 29                 | 26                 | 23                 | 27                 | 21                 | 21                 | 14                 | 30                 | 25                 | 16                 |
| Specific Conductivity  | umhos/cm | -         | 942                | 951                | 960                | 1000               | 1040               | 1026               | 1090               | 920                | 950                | 929                | 928                | 933                | 915                |
| DOC                    | mg/L     | 5         | 5.8                | 6.6                | 7.8                | 5.9                | 5                  | 6.2                | 9.5                | 6.7                | 7.2                | 10.8               | 11                 | 8.6                | 9.6                |
| Fluoride               | mg/L     | 1.5       | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | <0.1               | < 0.10             | 0.14               | 0.2                | 0.1                | 0.2                | 0.1                |
| Iron                   | mg/L     | 0.3       | 2.4                | 2.53               | 2.94               | 2.9                | 3.33               | 4.18               | 3.85               | 7.5                | 2.5                | 7.6                | 7.93               | 7.56               | 7.93               |
| Magnesium              | mg/L     | -         | 29.1               | 30.7               | 29.9               | 31.6               | 31.5               | 29.9               | 26                 | 11                 | 26                 | 10.4               | 10.7               | 10.4               | 10.9               |
| Manganese              | mg/L     | 0.05      | 0.117              | 0.114              | 0.126              | 0.122              | 0.128              | 0.162              | 0.15               | 0.33               | 0.12               | 0.357              | 0.382              | 0.363              | 0.374              |
| Nitrate                | mg/L     | 10        | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | <0.05              | < 0.10             | < 0.10             | < 0.1              | < 0.1              | <0.1               | <0.1               |
| Nitrite                | mg/L     | 1         | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | <0.05              | < 0.010            | < 0.010            | < 0.1              | < 0.1              | <0.1               | <0.1               |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.6                | 7.73               | 7.85               | 7.66               | 7.63               | 7.67               | 7.34               | 7.84               | 7.58               | 7.67               | 7.6                | 7.69               | 7.6                |
| Phenols                | mg/L     | -         | < 0.001            | < 0.001            | < 0.002            | < 0.001            | < 0.001            | < 0.001            | <0.001             | < 0.0010           | < 0.0010           | < 0.001            | < 0.001            | < 0.001            | < 0.001            |
| Phosphorus             | mg/L     | -         | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | <0.1               | < 0.10             | < 0.10             | 0.09               | < 0.1              | <0.1               | <0.1               |
| Potassium              | mg/L     | -         | 7.2                | 7.6                | 7.6                | 7.6                | 8.5                | 7.7                | 6.5                | 3.3                | 6.5                | 3.4                | 3.6                | 3.7                | 3.9                |
| Sodium                 | mg/L     | 200       | 37                 | 40                 | 39.6               | 38.7               | 38.9               | 39.7               | 36.4               | 33                 | 34                 | 35.4               | 37.5               | 35.3               | 38.1               |
| Sulphate               | mg/L     | 500       | 2                  | < 1                | < 1                | < 1                | < 1                | < 1                | <1                 | 20                 | 5                  | 22                 | 19                 | 18                 | 17                 |
| Dissolved Solids       | mg/L     | 500       | 496                | 505                | 541                | 530                | 547                | 562                | 584                | 505                | 522                | 500                | 516                | 510                | 513                |
| Tot Kjel N             | mg/L     | -         | 1.6                | 1.4                | 1.6                | 2.2                | 2.1                | 2.3                | 2.7                | 1.5                | 1.8                | 2.1                | 1.82               | 1.9                | 1.6                |
| Ammonia (NH3-N)        | mg/L     | -         | 1.29               | 1.29               | 1.36               | 1.71               | 1.44               | 2.02               | 1.58               | 1.1                | 1.4                | 1.33               | 1.22               | 1.41               | 1.35               |
| Ammonia - Unionized    | mg/L     | -         |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| Hardness (CaCO3)       | mg/L     | 100       | 437                | 454                | 450                | 462                | 451                | 475                | 404                | 400                | 420                | 391                | 419                | 402                | 407                |
| BOD                    | mg/L     | -         |                    |                    |                    |                    |                    |                    |                    | --                 | --                 | --                 | --                 | --                 | --                 |
| Cyanide (free)         | mg/L     | -         |                    |                    |                    |                    |                    |                    |                    | --                 | --                 | --                 | --                 | --                 | --                 |
| Total Suspended Solids | mg/L     | -         |                    |                    |                    |                    |                    |                    |                    | --                 | --                 | --                 | --                 | --                 | --                 |
| Aluminum               | mg/L     | 0.1       | 0.04               | 0.08               | 0.09               | 0.07               | 0.04               | 0.04               | 0.07               | < 0.0050           | < 0.0050           | 0.04               | 0.05               | 0.04               | 0.04               |
| Antimony               | mg/L     | 0.006     | < 0.0001           | < 0.0001           | < 0.0001           | 0.0001             | < 0.0001           | < 0.0001           | 0.0001             | < 0.00050          | < 0.00050          | < 0.0001           | < 0.0001           | <0.0001            | <0.0001            |
| Arsenic                | mg/L     | 0.025     | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | 0.0001             | < 0.0010           | < 0.0010           | 0.0007             | 0.0008             | 0.0006             | 0.0006             |
| Barium                 | mg/L     | 1         | 0.223              | 0.229              | 0.237              | 0.224              | 0.228              | 0.267              | 0.238              | 0.2                | 0.22               | 0.222              | 0.228              | 0.206              | 0.219              |
| Beryllium              | mg/L     | -         | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | <0.0001            | < 0.00050          | < 0.00050          | < 0.002            | < 0.002            | <0.002             | <0.002             |
| Boron                  | mg/L     | 5         | 0.218              | 0.228              | 0.232              | 0.233              | 0.249              | 0.252              | 0.236              | 0.079              | 0.19               | 0.056              | 0.065              | 0.083              | 0.086              |
|                        |          |           |                    |                    |                    |                    |                    | <                  |                    |                    |                    |                    |                    |                    |                    |
| Cadmium                | mg/L     | 0.005     | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000010         | 0.000012           | <0.000015          | < 0.00010          | < 0.00010          | 0.0001             | < 0.00002          | <0.00002           | <0.00002           |
| Chromium (total)       | mg/L     | 0.05      | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | <0.001             | < 0.0050           | < 0.0050           | < 0.0002           | 0.0384             | 0.0005             | 0.0048             |
| Chromium (VI)          | mg/L     | -         |                    |                    |                    | < 0.001            | < 0.001            | < 0.001            | <0.01              |                    |                    |                    |                    |                    |                    |
| Cobalt                 | mg/L     | -         | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | 0.0005             | < 0.00050          | < 0.00050          | < 0.005            | < 0.005            | <0.005             | <0.005             |
| Copper                 | mg/L     | 1         | 0.001              | 0.001              | 0.0006             | 0.0003             | 0.0005             | 0.0002             | 0.0007             | < 0.0010           | < 0.0010           | 0.0009             | 0.0009             | 0.0007             | 0.0007             |
| Lead                   | mg/L     | 0.01      | 0.00005            | 0.00004            | 0.00002            | 0.00002            | 0.00002            | < 0.00004          | <0.00002           | < 0.00050          | < 0.00050          | 0.00009            | 0.00012            | 0.00012            | <0.00002           |
| Mercury                | mg/L     | 0.001     | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | 0.00002            | < 0.00001          | < 0.00001          | < 0.00002          | < 0.00002          | <0.00002           | <0.00002           |
| Molybdenum             | mg/L     | -         | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | 0.0001             | <0.0001            | < 0.00050          | < 0.00050          | < 0.0001           | < 0.0001           | <0.0001            | 0.0001             |
| Nickel                 | mg/L     | -         | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | 0.0015             | < 0.0010           | < 0.0010           | < 0.01             | < 0.01             | <0.01              | <0.01              |
| Selenium               | mg/L     | 0.01      | < 0.001            | < 0.001            | < 0.001            | 0.001              | < 0.001            | < 0.001            | <0.001             | < 0.0020           | < 0.0020           | < 0.001            | < 0.001            | <0.001             | 0.002              |
| Silver                 | mg/L     | -         | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | <0.0001            | < 0.00010          | < 0.00010          | < 0.00002          | < 0.00002          | <0.00002           | <0.00002           |
| Strontium              | mg/L     | -         | 1.59               | 1.72               | 1.68               | 1.74               | 1.68               | 1.65               | 1.37               | 0.33               | 1.4                | --                 | --                 | --                 | 0.383              |
| Thallium               | mg/L     | -         | < 0.00005          | < 0.00005          | < 0.00005          | < 0.005            | < 0.005            | < 0.00005          | <0.00005           | < 0.000050         | < 0.000050         | < 0.00005          | < 0.00005          | <0.00005           | <0.00005           |
| Vanadium               | mg/L     | -         | 0.0004             | 0.0004             | 0.0004             | 0.0004             | 0.0004             | 0.0005             | 0.0005             | 0.0015             | < 0.00050          | 0.0041             | 0.0113             | 0.0033             | 0.0084             |
| Zinc                   | mg/L     | 5         | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | 0.006              | 0.006              | < 0.0050           | < 0.005            | < 0.005            | <0.005             | <0.005             |

ODWQS - Ontario Drinking Water Quality

Standards

Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW18B     | MW18B     | MW18B     | MW18B     | MW18B      | MW18B      | MW18B      | MW18B      | MW18B      | MW18B      | MW18B      | MW18B      | MW18B      |
|------------------------|----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|                        |          |           | 16-Apr-15 | 07-Oct-15 | 28-Apr-16 | 04-Oct-16 | 17-Apr-17  | 24-Oct-17  | 24-Apr-18  | 15-Oct-18  | 11-Apr-19  | 21-Oct-19  | 22-Apr-20  | 19-Oct-20  | 19-Apr-21  |
| Total Alkalinity       | mg/L     | 500       | 353       | 372       | 357       | 355       | 352        | 342        | 360        | 348        | 359        | 343        | 330        | 331        | 341        |
| Calcium                | mg/L     | -         | 144       | 154       | 146       | 156       | 153        | 156        | 155        | 141        | 149        | 151        | 133        | 145        | 146        |
| Chloride               | mg/L     | 250       | 74.4      | 76.2      | 73.8      | 81.4      | 74.3       | 64.7       | 73.1       | 78.7       | 71         | 63.5       | 59.4       | 59.5       | 51.5       |
| COD                    | mg/L     | -         | 25        | 20        | 32        | 20        | 24         | 26         | 45         | 19         | 23         | 18         | 23         | 20         | 21         |
| Specific Conductivity  | umhos/cm | -         | 910       | 900       | 918       | 952       | 919        | 916        | 929        | 921        | 921        | 906        | 844        | 867        | 861        |
| DOC                    | mg/L     | 5         | 7.4       | 5.3       | 6.3       | 7.1       | 7.7        | 7.7        | 7.9        | 8.2        | 9.2        | 9.6        | 8.5        | 7.1        | 9.8        |
| Fluoride               | mg/L     | 1.5       | 0.2       | 0.1       | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | 7.61      | 8.38      | 8.1       | 8.34      | 8.48       | 8.15       | 3.69       | 7.32       | 7.65       | 8.08       | 6.92       | 7.46       | 7.88       |
| Magnesium              | mg/L     | -         | 10.5      | 11.3      | 11.1      | 11.8      | 11         | 11.7       | 11.6       | 10.2       | 10.8       | 10.9       | 10.3       | 10.5       | 10.5       |
| Manganese              | mg/L     | 0.05      | 0.376     | 0.4       | 0.404     | 0.414     | 0.426      | 0.43       | 0.415      | 0.373      | 0.394      | 0.418      | 0.377      | 0.394      | 0.408      |
| Nitrate                | mg/L     | 10        | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| Nitrite                | mg/L     | 1         | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.51      | 7.65      | 7.57      | 7.56      | 7.79       | 7.47       | 7.73       | 7.7        | 7.87       | 7.74       | 7.69       | 7.56       | 7.63       |
| Phenols                | mg/L     | -         | < 0.001   | < 0.001   | 0.004     | 0.006     | < 0.001    | 0.002      | < 0.001    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.001    | < 0.001    |
| Phosphorus             | mg/L     | -         | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 3.6       | 3.7       | 3.7       | 3.7       | 3.9        | 3.8        | 4.2        | 3.4        | 4          | 4.1        | 3.7        | 3.7        | 4          |
| Sodium                 | mg/L     | 200       | 36.2      | 38.2      | 34.5      | 38.6      | 35.4       | 37.7       | 42         | 35.6       | 40.3       | 41.9       | 40.3       | 38.3       | 39.3       |
| Sulphate               | mg/L     | 500       | 17        | 17        | 17        | 17        | 16         | 13         | 14         | 17         | 16         | 16         | 15         | 16         | 11         |
| Dissolved Solids       | mg/L     | 500       | 508       | 535       | 510       | 531       | 516        | 501        | 522        | 504        | 516        | 503        | 462        | 478        | 469        |
| Tot Kjel N             | mg/L     | -         | 1.8       | 1.6       | 1.8       | 1.8       | 1.7        | 1.7        | 1.6        | 1.5        | 1.8        | 1.6        | 1.6        | 1.7        | 1.5        |
| Ammonia (NH3-N)        | mg/L     | -         | 1.37      | 1.3       | 1.37      | 1.48      | 1.46       | 1.37       | 1.31       | 1.25       | 1.32       | 1.37       | 1.26       | 1.29       | 1.43       |
| Ammonia - Unionized    | mg/L     | -         |           |           |           |           |            |            |            |            |            |            |            |            |            |
| Hardness (CaCO3)       | mg/L     | 100       | 404       | 432       | 409       | 437       | 428        | 438        | 435        | 394        | 417        | 422        | 375        | 405        | 408        |
| BOD                    | mg/L     | -         | --        | --        | --        | --        | --         | --         |            |            |            |            |            |            |            |
| Cyanide (free)         | mg/L     | -         | --        | --        | --        | --        | --         | --         |            |            |            |            |            |            |            |
| Total Suspended Solids | mg/L     | -         | --        | --        | --        | --        | --         | --         |            |            |            |            |            |            |            |
| Aluminum               | mg/L     | 0.1       | 0.04      | 0.05      | 0.04      | 0.05      | 0.09       | 0.08       | 0.08       | 0.07       | 0.11       | 0.09       | 0.08       | 0.05       | 0.08       |
| Antimony               | mg/L     | 0.006     | 0.0001    | < 0.0001  | < 0.0001  | 0.0002    | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | 0.0004    | 0.0004    | 0.0005    | 0.0001    | 0.0006     | 0.0005     | < 0.0001   | 0.0003     | 0.0003     | 0.0002     | 0.0002     | 0.0002     | 0.0002     |
| Barium                 | mg/L     | 1         | 0.207     | 0.218     | 0.199     | 0.229     | 0.234      | 0.239      | 0.216      | 0.212      | 0.224      | 0.241      | 0.205      | 0.21       | 0.218      |
| Beryllium              | mg/L     | -         | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | 0.087     | 0.085     | 0.06      | 0.087     | 0.09       | 0.095      | 0.088      | 0.078      | 0.096      | 0.099      | 0.092      | 0.092      | 0.089      |
|                        |          |           |           |           |           |           |            |            |            |            |            |            |            |            |            |
| Cadmium                | mg/L     | 0.005     | < 0.00002 | 0.00003   | < 0.00002 | < 0.00002 | < 0.000020 | < 0.000014 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | 0.0003    | 0.0025    | < 0.0002  | 0.034     | 0.001      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | 0.001      | < 0.001    | < 0.001    |
| Chromium (VI)          | mg/L     | -         |           |           |           |           |            |            |            |            |            |            |            |            |            |
| Cobalt                 | mg/L     | -         | < 0.005   | < 0.005   | < 0.005   | < 0.005   | 0.006      | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0008    | 0.0006    | 0.0007    | 0.0005    | 0.0002     | 0.0002     | 0.0007     | 0.0003     | 0.0007     | 0.0009     | < 0.0001   | 0.0017     | 0.0015     |
| Lead                   | mg/L     | 0.01      | 0.00003   | 0.00008   | 0.00004   | 0.00008   | 0.00003    | 0.00003    | 0.00003    | 0.00002    | 0.00023    | 0.00009    | 0.00003    | 0.00012    | 0.00006    |
| Mercury                | mg/L     | 0.001     | < 0.00002 | < 0.00002 | 0.00015   | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | 0.0002     | < 0.0001   | < 0.0001   | < 0.0001   |
| Nickel                 | mg/L     | -         | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.002      | < 0.001    | 0.002      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Silver                 | mg/L     | -         | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Strontium              | mg/L     | -         | 0.373     | 0.389     | 0.371     | 0.375     | 0.338      | 0.363      | 0.373      | 0.341      | 0.377      | 0.381      | 0.334      | 0.353      | 0.362      |
| Thallium               | mg/L     | -         | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | 0.0033    | 0.0016    | 0.0016    | 0.0009    | 0.0023     | 0.0011     | 0.0002     | 0.0009     | 0.001      | 0.0009     | 0.0009     | 0.001      | 0.001      |
| Zinc                   | mg/L     | 5         | < 0.005   | 0.006     | < 0.005   | < 0.005   | < 0.005    | < 0.005    | 0.005      | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance



Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW18B<br>27-Oct-21 | MW18B<br>20-Apr-22 | MW18B<br>26-Oct-22 | MW18B<br>19-Apr-23 | MW18B<br>11-Oct-23 | MW19<br>23-May-12 | MW19<br>01-Oct-12 | MW19<br>22-May-13 | MW19<br>01-Oct-13 | MW19<br>23-Apr-14 | MW19<br>15-Oct-14 | MW19<br>15-Apr-15 | MW19<br>07-Oct-15 |
|------------------------|----------|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L     | 500       | 411                | 404                | 414                | 454                | 474                | 270               | 270               | 282               | 288               | 297               | 294               | 294               | 315               |
| Calcium                | mg/L     | -         | 157                | 159                | 151                | 175                | 134                | 150               | 150               | 162               | 170               | 161               | 156               | 144               | 153               |
| Chloride               | mg/L     | 250       | 55.7               | 57.2               | 60.3               | 65.2               | 70.9               | 38                | 40                | 43.7              | 40.8              | 39.2              | 37.4              | 37.3              | 37                |
| COD                    | mg/L     | -         | 19                 | 29                 | 29                 | 30                 | 31                 | 16                | 14                | 9                 | 16                | 71                | 7                 | 11                | 13                |
| Specific Conductivity  | umhos/cm | -         | 902                | 959                | 977                | 1035               | 1050               | 830               | 890               | 977               | 985               | 955               | 921               | 932               | 814               |
| DOC                    | mg/L     | 5         | 9.1                | 7.2                | 6.3                | 7.9                | 10.8               | 5                 | 5.3               | 8.4               | 7.8               | 5.8               | 7.7               | 5.2               | 4.7               |
| Fluoride               | mg/L     | 1.5       | < 0.1              | < 0.1              | < 0.1              | < 0.1              | <0.1               | < 0.10            | < 0.10            | 0.2               | 0.1               | 0.2               | 0.1               | < 0.1             | 0.1               |
| Iron                   | mg/L     | 0.3       | 8.31               | 8.45               | 8.98               | 10.7               | 8.31               | < 0.10            | < 0.10            | 0.062             | 0.064             | 0.042             | 0.029             | 0.035             | 0.065             |
| Magnesium              | mg/L     | -         | 11.3               | 11.6               | 12.3               | 12.6               | 11.2               | 15                | 15                | 16.5              | 16.6              | 16.1              | 16.1              | 14.7              | 15.6              |
| Manganese              | mg/L     | 0.05      | 0.447              | 0.449              | 0.427              | 0.52               | 0.402              | 0.04              | 0.046             | 0.049             | 0.053             | 0.052             | 0.058             | 0.052             | 0.061             |
| Nitrate                | mg/L     | 10        | < 0.05             | 0.06               | < 0.05             | < 0.05             | <0.05              | 0.9               | 0.61              | 0.4               | 0.6               | 0.7               | 0.5               | 0.6               | 0.6               |
| Nitrite                | mg/L     | 1         | < 0.05             | < 0.05             | < 0.05             | < 0.05             | <0.05              | < 0.010           | 0.011             | < 0.1             | < 0.1             | <0.1              | <0.1              | < 0.1             | < 0.1             |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.82               | 7.5                | 7.55               | 7.65               | 7.27               | 7.85              | 7.66              | 7.83              | 7.73              | 7.92              | 7.84              | 7.81              | 7.88              |
| Phenols                | mg/L     | -         | < 0.002            | < 0.001            | < 0.001            | < 0.001            | <0.001             | < 0.0010          | < 0.0010          | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |
| Phosphorus             | mg/L     | -         | < 0.1              | < 0.1              | < 0.1              | < 0.1              | <0.1               | < 0.10            | < 0.10            | < 0.1             | < 0.1             | <0.1              | <0.1              | < 0.1             | < 0.1             |
| Potassium              | mg/L     | -         | 4.3                | 4.3                | 4.7                | 5                  | 4.2                | 2.9               | 2.8               | 3                 | 3.1               | 3.2               | 3.4               | 3                 | 3.2               |
| Sodium                 | mg/L     | 200       | 39.7               | 38.9               | 40.8               | 41.5               | 38.7               | 14                | 14                | 16.4              | 17.3              | 17.3              | 18.8              | 17.3              | 18.8              |
| Sulphate               | mg/L     | 500       | 10                 | 8                  | 6                  | 2                  | 2                  | 130               | 150               | 175               | 165               | 151               | 131               | 106               | 99                |
| Dissolved Solids       | mg/L     | 500       | 535                | 525                | 536                | 587                | 564                | 517               | 540               | 588               | 588               | 570               | 542               | 501               | 518               |
| Tot Kjel N             | mg/L     | -         | 1.8                | 2.2                | 2.3                | 2.9                | 2.3                | 0.4               | 1.9               | 0.5               | 0.32              | 0.4               | 0.3               | 0.7               | 0.3               |
| Ammonia (NH3-N)        | mg/L     | -         | 1.6                | 1.89               | 1.74               | 2.64               | 2.37               | < 0.050           | 0.06              | 0.01              | < 0.01            | <0.01             | 0.05              | 0.11              | 0.02              |
| Ammonia - Unionized    | mg/L     | -         |                    |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | 439                | 445                | 429                | 488                | 381                | 420               | 420               | 472               | 493               | 469               | 456               | 420               | 446               |
| BOD                    | mg/L     | -         |                    |                    |                    |                    |                    | --                | --                | --                | --                | --                | --                | --                | --                |
| Cyanide (free)         | mg/L     | -         |                    |                    |                    |                    |                    | --                | --                | --                | --                | --                | --                | --                | --                |
| Total Suspended Solids | mg/L     | -         |                    |                    |                    |                    |                    | --                | --                | --                | --                | --                | --                | --                | --                |
| Aluminum               | mg/L     | 0.1       | 0.08               | 0.09               | 0.06               | 0.05               | 0.08               | < 0.0050          | < 0.0050          | 0.05              | 0.05              | 0.04              | 0.03              | 0.04              | 0.04              |
| Antimony               | mg/L     | 0.006     | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | 0.0002             | < 0.00050         | < 0.00050         | < 0.0001          | < 0.0001          | <0.0001           | <0.0001           | 0.0001            | < 0.0001          |
| Arsenic                | mg/L     | 0.025     | 0.0002             | 0.0002             | 0.0002             | 0.0002             | 0.0002             | < 0.0010          | < 0.0010          | 0.0005            | 0.0006            | 0.0004            | 0.0005            | 0.0003            | 0.0003            |
| Barium                 | mg/L     | 1         | 0.235              | 0.236              | 0.233              | 0.277              | 0.22               | 0.14              | 0.14              | 0.168             | 0.171             | 0.154             | 0.162             | 0.145             | 0.157             |
| Beryllium              | mg/L     | -         | < 0.002            | < 0.002            | < 0.002            | < 0.002            | <0.0001            | < 0.00050         | < 0.00050         | < 0.002           | < 0.002           | <0.002            | <0.002            | < 0.002           | < 0.002           |
| Boron                  | mg/L     | 5         | 0.095              | 0.1                | 0.113              | 0.143              | 0.127              | 0.045             | 0.049             | 0.04              | 0.048             | 0.074             | 0.084             | 0.082             | 0.083             |
|                        |          |           |                    |                    |                    | <                  |                    |                   |                   |                   |                   |                   |                   |                   |                   |
| Cadmium                | mg/L     | 0.005     | < 0.000015         | < 0.000015         | < 0.000010         | 0.000012           | <0.000015          | < 0.00010         | < 0.00010         | < 0.00002         | < 0.00002         | <0.00002          | <0.00002          | < 0.00002         | < 0.00002         |
| Chromium (total)       | mg/L     | 0.05      | < 0.001            | < 0.001            | < 0.001            | < 0.001            | <0.001             | < 0.0050          | < 0.0050          | < 0.0002          | 0.025             | 0.0006            | 0.0044            | 0.0007            | 0.0024            |
| Chromium (VI)          | mg/L     | -         |                    | < 0.001            | < 0.001            | < 0.001            | <0.01              |                   |                   |                   |                   |                   |                   |                   |                   |
| Cobalt                 | mg/L     | -         | < 0.005            | < 0.005            | < 0.005            | < 0.005            | 0.0006             | < 0.00050         | < 0.00050         | < 0.005           | < 0.005           | <0.005            | <0.005            | < 0.005           | < 0.005           |
| Copper                 | mg/L     | 1         | 0.0007             | 0.0004             | 0.0006             | 0.0002             | 0.0007             | 0.0023            | 0.0015            | 0.002             | 0.0018            | 0.0017            | 0.0018            | 0.0022            | 0.0022            |
| Lead                   | mg/L     | 0.01      | 0.00004            | 0.00015            | 0.00008            | < 0.00004          | <0.00002           | < 0.00050         | < 0.00050         | < 0.00002         | 0.00006           | 0.00004           | <0.00002          | < 0.00002         | < 0.00002         |
| Mercury                | mg/L     | 0.001     | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | <0.00002           | < 0.00001         | < 0.00001         | < 0.00002         | < 0.00002         | <0.00002          | <0.00002          | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L     | -         | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | <0.0001            | 0.00078           | 0.001             | 0.0007            | 0.0007            | 0.0007            | 0.0006            | 0.0004            | 0.0008            |
| Nickel                 | mg/L     | -         | < 0.01             | < 0.01             | < 0.01             | < 0.01             | 0.0012             | < 0.0010          | < 0.0010          | < 0.01            | < 0.01            | <0.01             | <0.01             | < 0.01            | < 0.01            |
| Selenium               | mg/L     | 0.01      | < 0.001            | < 0.001            | < 0.001            | < 0.001            | <0.001             | < 0.0020          | < 0.0020          | < 0.001           | < 0.001           | <0.001            | 0.002             | < 0.001           | < 0.001           |
| Silver                 | mg/L     | -         | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | <0.0001            | < 0.00010         | < 0.00010         | < 0.00002         | < 0.00002         | <0.00002          | <0.00002          | < 0.00002         | < 0.00002         |
| Strontium              | mg/L     | -         | 0.399              | 0.401              | 0.431              | 0.45               | 0.397              | 0.28              | 0.31              | --                | --                | --                | 0.352             | 0.312             | 0.326             |
| Thallium               | mg/L     | -         | < 0.00005          | < 0.005            | < 0.005            | < 0.00005          | <0.00005           | < 0.000050        | < 0.000050        | < 0.00005         | < 0.00005         | <0.00005          | <0.00005          | < 0.00005         | < 0.00005         |
| Vanadium               | mg/L     | -         | 0.001              | 0.0011             | 0.0011             | 0.0011             | 0.0011             | < 0.00050         | < 0.00050         | 0.0025            | 0.0068            | 0.0017            | 0.0059            | 0.0019            | 0.0007            |
| Zinc                   | mg/L     | 5         | < 0.005            | < 0.005            | < 0.005            | < 0.005            | <0.005             | 0.0081            | < 0.0050          | < 0.005           | < 0.005           | <0.005            | <0.005            | < 0.005           | 0.005             |

ODWQS - Ontario Drinking Water Quality

Standards

Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW19<br>28-Apr-16 | MW19<br>03-Oct-16 | MW19<br>17-Apr-17 | MW19<br>23-Oct-17 | MW19<br>24-Apr-18 | MW19<br>15-Oct-18 | MW19<br>11-Apr-19 | MW19<br>21-Oct-19 | MW19<br>22-Apr-20 | MW19<br>19-Oct-20 | MW19<br>19-Apr-21 | MW19<br>27-Oct-21 | MW19<br>20-Apr-22 |
|------------------------|----------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L     | 500       | 318               | 320               | 303               | 305               | 298               | 301               | 288               | 292               | 294               | 293               | 318               | 405               | 423               |
| Calcium                | mg/L     | -         | 145               | 149               | 132               | 138               | 134               | 129               | 134               | 153               | 134               | 133               | 139               | 148               | 165               |
| Chloride               | mg/L     | 250       | 36                | 34.9              | 36                | 32.9              | 33.5              | 45.7              | 58.7              | 56.1              | 52.6              | 40.2              | 36.8              | 34.1              | 33.1              |
| COD                    | mg/L     | -         | 16                | 8                 | 16                | 20                | 11                | 11                | 11                | 14                | 15                | 9                 | 12                | 9                 | 26                |
| Specific Conductivity  | umhos/cm | -         | 845               | 840               | 783               | 791               | 731               | 783               | 823               | 829               | 818               | 784               | 814               | 862               | 963               |
| DOC                    | mg/L     | 5         | 4.3               | 5.8               | 5.1               | 5.4               | 5.8               | 5.7               | 5.7               | 5.8               | 5.9               | 4.9               | 6.5               | 5.8               | 5.7               |
| Fluoride               | mg/L     | 1.5       | < 0.1             | < 0.1             | 0.4               | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             |
| Iron                   | mg/L     | 0.3       | 0.052             | 0.081             | 0.07              | 0.089             | 0.009             | 0.064             | 0.041             | 0.081             | 0.057             | 0.108             | 0.076             | 0.147             | 0.211             |
| Magnesium              | mg/L     | -         | 15.4              | 16.4              | 13.9              | 14.6              | 13.8              | 12.8              | 13.5              | 15.1              | 14.6              | 14                | 14.4              | 15.6              | 17.7              |
| Manganese              | mg/L     | 0.05      | 0.06              | 0.063             | 0.058             | 0.061             | 0.06              | 0.063             | 0.06              | 0.079             | 0.071             | 0.071             | 0.078             | 0.085             | 0.101             |
| Nitrate                | mg/L     | 10        | 0.8               | 0.3               | 0.7               | 0.69              | 0.66              | 0.39              | 1.41              | 0.82              | 0.92              | 0.08              | 0.35              | 0.07              | < 0.05            |
| Nitrite                | mg/L     | 1         | < 0.1             | < 0.1             | 0.3               | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.88              | 7.8               | 8.05              | 7.79              | 8.05              | 7.91              | 8.04              | 7.91              | 7.9               | 7.69              | 7.86              | 7.94              | 7.74              |
| Phenols                | mg/L     | -         | 0.001             | 0.006             | < 0.001           | 0.001             | < 0.001           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.001           | < 0.001           | < 0.002           | < 0.001           |
| Phosphorus             | mg/L     | -         | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             |
| Potassium              | mg/L     | -         | 3.2               | 3.4               | 3.2               | 3.2               | 3.6               | 3.1               | 4                 | 3.9               | 3.5               | 3.5               | 3.8               | 3.9               | 4                 |
| Sodium                 | mg/L     | 200       | 18.4              | 25.8              | 17.7              | 17.9              | 18.9              | 16.5              | 18.9              | 21.7              | 23.9              | 24.7              | 31.3              | 33.3              | 33.1              |
| Sulphate               | mg/L     | 500       | 85                | 82                | 61                | 41                | 33                | 42                | 38                | 40                | 44                | 44                | 35                | 34                | 31                |
| Dissolved Solids       | mg/L     | 500       | 497               | 505               | 450               | 432               | 416               | 429               | 440               | 465               | 449               | 436               | 451               | 512               | 540               |
| Tot Kjel N             | mg/L     | -         | 0.5               | 0.4               | 0.3               | 0.3               | 0.4               | 0.3               | 0.5               | 0.3               | 0.3               | 0.3               | 0.3               | 0.3               | 0.4               |
| Ammonia (NH3-N)        | mg/L     | -         | 0.02              | 0.04              | 0.04              | 0.03              | 0.04              | 0.02              | < 0.01            | 0.02              | 0.01              | 0.02              | 0.02              | 0.03              | 0.18              |
| Ammonia - Unionized    | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | 425               | 440               | 387               | 405               | 392               | 375               | 390               | 445               | 395               | 390               | 407               | 434               | 485               |
| BOD                    | mg/L     | -         | --                | --                | --                | --                |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cyanide (free)         | mg/L     | -         | --                | --                | --                | --                |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Total Suspended Solids | mg/L     | -         | --                | --                | --                | --                |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Aluminum               | mg/L     | 0.1       | 0.04              | 0.07              | 0.07              | 0.07              | 0.08              | 0.07              | 0.07              | 0.09              | 0.08              | 0.04              | 0.08              | 0.08              | 0.08              |
| Antimony               | mg/L     | 0.006     | < 0.0001          | 0.0002            | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | 0.0001            | < 0.0001          |
| Arsenic                | mg/L     | 0.025     | 0.0003            | 0.0002            | 0.0004            | 0.0003            | 0.0001            | 0.0002            | 0.0003            | 0.0002            | 0.0002            | 0.0003            | 0.0002            | 0.0002            | 0.0003            |
| Barium                 | mg/L     | 1         | 0.143             | 0.169             | 0.149             | 0.156             | 0.149             | 0.147             | 0.151             | 0.183             | 0.158             | 0.154             | 0.166             | 0.18              | 0.2               |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           |
| Boron                  | mg/L     | 5         | 0.058             | 0.088             | 0.085             | 0.084             | 0.075             | 0.065             | 0.073             | 0.078             | 0.075             | 0.072             | 0.079             | 0.084             | 0.093             |
|                        |          |           |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cadmium                | mg/L     | 0.005     | < 0.00002         | < 0.00002         | < 0.000020        | < 0.000014        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        |
| Chromium (total)       | mg/L     | 0.05      | < 0.0002          | 0.0098            | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |
| Chromium (VI)          | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | < 0.001           |
| Cobalt                 | mg/L     | -         | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | 0.008             | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |
| Copper                 | mg/L     | 1         | 0.0023            | 0.0017            | 0.0014            | 0.0011            | 0.0034            | 0.0017            | 0.0021            | 0.0024            | 0.0033            | 0.0034            | 0.0038            | 0.0023            | 0.0021            |
| Lead                   | mg/L     | 0.01      | < 0.00002         | 0.00004           | < 0.00002         | < 0.00002         | 0.00005           | < 0.00002         | < 0.00002         | 0.00007           | 0.00004           | 0.00007           | 0.00007           | < 0.00002         | 0.00003           |
| Mercury                | mg/L     | 0.001     | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L     | -         | 0.0006            | 0.0007            | 0.0007            | 0.0005            | 0.0006            | 0.0006            | 0.0013            | 0.0007            | 0.0004            | 0.0006            | 0.0005            | 0.0005            | 0.0005            |
| Nickel                 | mg/L     | -         | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            |
| Selenium               | mg/L     | 0.01      | < 0.001           | < 0.001           | 0.003             | < 0.001           | 0.002             | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |
| Silver                 | mg/L     | -         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          |
| Strontium              | mg/L     | -         | 0.318             | 0.468             | 0.258             | 0.277             | 0.27              | 0.264             | 0.29              | 0.322             | 0.282             | 0.277             | 0.288             | 0.312             | 0.341             |
| Thallium               | mg/L     | -         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.005           |
| Vanadium               | mg/L     | -         | 0.0007            | 0.001             | 0.0015            | 0.0003            | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | 0.0001            | < 0.0001          | 0.0001            |
| Zinc                   | mg/L     | 5         | < 0.005           | < 0.005           | 0.007             | < 0.005           | 0.009             | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |

ODWQS - Ontario Drinking Water Quality

Standards

Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| DUP                    |          |           |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|------------------------|----------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Parameters             | Units    | ODWQS     | MW19<br>20-Apr-22 | MW19<br>26-Oct-22 | MW19<br>19-Apr-23 | MW19<br>19-Apr-23 | MW19<br>11-Oct-23 | MW22<br>24-May-12 | MW22<br>01-Oct-12 | MW22<br>22-May-13 | MW22<br>01-Oct-13 | MW22<br>23-Apr-14 | MW22<br>15-Oct-14 | MW22<br>16-Apr-15 | MW22<br>08-Oct-15 |
| Total Alkalinity       | mg/L     | 500       | 435               | 445               | 449               | 454               | 462               | 250               | 250               | 245               | 247               | 258               | 252               | 250               | 257               |
| Calcium                | mg/L     | -         | 166               | 152               | 160               | 167               | 130               | 84                | 79                | 83.2              | 87.2              | 108               | 86.7              | 83.4              | 89.1              |
| Chloride               | mg/L     | 250       | 32.8              | 28.3              | 29.5              | 29.3              | 32.3              | 63                | 49                | 71.3              | 59.4              | 115               | 55                | 59.3              | 60.3              |
| COD                    | mg/L     | -         | 21                | 14                | 11                | 14                | 18                | 22                | 22                | 13                | 22                | 26                | 18                | 20                | 16                |
| Specific Conductivity  | umhos/cm | -         | 969               | 950               | 932               | 957               | 940               | 670               | 650               | 694               | 662               | 835               | 656               | 648               | 626               |
| DOC                    | mg/L     | 5         | 5.7               | 5                 | 6.5               | 3.7               | 8.8               | 6.6               | 8.2               | 9.9               | 10.5              | 8.6               | 11.4              | 8.7               | 7.1               |
| Fluoride               | mg/L     | 1.5       | < 0.1             | < 0.1             | < 0.1             | < 0.1             | <0.1              | 0.15              | 0.18              | 0.3               | 0.2               | 0.3               | 0.2               | 0.2               | 0.2               |
| Iron                   | mg/L     | 0.3       | 0.202             | 0.458             | < 0.005           | 0.272             | 0.292             | 0.92              | 0.8               | 0.887             | 0.907             | 1.48              | 0.971             | 0.908             | 1.03              |
| Magnesium              | mg/L     | -         | 17.8              | 18.3              | 17.4              | 18.4              | 16.6              | 18                | 17                | 18.4              | 18.4              | 19.4              | 18.2              | 17.7              | 18.8              |
| Manganese              | mg/L     | 0.05      | 0.101             | 0.101             | 0.106             | 0.109             | 0.097             | 0.029             | 0.029             | 0.031             | 0.029             | 0.05              | 0.03              | 0.034             | 0.031             |
| Nitrate                | mg/L     | 10        | < 0.05            | < 0.05            | < 0.05            | < 0.05            | <0.05             | < 0.10            | < 0.10            | 0.1               | < 0.1             | <0.1              | 0.2               | < 0.1             | < 0.1             |
| Nitrite                | mg/L     | 1         | < 0.05            | < 0.05            | < 0.05            | < 0.05            | <0.05             | < 0.010           | < 0.010           | < 0.1             | < 0.1             | <0.1              | <0.1              | < 0.1             | < 0.1             |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.74              | 7.68              | 7.73              | 7.83              | 7.44              | 7.79              | 7.69              | 7.89              | 7.86              | 7.98              | 7.89              | 7.89              | 7.89              |
| Phenols                | mg/L     | -         | < 0.001           | < 0.001           | < 0.001           | < 0.001           | <0.001            | < 0.0010          | < 0.0010          | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |
| Phosphorus             | mg/L     | -         | < 0.1             | < 0.1             | < 0.1             | < 0.1             | <0.1              | < 0.10            | < 0.10            | < 0.01            | 0.02              | <0.1              | <0.1              | < 0.1             | < 0.1             |
| Potassium              | mg/L     | -         | 4.1               | 4.2               | 4                 | 4.2               | 3.4               | 3.6               | 3.5               | 3.6               | 3.8               | 3.8               | 3.8               | 3.6               | 3.6               |
| Sodium                 | mg/L     | 200       | 33.4              | 29.8              | 24.6              | 25.8              | 20.2              | 24                | 23                | 25.4              | 23.9              | 29.8              | 24.2              | 23.4              | 25                |
| Sulphate               | mg/L     | 500       | 31                | 28                | 24                | 23                | 21                | < 1               | < 1               | < 1               | 1                 | 3                 | 1                 | < 1               | < 1               |
| Dissolved Solids       | mg/L     | 500       | 547               | 528               | 529               | 542               | 500               | 364               | 343               | 352               | 343               | 436               | 344               | 340               | 354               |
| Tot Kjel N             | mg/L     | -         | 0.3               | 0.3               | 0.7               | 0.9               | 0.3               | 0.56              | 1.7               | 1.2               | 0.8               | 1                 | 0.7               | 0.9               | 0.5               |
| Ammonia (NH3-N)        | mg/L     | -         | 0.02              | 0.07              | 0.43              | 0.4               | <0.05             | 0.45              | 0.6               | 0.548             | 0.52              | 0.61              | 0.57              | 0.56              | 0.54              |
| Ammonia - Unionized    | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | 488               | 456               | 471               | 494               | 393               | 280               | 270               | 284               | 293               | 349               | 292               | 281               | 300               |
| BOD                    | mg/L     | -         |                   |                   |                   |                   |                   | --                | --                | --                | --                | --                | --                | --                | --                |
| Cyanide (free)         | mg/L     | -         |                   |                   |                   |                   |                   | --                | --                | --                | --                | --                | --                | --                | --                |
| Total Suspended Solids | mg/L     | -         |                   |                   |                   |                   |                   | --                | --                | --                | --                | --                | --                | --                | --                |
| Aluminum               | mg/L     | 0.1       | 0.08              | 0.04              | 0.04              | 0.04              | 0.08              | < 0.0050          | 0.0072            | 0.03              | 0.03              | 0.03              | 0.02              | 0.02              | 0.03              |
| Antimony               | mg/L     | 0.006     | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | 0.0001            | < 0.00050         | < 0.00050         | < 0.0001          | < 0.0001          | <0.0001           | <0.0001           | 0.0001            | < 0.0001          |
| Arsenic                | mg/L     | 0.025     | 0.0003            | 0.0003            | 0.0003            | 0.0003            | 0.0003            | < 0.0010          | < 0.0010          | 0.0004            | 0.0005            | 0.0004            | 0.0005            | 0.0004            | 0.0003            |
| Barium                 | mg/L     | 1         | 0.201             | 0.195             | 0.203             | 0.21              | 0.168             | 0.1               | 0.094             | 0.107             | 0.1               | 0.124             | 0.099             | 0.091             | 0.101             |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.002           | < 0.002           | < 0.002           | <0.0001           | < 0.00050         | < 0.00050         | < 0.002           | < 0.002           | <0.002            | <0.002            | < 0.002           | < 0.002           |
| Boron                  | mg/L     | 5         | 0.094             | 0.106             | 0.105             | 0.11              | 0.105             | 0.085             | 0.085             | 0.063             | 0.069             | 0.068             | 0.09              | 0.091             | 0.085             |
|                        |          |           |                   |                   | <                 | <                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cadmium                | mg/L     | 0.005     | < 0.000015        | < 0.000010        | 0.000010          | 0.000010          | <0.000015         | < 0.00010         | < 0.00010         | < 0.00002         | < 0.00002         | 0.00004           | <0.00002          | < 0.00002         | < 0.00002         |
| Chromium (total)       | mg/L     | 0.05      | < 0.001           | 0.003             | < 0.001           | < 0.001           | <0.001            | < 0.0050          | < 0.0050          | < 0.0002          | 0.0197            | 0.0003            | 0.0034            | 0.0002            | 0.0017            |
| Chromium (VI)          | mg/L     | -         | < 0.001           | < 0.001           | < 0.001           | < 0.001           | <0.01             |                   |                   |                   |                   |                   |                   |                   |                   |
| Cobalt                 | mg/L     | -         | < 0.005           | < 0.005           | 0.007             | 0.006             | 0.001             | < 0.00050         | < 0.00050         | < 0.005           | < 0.005           | <0.005            | <0.005            | < 0.005           | < 0.005           |
| Copper                 | mg/L     | 1         | 0.0021            | 0.0023            | 0.0023            | 0.0023            | 0.0024            | < 0.0010          | < 0.0010          | 0.0003            | 0.0006            | 0.0007            | 0.0005            | 0.0011            | 0.0006            |
| Lead                   | mg/L     | 0.01      | 0.00004           | < 0.00002         | < 0.00002         | < 0.00002         | <0.00002          | < 0.00050         | < 0.00050         | 0.00002           | 0.00011           | 0.00007           | 0.00004           | 0.00003           | 0.00003           |
| Mercury                | mg/L     | 0.001     | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | <0.00002          | < 0.00001         | < 0.00001         | < 0.00002         | < 0.00002         | <0.00002          | <0.00002          | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L     | -         | 0.0005            | 0.0005            | 0.0004            | 0.0004            | 0.0004            | < 0.00050         | < 0.00050         | < 0.0001          | < 0.0001          | <0.0001           | <0.0001           | < 0.0001          | < 0.0001          |
| Nickel                 | mg/L     | -         | < 0.01            | < 0.01            | < 0.01            | < 0.01            | 0.0024            | < 0.0010          | < 0.0010          | < 0.01            | < 0.01            | <0.01             | <0.01             | < 0.01            | < 0.01            |
| Selenium               | mg/L     | 0.01      | < 0.001           | < 0.001           | < 0.001           | < 0.001           | <0.001            | < 0.0020          | < 0.0020          | < 0.001           | < 0.001           | <0.001            | 0.002             | < 0.001           | < 0.001           |
| Silver                 | mg/L     | -         | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | <0.0001           | < 0.00010         | < 0.00010         | < 0.00002         | < 0.00002         | <0.00002          | <0.00002          | < 0.00002         | < 0.00002         |
| Strontium              | mg/L     | -         | 0.344             | 0.336             | 0.327             | 0.343             | 0.304             | 1.3               | 1.3               | --                | --                | --                | 1.48              | 1.45              | 1.49              |
| Thallium               | mg/L     | -         | < 0.005           | < 0.005           | < 0.00005         | < 0.00005         | <0.00005          | < 0.000050        | < 0.000050        | < 0.00005         | < 0.00005         | <0.00005          | <0.00005          | < 0.00005         | < 0.00005         |
| Vanadium               | mg/L     | -         | < 0.0001          | 0.0001            | < 0.0001          | < 0.0001          | <0.0001           | < 0.00050         | < 0.00050         | 0.002             | 0.0057            | 0.0018            | 0.0055            | 0.0017            | 0.001             |
| Zinc                   | mg/L     | 5         | < 0.005           | < 0.005           | < 0.005           | < 0.005           | <0.005            | < 0.0050          | < 0.0050          | < 0.005           | < 0.005           | <0.005            | <0.005            | 0.016             | 0.006             |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW22<br>27-Apr-16 | MW22<br>03-Oct-16 | MW22<br>17-Apr-17 | MW22<br>24-Oct-17 | MW22<br>24-Apr-18 | MW22<br>15-Oct-18 | MW22<br>11-Apr-19 | MW22<br>21-Oct-19 | MW22<br>22-Apr-20 | MW22<br>20-Oct-20 | MW22<br>19-Apr-21 | MW22<br>27-Oct-21 | MW22<br>20-Apr-22 |
|------------------------|----------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L     | 500       | 260               | 298               | 309               | 250               | 262               | 273               | 240               | 258               | 237               | 239               | 235               | 263               | 255               |
| Calcium                | mg/L     | -         | 105               | 146               | 143               | 89.5              | 114               | 84.2              | 85.5              | 102               | 86.2              | 92.9              | 90.1              | 87.2              | 88.1              |
| Chloride               | mg/L     | 250       | 92.1              | 106               | 90.9              | 48                | 92.9              | 46.8              | 56.2              | 59.5              | 63.1              | 55.3              | 55.8              | 49.8              | 56                |
| COD                    | mg/L     | -         | 12                | 24                | 31                | 29                | 25                | 21                | 24                | 32                | 31                | 22                | 26                | 15                | 32                |
| Specific Conductivity  | umhos/cm | -         | 798               | 910               | 879               | 665               | 818               | 655               | 657               | 698               | 655               | 654               | 661               | 621               | 673               |
| DOC                    | mg/L     | 5         | 7.1               | 7.8               | 9.7               | 8.3               | 8.8               | 9.1               | 8.5               | 12.9              | 8.2               | 8.4               | 9.4               | 10                | 8.7               |
| Fluoride               | mg/L     | 1.5       | 0.2               | < 0.1             | 0.4               | 0.1               | < 0.1             | < 0.1             | 0.1               | 0.1               | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             |
| Iron                   | mg/L     | 0.3       | 1.42              | 2.94              | 3.22              | 1.05              | 1.68              | 1.13              | 1.63              | 2.22              | 1.47              | 1.51              | 1.44              | 1.4               | 1.6               |
| Magnesium              | mg/L     | -         | 19.8              | 6                 | 5.67              | 19.3              | 20.1              | 16.8              | 18.7              | 19.4              | 19.8              | 16.8              | 18.7              | 18.2              | 18.8              |
| Manganese              | mg/L     | 0.05      | 0.048             | 0.161             | 0.162             | 0.035             | 0.055             | 0.03              | 0.04              | 0.055             | 0.033             | 0.039             | 0.039             | 0.034             | 0.035             |
| Nitrate                | mg/L     | 10        | < 0.1             | < 0.1             | < 0.1             | < 0.05            | < 0.05            | 0.5               | < 0.05            | 0.05              | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            |
| Nitrite                | mg/L     | 1         | < 0.1             | < 0.1             | < 0.1             | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.95              | 7.65              | 7.94              | 7.87              | 7.91              | 7.87              | 8.05              | 7.93              | 7.94              | 7.87              | 7.86              | 7.98              | 7.61              |
| Phenols                | mg/L     | -         | 0.009             | 0.003             | < 0.001           | 0.002             | < 0.001           | < 0.002           | 0.003             | 0.004             | 0.002             | < 0.001           | < 0.001           | < 0.002           | < 0.001           |
| Phosphorus             | mg/L     | -         | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | 0.01              | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             |
| Potassium              | mg/L     | -         | 3.8               | 1.3               | 1.3               | 3.6               | 4.3               | 3.4               | 4.5               | 4.6               | 3.8               | 3.8               | 4.8               | 4.3               | 4.4               |
| Sodium                 | mg/L     | 200       | 29.1              | 45.6              | 36.7              | 23.4              | 33.6              | 22.6              | 25.2              | 25.9              | 24.4              | 24.6              | 26.7              | 24                | 24.2              |
| Sulphate               | mg/L     | 500       | 2                 | 9                 | 11                | 1                 | 3                 | 40                | < 1               | < 1               | < 1               | < 1               | < 1               | < 1               | < 1               |
| Dissolved Solids       | mg/L     | 500       | 410               | 496               | 478               | 338               | 427               | 380               | 338               | 370               | 340               | 339               | 339               | 344               | 348               |
| Tot Kjeh N             | mg/L     | -         | 0.9               | 1.8               | 0.8               | 0.8               | 0.8               | 0.7               | 0.9               | 1                 | 0.9               | 1                 | 1.5               | 1                 | 1.5               |
| Ammonia (NH3-N)        | mg/L     | -         | 0.67              | 0.4               | 0.46              | 0.59              | 0.64              | 0.53              | 0.78              | 0.81              | 0.59              | 0.7               | 1.33              | 0.81              | 1.46              |
| Ammonia - Unionized    | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Hardness (CaCO3)       | mg/L     | 100       | 343               | 390               | 381               | 303               | 368               | 280               | 291               | 335               | 297               | 302               | 302               | 293               | 298               |
| BOD                    | mg/L     | -         | --                | --                | --                | --                |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cyanide (free)         | mg/L     | -         | --                | --                | --                | --                |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Total Suspended Solids | mg/L     | -         | --                | --                | --                | --                |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Aluminum               | mg/L     | 0.1       | 0.03              | 0.05              | 0.08              | 0.04              | 0.07              | 0.05              | 0.05              | 0.07              | 0.05              | 0.03              | 0.06              | 0.06              | 0.05              |
| Antimony               | mg/L     | 0.006     | < 0.0001          | 0.0001            | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          |
| Arsenic                | mg/L     | 0.025     | 0.0004            | < 0.0001          | 0.0005            | 0.0003            | < 0.0001          | 0.0001            | 0.0002            | 0.0003            | 0.0002            | 0.0002            | 0.0002            | 0.0002            | 0.0003            |
| Barium                 | mg/L     | 1         | 0.117             | 0.085             | 0.082             | 0.109             | 0.138             | 0.101             | 0.1               | 0.12              | 0.1               | 0.089             | 0.095             | 0.095             | 0.088             |
| Beryllium              | mg/L     | -         | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           |
| Boron                  | mg/L     | 5         | 0.057             | 0.009             | 0.013             | 0.088             | 0.063             | 0.083             | 0.1               | 0.102             | 0.097             | 0.095             | 0.103             | 0.097             | 0.099             |
| Cadmium                | mg/L     | 0.005     | < 0.00002         | < 0.00002         | < 0.000020        | < 0.000014        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        |
| Chromium (total)       | mg/L     | 0.05      | < 0.0002          | < 0.0002          | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |
| Chromium (VI)          | mg/L     | -         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | < 0.001           |
| Cobalt                 | mg/L     | -         | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | 0.008             | 0.007             | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |
| Copper                 | mg/L     | 1         | 0.0007            | 0.0003            | 0.0012            | < 0.0001          | < 0.0001          | < 0.0001          | 0.0003            | 0.0007            | 0.0004            | 0.0013            | 0.0016            | 0.0006            | < 0.0001          |
| Lead                   | mg/L     | 0.01      | 0.00005           | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | 0.00019           | < 0.00002         | 0.00008           | 0.00002           | 0.00006           | 0.00005           | < 0.00002         | 0.00004           |
| Mercury                | mg/L     | 0.001     | 0.00003           | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L     | -         | < 0.0001          | 0.0001            | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | 0.0001            | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          |
| Nickel                 | mg/L     | -         | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            |
| Selenium               | mg/L     | 0.01      | < 0.001           | < 0.001           | 0.002             | < 0.001           | 0.002             | < 0.001           | 0.001             | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |
| Silver                 | mg/L     | -         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          |
| Strontium              | mg/L     | -         | 1.63              | 0.361             | 0.322             | 1.42              | 1.57              | 1.32              | 1.51              | 1.55              | 1.43              | 1.28              | 1.43              | 1.43              | 1.44              |
| Thallium               | mg/L     | -         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.005           |
| Vanadium               | mg/L     | -         | 0.0013            | 0.0027            | 0.0033            | 0.0005            | 0.0008            | 0.0005            | 0.0004            | 0.0006            | 0.0005            | 0.0007            | 0.0006            | 0.0006            | 0.0007            |
| Zinc                   | mg/L     | 5         | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | 0.009             | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |

ODWQS - Ontario Drinking Water Quality

Standards

Bold and highlighted indicates exceedance



Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW22       | MW22       | MW22      |
|------------------------|----------|-----------|------------|------------|-----------|
|                        |          |           | 26-Oct-22  | 19-Apr-23  | 11-Oct-23 |
| Total Alkalinity       | mg/L     | 500       | 256        | 256        | 290       |
| Calcium                | mg/L     | -         | 89.7       | 89.5       | 73.2      |
| Chloride               | mg/L     | 250       | 50.9       | 54.1       | 53.4      |
| COD                    | mg/L     | -         | 40         | 18         | 31        |
| Specific Conductivity  | umhos/cm | -         | 664        | 663        | 685       |
| DOC                    | mg/L     | 5         | 7.7        | 7.9        | 11.5      |
| Fluoride               | mg/L     | 1.5       | < 0.1      | < 0.1      | <0.1      |
| Iron                   | mg/L     | 0.3       | 2.29       | 1.75       | 1.68      |
| Magnesium              | mg/L     | -         | 19.6       | 19.1       | 17.6      |
| Manganese              | mg/L     | 0.05      | 0.069      | 0.034      | 0.038     |
| Nitrate                | mg/L     | 10        | < 0.05     | < 0.05     | <0.05     |
| Nitrite                | mg/L     | 1         | < 0.05     | < 0.05     | <0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.77       | 7.82       | 7.1       |
| Phenols                | mg/L     | -         | < 0.001    | < 0.001    | <0.001    |
| Phosphorus             | mg/L     | -         | < 0.1      | < 0.1      | <0.1      |
| Potassium              | mg/L     | -         | 7.9        | 4.4        | 4.7       |
| Sodium                 | mg/L     | 200       | 30.4       | 22.9       | 22        |
| Sulphate               | mg/L     | 500       | < 1        | < 1        | <1        |
| Dissolved Solids       | mg/L     | 500       | 356        | 346        | 356       |
| Tot Kjel N             | mg/L     | -         | 1.9        | 1          | 1.7       |
| Ammonia (NH3-N)        | mg/L     | -         | 1.08       | 0.78       | 1.6       |
| Ammonia - Unionized    | mg/L     | -         |            |            |           |
| Hardness (CaCO3)       | mg/L     | 100       | 305        | 302        | 255       |
| BOD                    | mg/L     | -         |            |            |           |
| Cyanide (free)         | mg/L     | -         |            |            |           |
| Total Suspended Solids | mg/L     | -         |            |            |           |
| Aluminum               | mg/L     | 0.1       | 0.03       | 0.02       | 0.06      |
| Antimony               | mg/L     | 0.006     | < 0.0001   | < 0.0001   | 0.0001    |
| Arsenic                | mg/L     | 0.025     | 0.0003     | 0.0002     | 0.0005    |
| Barium                 | mg/L     | 1         | 0.088      | 0.098      | 0.075     |
| Beryllium              | mg/L     | -         | < 0.002    | < 0.002    | <0.0001   |
| Boron                  | mg/L     | 5         | 0.143      | 0.1        | 0.112     |
| Cadmium                | mg/L     | 0.005     | < 0.000010 | < 0.000010 | <0.000015 |
| Chromium (total)       | mg/L     | 0.05      | < 0.001    | < 0.001    | <0.001    |
| Chromium (VI)          | mg/L     | -         | < 0.001    | < 0.001    | <0.01     |
| Cobalt                 | mg/L     | -         | < 0.005    | < 0.005    | 0.0002    |
| Copper                 | mg/L     | 1         | 0.0005     | 0.0002     | 0.0005    |
| Lead                   | mg/L     | 0.01      | 0.00002    | < 0.00002  | 0.00003   |
| Mercury                | mg/L     | 0.001     | < 0.00002  | < 0.00002  | 0.00002   |
| Molybdenum             | mg/L     | -         | < 0.0001   | < 0.0001   | <0.0001   |
| Nickel                 | mg/L     | -         | < 0.01     | < 0.01     | 0.0002    |
| Selenium               | mg/L     | 0.01      | < 0.001    | < 0.001    | <0.001    |
| Silver                 | mg/L     | -         | < 0.0001   | < 0.0001   | <0.0001   |
| Strontium              | mg/L     | -         | 1.39       | 1.49       | 1.32      |
| Thallium               | mg/L     | -         | < 0.005    | < 0.00005  | <0.00005  |
| Vanadium               | mg/L     | -         | 0.0007     | 0.0006     | 0.0008    |
| Zinc                   | mg/L     | 5         | < 0.005    | < 0.005    | <0.005    |

ODWQS - Ontario Drinking Water Quality  
Standards

Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW22A      | MW22A       | MW22A        | MW22A        | MW22A        | MW22A        | MW22A        | MW22A        | MW22A        | MW22A       | MW22A       | MW22A        | MW22A        |
|------------------------|----------|-----------|------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|
|                        |          |           | 24-May-12  | 01-Oct-12   | 22-May-13    | 01-Oct-13    | 23-Apr-14    | 15-Oct-14    | 16-Apr-15    | 08-Oct-15    | 27-Apr-16    | 03-Oct-16   | 17-Apr-17   | 24-Oct-17    | 24-Apr-18    |
| Total Alkalinity       | mg/L     | 500       | 330        | 320         | 319          | 309          | 317          | 317          | 325          | 318          | 347          | 250         | 265         | 274          | 273          |
| Calcium                | mg/L     | -         | 160        | 160         | 153          | 156          | 145          | 154          | 158          | 146          | 160          | 90.2        | 107         | 142          | 153          |
| Chloride               | mg/L     | 250       | 130        | 140         | 135          | 124          | 101          | 114          | 110          | 96.1         | 106          | 59.5        | 97.7        | 92.4         | 120          |
| COD                    | mg/L     | -         | 26         | 25          | 56           | 30           | 29           | 22           | 31           | 22           | 17           | 19          | 25          | 37           | 27           |
| Specific Conductivity  | umhos/cm | -         | 1100       | 1100        | 1050         | 1020         | 910          | 968          | 951          | 854          | 1010         | 662         | 805         | 900          | 957          |
| DOC                    | mg/L     | 5         | <b>7.6</b> | <b>8</b>    | <b>9.1</b>   | <b>10</b>    | <b>11.5</b>  | <b>11.8</b>  | <b>10.2</b>  | <b>7</b>     | <b>7.2</b>   | <b>9</b>    | <b>8.4</b>  | <b>8.5</b>   | <b>8.7</b>   |
| Fluoride               | mg/L     | 1.5       | < 0.10     | < 0.10      | 0.2          | 0.1          | <0.1         | 0.1          | 0.2          | 0.1          | < 0.1        | < 0.1       | 0.5         | < 0.1        | < 0.1        |
| Iron                   | mg/L     | 0.3       | <b>3.6</b> | <b>3.8</b>  | <b>3.52</b>  | <b>3.62</b>  | <b>3.38</b>  | <b>3.56</b>  | <b>3.7</b>   | <b>3.41</b>  | <b>3.68</b>  | <b>1.02</b> | <b>1.52</b> | <b>2.97</b>  | <b>2.73</b>  |
| Magnesium              | mg/L     | -         | 6.2        | 6.6         | 6.42         | 5.95         | 5.97         | 7.04         | 7.1          | 6.28         | 6.51         | 19.5        | 20          | 6.41         | 6.51         |
| Manganese              | mg/L     | 0.05      | <b>0.2</b> | <b>0.23</b> | <b>0.277</b> | <b>0.219</b> | <b>0.205</b> | <b>0.247</b> | <b>0.245</b> | <b>0.215</b> | <b>0.229</b> | 0.035       | 0.049       | <b>0.169</b> | <b>0.146</b> |
| Nitrate                | mg/L     | 10        | < 0.10     | < 0.10      | 0.1          | 0.2          | 0.1          | 0.1          | 0.1          | < 0.1        | < 0.1        | < 0.1       | < 0.1       | 0.09         | < 0.05       |
| Nitrite                | mg/L     | 1         | < 0.010    | < 0.010     | < 0.1        | < 0.1        | <0.1         | <0.1         | < 0.1        | < 0.1        | < 0.1        | < 0.1       | < 0.1       | < 0.05       | < 0.05       |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.61       | 7.43        | 7.64         | 7.56         | 7.72         | 7.59         | 7.61         | 7.78         | 7.8          | 7.9         | 8.06        | 7.64         | 7.79         |
| Phenols                | mg/L     | -         | < 0.0010   | < 0.0010    | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | 0.009        | 0.004       | < 0.001     | < 0.001      | < 0.001      |
| Phosphorus             | mg/L     | -         | < 0.10     | < 0.10      | < 0.1        | 0.08         | <0.1         | <0.1         | < 0.1        | < 0.1        | < 0.1        | < 0.1       | < 0.1       | < 0.1        | < 0.1        |
| Potassium              | mg/L     | -         | 1.7        | 1.6         | 1.5          | 1.5          | 1.5          | 1.5          | 1.5          | 1.3          | 1.4          | 3.6         | 3.9         | 1.3          | 1.7          |
| Sodium                 | mg/L     | 200       | 57         | 48          | 49.3         | 52.8         | 37.3         | 41.5         | 39           | 40.6         | 48.4         | 25.5        | 28.6        | 39.8         | 47.3         |
| Sulphate               | mg/L     | 500       | 27         | 24          | 23           | 20           | 13           | 15           | 12           | 10           | 14           | < 1         | 2           | 6            | 8            |
| Dissolved Solids       | mg/L     | 500       | <b>595</b> | <b>588</b>  | <b>565</b>   | <b>551</b>   | 498          | <b>528</b>   | <b>528</b>   | 495          | <b>550</b>   | 351         | 421         | 456          | <b>505</b>   |
| Tot Kjel N             | mg/L     | -         | 0.58       | 0.89        | 1.5          | 0.79         | 0.9          | 0.9          | 1.4          | 1.1          | 0.9          | 0.9         | 0.9         | 0.8          | 0.7          |
| Ammonia (NH3-N)        | mg/L     | -         | 0.36       | 0.5         | 0.575        | 0.4          | 0.46         | 0.56         | 0.39         | 0.51         | 0.56         | 0.56        | 0.65        | < 0.01       | 0.4          |
| Ammonia - Unionized    | mg/L     | -         |            |             |              |              |              |              |              |              |              |             |             |              |              |
| Hardness (CaCO3)       | mg/L     | 100       | <b>430</b> | <b>430</b>  | <b>408</b>   | <b>416</b>   | <b>388</b>   | <b>414</b>   | <b>424</b>   | <b>390</b>   | <b>427</b>   | <b>306</b>  | <b>350</b>  | <b>381</b>   | <b>409</b>   |
| BOD                    | mg/L     | -         | --         | --          | --           | --           | --           | --           | --           | --           | --           | --          | --          | --           |              |
| Cyanide (free)         | mg/L     | -         | --         | --          | --           | --           | --           | --           | --           | --           | --           | --          | --          | --           |              |
| Total Suspended Solids | mg/L     | -         | --         | --          | --           | --           | --           | --           | --           | --           | --           | --          | --          | --           |              |
| Aluminum               | mg/L     | 0.1       | 0.0072     | 0.0098      | 0.05         | 0.05         | 0.04         | 0.04         | 0.05         | 0.05         | 0.05         | 0.05        | 0.06        | 0.07         | 0.08         |
| Antimony               | mg/L     | 0.006     | < 0.00050  | < 0.00050   | < 0.0001     | < 0.0001     | <0.0001      | <0.0001      | 0.0001       | < 0.0001     | < 0.0001     | 0.0004      | < 0.0001    | < 0.0001     | < 0.0001     |
| Arsenic                | mg/L     | 0.025     | < 0.0010   | < 0.0010    | 0.0003       | 0.0004       | 0.0002       | 0.0002       | 0.0002       | 0.0003       | 0.0002       | < 0.0001    | 0.0005      | 0.0004       | < 0.0001     |
| Barium                 | mg/L     | 1         | 0.084      | 0.093       | 0.091        | 0.095        | 0.079        | 0.096        | 0.096        | 0.09         | 0.089        | 0.101       | 0.123       | 0.087        | 0.085        |
| Beryllium              | mg/L     | -         | < 0.00050  | < 0.00050   | < 0.002      | < 0.002      | <0.002       | <0.002       | < 0.002      | < 0.002      | < 0.002      | < 0.002     | < 0.002     | < 0.002      | < 0.002      |
| Boron                  | mg/L     | 5         | 0.02       | 0.019       | < 0.005      | < 0.005      | 0.021        | 0.019        | 0.022        | 0.013        | < 0.005      | 0.087       | 0.079       | 0.014        | 0.01         |
| Cadmium                | mg/L     | 0.005     | < 0.00010  | < 0.00010   | < 0.00002    | < 0.00002    | <0.00002     | 0.00006      | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002   | 0.000029    | < 0.000014   | < 0.000015   |
| Chromium (total)       | mg/L     | 0.05      | < 0.0050   | < 0.0050    | < 0.0002     | 0.0375       | 0.0003       | 0.004        | 0.0006       | 0.0028       | < 0.0002     | < 0.0002    | < 0.001     | < 0.001      | < 0.001      |
| Chromium (VI)          | mg/L     | -         |            |             |              |              |              |              |              |              |              |             |             |              |              |
| Cobalt                 | mg/L     | -         | < 0.00050  | < 0.00050   | < 0.005      | < 0.005      | <0.005       | <0.005       | < 0.005      | < 0.005      | < 0.005      | < 0.005     | < 0.005     | < 0.005      | < 0.005      |
| Copper                 | mg/L     | 1         | 0.0012     | < 0.0010    | 0.0004       | 0.001        | 0.0008       | 0.0012       | 0.0006       | 0.0006       | 0.0006       | 0.0002      | 0.0012      | 0.0001       | < 0.0001     |
| Lead                   | mg/L     | 0.01      | < 0.00050  | < 0.00050   | 0.00003      | 0.00012      | 0.00003      | 0.00014      | < 0.00002    | < 0.00002    | < 0.00002    | 0.00005     | < 0.00002   | < 0.00002    | < 0.00002    |
| Mercury                | mg/L     | 0.001     | < 0.00001  | < 0.00001   | < 0.00002    | < 0.00002    | <0.00002     | <0.00002     | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002   | < 0.00002    | < 0.00002    |
| Molybdenum             | mg/L     | -         | < 0.00050  | < 0.00050   | < 0.0001     | < 0.0001     | <0.0001      | 0.0001       | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001    | < 0.0001     | < 0.0001     |
| Nickel                 | mg/L     | -         | < 0.0010   | < 0.0010    | < 0.01       | < 0.01       | <0.01        | <0.01        | < 0.01       | < 0.01       | < 0.01       | < 0.01      | < 0.01      | < 0.01       | < 0.01       |
| Selenium               | mg/L     | 0.01      | < 0.0020   | < 0.0020    | < 0.001      | < 0.001      | <0.001       | 0.001        | < 0.001      | < 0.001      | < 0.001      | < 0.001     | 0.002       | < 0.001      | 0.003        |
| Silver                 | mg/L     | -         | < 0.00010  | < 0.00010   | < 0.00002    | < 0.00002    | <0.00002     | <0.00002     | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002   | < 0.00002    | < 0.0001     |
| Strontium              | mg/L     | -         | 0.37       | 0.4         | --           | --           | --           | 0.482        | 0.502        | 0.423        | 0.443        | 1.43        | 1.48        | 0.35         | 0.355        |
| Thallium               | mg/L     | -         | < 0.000050 | < 0.000050  | < 0.00005    | < 0.00005    | <0.00005     | <0.00005     | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005   | < 0.00005   | < 0.00005    | < 0.00005    |
| Vanadium               | mg/L     | -         | 0.001      | 0.0015      | 0.0041       | 0.0103       | 0.0037       | 0.0081       | 0.0041       | 0.0028       | 0.0029       | 0.0011      | 0.0016      | 0.0021       | 0.0018       |
| Zinc                   | mg/L     | 5         | < 0.0050   | < 0.0050    | < 0.005      | < 0.005      | 0.008        | 0.009        | 0.009        | 0.007        | < 0.005      | < 0.005     | < 0.005     | < 0.005      | < 0.005      |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW22A      | MW22A      | MW22A      | MW22A      | MW22A      | MW22A      | MW22A      | MW22A      | MW22A      | MW22A     | MW22A     | MW22B      | MW22B      |
|------------------------|----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-----------|-----------|------------|------------|
|                        |          |           | 15-Oct-18  | 11-Apr-19  | 21-Oct-19  | 22-Apr-20  | 20-Oct-20  | 19-Apr-21  | 27-Oct-21  | 20-Apr-22  | 26-Oct-22  | 19-Apr-23 | 11-Oct-23 | 24-May-12  | 01-Oct-12  |
| Total Alkalinity       | mg/L     | 500       | 272        | 281        | 386        | 315        | 317        | 317        | 382        | 344        | 365        | 373       | 364       | 290        | 240        |
| Calcium                | mg/L     | -         | 138        | 153        | 177        | 170        | 157        | 270        | 268        | 231        | 174        | 285       | 161       | 110        | 110        |
| Chloride               | mg/L     | 250       | 111        | 117        | 97.4       | 141        | 113        | 414        | 561        | 428        | 342        | 504       | 336       | 19         | 26         |
| COD                    | mg/L     | -         | 23         | 28         | 264        | 31         | 85         | 30         | 21         | 37         | 34         | 33        | 62        | 13         | 15         |
| Specific Conductivity  | umhos/cm | -         | 876        | 939        | 1130       | 1050       | 978        | 1960       | 2380       | 2060       | 1860       | 2205      | 1660      | 640        | 620        |
| DOC                    | mg/L     | 5         | 8.2        | 9.9        | 64.1       | 8          | 10.3       | 4.5        | 4.3        | 3.4        | 2.5        | 3.7       | 6.2       | 1.7        | 2.5        |
| Fluoride               | mg/L     | 1.5       | < 0.1      | < 0.1      | 5.3        | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.5      | < 1        | < 0.1     | <0.1      | < 0.10     | < 0.10     |
| Iron                   | mg/L     | 0.3       | 3.03       | 3.52       | 5.66       | 3.98       | 3.55       | 6.42       | 6.66       | 5.65       | 4.35       | 7.47      | 0.29      | < 0.10     | < 0.10     |
| Magnesium              | mg/L     | -         | 5.81       | 11.6       | 8.41       | 8.05       | 9.27       | 12.3       | 12.2       | 10.9       | 12.7       | 14.4      | 12.3      | 5.1        | 4.5        |
| Manganese              | mg/L     | 0.05      | 0.133      | 0.214      | 0.219      | 0.22       | 0.154      | 0.385      | 0.397      | 0.334      | 0.234      | 0.437     | 0.236     | 0.11       | 0.0029     |
| Nitrate                | mg/L     | 10        | < 0.05     | < 0.05     | 0.06       | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.3      | < 0.5      | < 0.05    | <0.05     | 2.2        | 5.7        |
| Nitrite                | mg/L     | 1         | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.3      | < 0.5      | < 0.05    | <0.05     | < 0.010    | < 0.010    |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.76       | 7.87       | 7.63       | 7.69       | 7.55       | 7.62       | 7.83       | 7.52       | 7.67       | 7.61      | 7.27      | 7.93       | 7.54       |
| Phenols                | mg/L     | -         | < 0.002    | < 0.002    | 0.115      | < 0.002    | 0.019      | < 0.001    | < 0.002    | < 0.001    | < 0.001    | < 0.001   | <0.001    | < 0.0010   | < 0.0010   |
| Phosphorus             | mg/L     | -         | < 0.1      | 0.2        | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1     | <0.1      | < 0.10     | < 0.10     |
| Potassium              | mg/L     | -         | 1.3        | 2.4        | 1.5        | 1.7        | 1.9        | 2.6        | 2.5        | 2          | 2.6        | 2.3       | 2.5       | 0.92       | 0.96       |
| Sodium                 | mg/L     | 200       | 38.8       | 28.2       | 47.6       | 48.4       | 44.7       | 135        | 235        | 194        | 177        | 176       | 154       | 13         | 22         |
| Sulphate               | mg/L     | 500       | 8          | 6          | 5          | 9          | 2          | 10         | 14         | 9          | < 10       | 9         | 6         | 18         | 32         |
| Dissolved Solids       | mg/L     | 500       | 470        | 492        | 580        | 568        | 522        | 1036       | 1330       | 1083       | 933        | 1224      | 909       | 358        | 369        |
| Tot Kjel N             | mg/L     | -         | 0.8        | 1.1        | 1.4        | 0.9        | 1.3        | 1.3        | 1.6        | 2          | 1.7        | 2.1       | 1.3       | 0.32       | 0.26       |
| Ammonia (NH3-N)        | mg/L     | -         | 0.64       | 0.62       | 0.57       | 0.47       | 0.46       | 0.98       | 1.11       | 1.2        | 0.92       | 1.62      | 0.89      | < 0.050    | 0.05       |
| Ammonia - Unionized    | mg/L     | -         |            |            |            |            |            |            |            |            |            |           |           |            |            |
| Hardness (CaCO3)       | mg/L     | 100       | 369        | 430        | 477        | 458        | 431        | 726        | 720        | 622        | 488        | 771       | 453       | 300        | 290        |
| BOD                    | mg/L     | -         |            |            |            |            |            |            |            |            |            |           |           | --         | --         |
| Cyanide (free)         | mg/L     | -         |            |            |            |            |            |            |            |            |            |           |           | --         | --         |
| Total Suspended Solids | mg/L     | -         |            |            |            |            |            |            |            |            |            |           |           | --         | --         |
| Aluminum               | mg/L     | 0.1       | 0.07       | 0.08       | 0.1        | 0.09       | 0.06       | 0.13       | 0.12       | 0.11       | 0.06       | 0.08      | 0.11      | < 0.0050   | < 0.0050   |
| Antimony               | mg/L     | 0.006     | < 0.0001   | < 0.0001   | 0.0001     | < 0.0001   | < 0.0001   | 0.0002     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | 0.0001    | < 0.00050  | < 0.00050  |
| Arsenic                | mg/L     | 0.025     | 0.0001     | 0.0002     | 0.0003     | 0.0001     | 0.0003     | < 0.0003   | < 0.0003   | < 0.0003   | 0.0001     | < 0.0003  | 0.0002    | < 0.0010   | < 0.0010   |
| Barium                 | mg/L     | 1         | 0.076      | 0.123      | 0.119      | 0.112      | 0.096      | 0.218      | 0.288      | 0.247      | 0.216      | 0.327     | 0.206     | 0.025      | 0.03       |
| Beryllium              | mg/L     | -         | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002   | <0.0001   | < 0.00050  | < 0.00050  |
| Boron                  | mg/L     | 5         | 0.011      | 0.035      | 0.095      | 0.022      | 0.057      | 0.036      | 0.041      | 0.036      | 0.049      | 0.036     | 0.048     | 0.13       | 0.099      |
| Cadmium                | mg/L     | 0.005     | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000029 | < 0.000029 | < 0.000029 | < 0.000012 | 0.000029  | <0.000015 | < 0.00010  | < 0.00010  |
| Chromium (total)       | mg/L     | 0.05      | < 0.001    | < 0.001    | 0.001      | 0.001      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001   | 0.001     | < 0.0050   | < 0.0050   |
| Chromium (VI)          | mg/L     | -         |            |            |            |            |            |            |            | < 0.001    | < 0.001    | < 0.001   | <0.01     |            |            |
| Cobalt                 | mg/L     | -         | < 0.005    | 0.007      | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | 0.007     | 0.0003    | < 0.00050  | < 0.00050  |
| Copper                 | mg/L     | 1         | 0.0003     | 0.0003     | 0.0006     | 0.0002     | 0.0004     | 0.0008     | 0.0006     | 0.0004     | 0.0003     | 0.0005    | 0.0005    | 0.0025     | 0.0017     |
| Lead                   | mg/L     | 0.01      | < 0.00002  | < 0.00002  | 0.00007    | < 0.00004  | 0.00013    | < 0.00009  | < 0.00009  | < 0.00009  | < 0.00004  | < 0.00009 | 0.00009   | < 0.00050  | < 0.00050  |
| Mercury                | mg/L     | 0.001     | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002 | <0.00002  | < 0.00001  | < 0.00001  |
| Molybdenum             | mg/L     | -         | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0002   | < 0.0002   | < 0.0002   | < 0.0001   | 0.0003    | <0.0001   | < 0.00050  | < 0.00050  |
| Nickel                 | mg/L     | -         | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01    | 0.0008    | < 0.0010   | < 0.0010   |
| Selenium               | mg/L     | 0.01      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | 0.003      | < 0.001    | 0.003     | <0.001    | < 0.0020   | < 0.0020   |
| Silver                 | mg/L     | -         | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | 0.0005     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | < 0.00010  | < 0.00010  |
| Strontium              | mg/L     | -         | 0.298      | 0.966      | 0.453      | 0.463      | 0.605      | 0.825      | 0.9        | 0.767      | 0.943      | 0.993     | 0.893     | 0.21       | 0.21       |
| Thallium               | mg/L     | -         | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.005    | < 0.005    | < 0.00005 | <0.00005  | < 0.000050 | < 0.000050 |
| Vanadium               | mg/L     | -         | 0.002      | 0.0021     | 0.0021     | 0.0021     | 0.0029     | 0.0018     | 0.0016     | 0.0021     | 0.0019     | 0.0021    | 0.0013    | < 0.00050  | < 0.00050  |
| Zinc                   | mg/L     | 5         | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005   | <0.005    | 0.0073     | < 0.0050   |

ODWQS - Ontario Drinking Water Quality  
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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW22B     | MW22B     | MW22B     | MW22B     | MW22B     | MW22B     | MW22B     | MW22B     | MW22B      | MW22B      | MW22B      | MW22B     | MW22B     |
|------------------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|-----------|-----------|
|                        |          |           | 22-May-13 | 01-Oct-13 | 23-Apr-14 | 15-Oct-14 | 16-Apr-15 | 08-Oct-15 | 27-Apr-16 | 03-Oct-16 | 18-Apr-17  | 24-Oct-17  | 24-Apr-18  | 15-Oct-18 | 11-Apr-19 |
| Total Alkalinity       | mg/L     | 500       | 411       | 304       | 396       | 272       | 264       | 274       | 415       | 453       | 447        | 553        | 1120       | 4300      | 1200      |
| Calcium                | mg/L     | -         | 129       | 120       | 162       | 106       | 143       | 121       | 176       | 216       | 133        | 238        | 838        | 1520      | 310       |
| Chloride               | mg/L     | 250       | 15        | 34.2      | 33        | 62.3      | 109       | 55.5      | 27.5      | 21.6      | 27.9       | 86         | 420        | 129       | 195       |
| COD                    | mg/L     | -         | 25        | 30        | 18        | <5        | 5         | 21        | < 5       | 22        | 38         | 36         | 5670       | 8250      | 234       |
| Specific Conductivity  | umhos/cm | -         | 855       | 764       | 861       | 751       | 936       | 708       | 1040      | 1030      | 919        | 1270       | 6840       | 10400     | 2880      |
| DOC                    | mg/L     | 5         | 12.8      | 12.1      | 8.9       | 4.7       | 3.5       | 1.8       | 4.8       | 9.4       | 10.6       | 8.1        | 134        | 533       | 83.2      |
| Fluoride               | mg/L     | 1.5       | 0.2       | 0.1       | <0.1      | 0.1       | 0.2       | 0.1       | < 0.1     | < 0.1     | < 0.1      | < 0.1      | 165        | 75.7      | < 1       |
| Iron                   | mg/L     | 0.3       | 0.006     | 0.062     | 0.052     | 0.006     | 0.009     | 0.012     | 0.01      | 0.006     | 5.87       | 30         | 123        | 363       |           |
| Magnesium              | mg/L     | -         | 5.27      | 4.56      | 5.99      | 4.86      | 6.82      | 5.27      | 8.13      | 7.71      | 4.94       | 9.53       | 79.5       | 123       | 37.9      |
| Manganese              | mg/L     | 0.05      | 1.12      | 0.842     | 0.611     | 0.122     | 0.031     | 0.011     | 0.128     | 1.41      | 3.4        | 3.91       | 9.35       | 12.9      | 2.15      |
| Nitrate                | mg/L     | 10        | 1.7       | 2.3       | 3.5       | 3.3       | 4.2       | 1.8       | 17.5      | 10        | 0.4        | 1.96       | < 0.5      | < 0.3     | < 0.5     |
| Nitrite                | mg/L     | 1         | < 0.1     | < 0.1     | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | 0.3        | < 0.05     | < 0.5      | < 0.3     | < 0.5     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.44      | 7.45      | 7.69      | 7.8       | 7.76      | 7.82      | 7.66      | 7.35      | 7.63       | 7          | 6.68       | 6.86      | 7.75      |
| Phenols                | mg/L     | -         | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.005     | 0.005     | < 0.001    | < 0.001    | 2.7        | 5.85      | 0.82      |
| Phosphorus             | mg/L     | -         | < 0.1     | < 0.1     | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | 8.1        | 5.6       | 4.9       |
| Potassium              | mg/L     | -         | 1.5       | 1.4       | 1.8       | 1.2       | 1.1       | 1.2       | 1.4       | 2.8       | 4.4        | 7.5        | 315        | 420       | 138       |
| Sodium                 | mg/L     | 200       | 47.3      | 45.4      | 16.8      | 38.5      | 43.5      | 24.2      | 51.2      | 17.2      | 18.9       | 51         | 534        | 709       | 189       |
| Sulphate               | mg/L     | 500       | 18        | 26        | 18        | 19        | 49        | 26        | 40        | 27        | 17         | 17         | 221        | < 5       | 17        |
| Dissolved Solids       | mg/L     | 500       | 472       | 425       | 491       | 409       | 529       | 406       | 631       | 611       | 487        | 775        | 3622       | 5998      | 1747      |
| Tot Kjel N             | mg/L     | -         | 0.6       | 0.76      | 0.5       | 0.2       | 0.5       | 0.2       | 0.7       | 1         | 1.1        | 0.9        | 233        | 508       | 92.8      |
| Ammonia (NH3-N)        | mg/L     | -         | 0.031     | 0.03      | <0.01     | 0.02      | < 0.01    | 0.02      | 0.05      | 0.07      | 0.19       | 0.52       | 189        | 421       | 108       |
| Ammonia - Unionized    | mg/L     | -         |           |           |           |           |           |           |           |           |            |            |            |           |           |
| Hardness (CaCO3)       | mg/L     | 100       | 344       | 318       | 430       | 284       | 386       | 325       | 473       | 572       | 353        | 634        | 2340       | 4310      | 931       |
| BOD                    | mg/L     | -         | --        | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |           |           |
| Cyanide (free)         | mg/L     | -         | --        | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |           |           |
| Total Suspended Solids | mg/L     | -         | --        | --        | --        | --        | --        | --        | --        | --        | --         | --         |            |           |           |
| Aluminum               | mg/L     | 0.1       | 0.04      | 0.04      | 0.04      | 0.02      | 0.03      | 0.03      | 0.05      | 0.06      | 0.08       | 0.09       | 0.37       | 0.36      | 0.13      |
| Antimony               | mg/L     | 0.006     | < 0.0001  | 0.0002    | 0.0001    | <0.0001   | 0.0002    | 0.0002    | < 0.0001  | 0.0004    | 0.0001     | < 0.0001   | 0.0063     | 0.0064    | 0.0011    |
| Arsenic                | mg/L     | 0.025     | 0.0004    | 0.0005    | 0.0004    | 0.0003    | 0.0002    | 0.0001    | 0.0002    | < 0.0001  | 0.0031     | 0.0029     | 0.0071     | 0.0131    | 0.0079    |
| Barium                 | mg/L     | 1         | 0.042     | 0.042     | 0.039     | 0.03      | 0.041     | 0.035     | 0.051     | 0.071     | 0.075      | 0.179      | 0.47       | 0.751     | 0.107     |
| Beryllium              | mg/L     | -         | < 0.002   | < 0.002   | <0.002    | <0.002    | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    | < 0.002   | < 0.002   |
| Boron                  | mg/L     | 5         | 0.065     | 0.078     | 0.081     | 0.065     | 0.059     | 0.065     | 0.051     | 0.134     | 0.234      | 0.203      | 1.98       | 2.71      | 0.785     |
| Cadmium                | mg/L     | 0.005     | 0.00008   | 0.00004   | 0.00002   | <0.00002  | 0.00003   | < 0.00002 | 0.00005   | 0.00012   | < 0.000020 | < 0.000014 | < 0.000059 | 0.000066  | 0.000031  |
| Chromium (total)       | mg/L     | 0.05      | < 0.0002  | 0.0285    | <0.0002   | 0.0037    | 0.0003    | 0.002     | < 0.0002  | < 0.0002  | 0.001      | 0.001      | 0.157      | 0.093     | 0.016     |
| Chromium (VI)          | mg/L     | -         |           |           |           |           |           |           |           |           |            |            |            |           |           |
| Cobalt                 | mg/L     | -         | < 0.005   | < 0.005   | <0.005    | <0.005    | < 0.005   | < 0.005   | < 0.005   | < 0.005   | 0.019      | 0.028      | 0.052      | 0.039     | < 0.005   |
| Copper                 | mg/L     | 1         | 0.0031    | 0.0061    | 0.0028    | 0.0022    | 0.0026    | 0.0026    | 0.0026    | 0.0048    | 0.0018     | 0.0007     | 0.0012     | 0.0024    | 0.0011    |
| Lead                   | mg/L     | 0.01      | 0.00004   | 0.00009   | 0.00005   | <0.00002  | < 0.00002 | < 0.00002 | 0.00004   | < 0.00002 | < 0.00002  | < 0.00002  | 0.00029    | 0.0011    | 0.00059   |
| Mercury                | mg/L     | 0.001     | < 0.00002 | < 0.00002 | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | 0.00007   | < 0.00002 |
| Molybdenum             | mg/L     | -         | 0.0003    | 0.0005    | 0.0003    | 0.0003    | < 0.0001  | 0.0003    | 0.0002    | 0.0004    | 0.0013     | 0.0005     | 0.0005     | 0.0005    | 0.0002    |
| Nickel                 | mg/L     | -         | < 0.01    | < 0.01    | <0.01     | <0.01     | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01     | 0.09       | 0.04      | 0.01      |
| Selenium               | mg/L     | 0.01      | < 0.001   | < 0.001   | <0.001    | 0.001     | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.002      | < 0.001    | 0.013      | 0.005     | 0.002     |
| Silver                 | mg/L     | -         | < 0.00002 | < 0.00002 | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | 0.0004     | 0.0049    | < 0.0001  |
| Strontium              | mg/L     | -         | --        | --        | --        | 0.221     | 0.306     | 0.251     | 0.393     | 0.451     | 0.25       |            | 1.8        | 4.05      | 0.906     |
| Thallium               | mg/L     | -         | < 0.00005 | < 0.00005 | <0.00005  | <0.00005  | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005 | < 0.00005 |
| Vanadium               | mg/L     | -         | 0.0037    | 0.0081    | 0.0025    | 0.0058    | 0.0019    | 0.0007    | 0.0015    | 0.0019    | 0.0025     | 0.0027     | 0.0479     | 0.0114    | 0.0066    |
| Zinc                   | mg/L     | 5         | < 0.005   | < 0.005   | <0.005    | <0.005    | < 0.005   | 0.006     | < 0.005   | < 0.005   | < 0.005    | < 0.005    | 0.011      | 0.072     | 0.026     |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance



Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW22B      | MW22B      | MW22B      | MW22B      | MW22B      | MW22B      | MW22B      | MW22B      | MW22B     | MW23       | MW23       | MW23      | MW23      |
|------------------------|----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|-----------|------------|------------|-----------|-----------|
|                        |          |           | 21-Oct-19  | 22-Apr-20  | 20-Oct-20  | 19-Apr-21  | 27-Oct-21  | 20-Apr-22  | 26-Oct-22  | 19-Apr-23  | 11-Oct-23 | 23-May-12  | 01-Oct-12  | 23-May-13 | 01-Oct-13 |
| Total Alkalinity       | mg/L     | 500       | 2140       | 1870       | 2760       | 1910       | 1890       | 1200       | 1260       | 2440       | 2040      | 390        | 370        | 381       | 373       |
| Calcium                | mg/L     | -         | 466        | 413        | 525        | 500        | 364        | 307        | 256        | 428        | 281       | 150        | 140        | 149       | 151       |
| Chloride               | mg/L     | 250       | 274        | 285        | 38         | 288        | 338        | 181        | 199        | 404        | 323       | 61         | 67         | 64.3      | 65.6      |
| COD                    | mg/L     | -         | 455        | 357        | 627        | 401        | 380        | 188        | 230        | 537        | 466       | 31         | 29         | 21        | 30        |
| Specific Conductivity  | umhos/cm | -         | 4660       | 4180       | 6030       | 4560       | 4320       | 3050       | 3050       | 4951       | 4620      | 910        | 880        | 913       | 904       |
| DOC                    | mg/L     | 5         | 174        | 90.7       | 100        | 30         | 90.6       | 14.4       | 54         | 24.1       | 29.4      | 7.3        | 8.9        | 13.2      | 13.1      |
| Fluoride               | mg/L     | 1.5       | < 1        | < 3        | < 0.1      | < 1        | < 1        | < 1        | 1.5        | < 1        | <0.7      | < 0.10     | 0.1        | 0.2       | 0.1       |
| Iron                   | mg/L     | 0.3       | 1.65       | 7.9        | 38.2       | 33.5       | 31.7       | 28.1       | 0.198      | 0.825      | 25.9      | 4.8        | 4.7        | 5.09      | 5.05      |
| Magnesium              | mg/L     | -         | 56.1       | 59.7       | 78.1       | 58.9       | 49.7       | 35.5       | 34.8       | 72.9       | 59.4      | 13         | 14         | 14.3      | 13.6      |
| Manganese              | mg/L     | 0.05      | 1.73       | 1.64       | 1.99       | 1.94       | 1.82       | 1.66       | 1.12       | 1.73       | 2.53      | 0.12       | 0.12       | 0.145     | 0.128     |
| Nitrate                | mg/L     | 10        | < 0.5      | < 1        | < 0.05     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | <0.40     | < 0.10     | < 0.10     | < 0.1     | 0.1       |
| Nitrite                | mg/L     | 1         | < 0.5      | < 1        | < 0.05     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | <0.40     | < 0.010    | < 0.010    | < 0.1     | < 0.1     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.5        | 7.28       | 7.17       | 7.08       | 7.57       | 7.26       | 7.36       | 7.42       | 7.25      | 7.92       | 7.52       | 7.55      | 7.56      |
| Phenols                | mg/L     | -         | 0.016      | 0.026      | 0.028      | 0.02       | 0.01       | 0.003      | 0.002      | 0.017      | 0.012     | < 0.0010   | < 0.0010   | < 0.001   | < 0.001   |
| Phosphorus             | mg/L     | -         | < 0.1      | < 0.1      | 4.6        | 2.4        | 2.7        | 2.3        | < 0.1      | 0.1        | 2.8       | < 0.10     | < 0.10     | < 0.01    | < 0.01    |
| Potassium              | mg/L     | -         | 218        | 163        | 239        | 157        | 146        | 95.9       | 103        | 197        | 160       | 2.8        | 2.7        | 2.7       | 2.7       |
| Sodium                 | mg/L     | 200       | 319        | 259        | 356        | 267        | 285        | 204        | 210        | 381        | 286       | 26         | 25         | 27.7      | 27.3      |
| Sulphate               | mg/L     | 500       | < 10       | < 30       | < 1        | 18         | 17         | 40         | 21         | 14         | 14        | < 1        | < 1        | < 1       | < 1       |
| Dissolved Solids       | mg/L     | 500       | 2865       | 2484       | 2934       | 2657       | 2617       | 1709       | 1734       | 3266       | 2610      | 486        | 499        | 493       | 491       |
| Tot Kjel N             | mg/L     | -         | 182        | 166        | 319        | 214        | 203        | 114        | 153        | 268        | 273       | 0.97       | 0.8        | 0.72      | 0.74      |
| Ammonia (NH3-N)        | mg/L     | -         | 183        | 141        | 283        | 172        | 192        | 95.7       | 130        | 237        | 257       | 0.3        | 0.4        | 0.32      | 0.33      |
| Ammonia - Unionized    | mg/L     | -         |            |            |            |            |            |            |            |            |           |            |            |           |           |
| Hardness (CaCO3)       | mg/L     | 100       | 1400       | 1280       | 1630       | 1490       | 1110       | 913        | 871        | 1370       | 947       | 420        | 410        | 432       | 434       |
| BOD                    | mg/L     | -         |            |            |            |            |            |            |            |            |           | --         | --         | --        | --        |
| Cyanide (free)         | mg/L     | -         |            |            |            |            |            |            |            |            |           | --         | --         | --        | --        |
| Total Suspended Solids | mg/L     | -         |            |            |            |            |            |            |            |            |           | --         | --         | --        | --        |
| Aluminum               | mg/L     | 0.1       | 0.17       | 0.16       | 0.23       | 0.29       | 0.14       | 0.12       | 0.1        | 0.12       | 0.15      | < 0.0050   | < 0.0050   | 0.05      | 0.04      |
| Antimony               | mg/L     | 0.006     | 0.0025     | 0.0012     | 0.0026     | 0.0017     | 0.0013     | 0.0006     | 0.0006     | 0.0015     | 0.0009    | < 0.00050  | < 0.00050  | < 0.0001  | < 0.0001  |
| Arsenic                | mg/L     | 0.025     | 0.0037     | 0.0013     | 0.0033     | 0.0022     | 0.0017     | 0.0014     | 0.0013     | 0.0025     | 0.0025    | < 0.0010   | < 0.0010   | 0.0004    | 0.0005    |
| Barium                 | mg/L     | 1         | 0.07       | 0.099      | 0.272      | 0.19       | 0.252      | 0.154      | 0.07       | 0.133      | 0.207     | 0.14       | 0.14       | 0.155     | 0.154     |
| Beryllium              | mg/L     | -         | < 0.002    | < 0.002    | < 0.01     | < 0.02     | < 0.002    | < 0.002    | < 0.002    | < 0.002    | <0.0001   | < 0.00050  | < 0.00050  | < 0.002   | < 0.002   |
| Boron                  | mg/L     | 5         | 1.14       | 1.7        | 2.55       | 1.94       | 1.73       | 1.09       | 1.08       | 2.9        | 2.29      | 0.078      | 0.084      | 0.082     | 0.062     |
| Cadmium                | mg/L     | 0.005     | < 0.000059 | < 0.000029 | < 0.000059 | < 0.000059 | < 0.000059 | < 0.000029 | < 0.000029 | < 0.000059 | <0.000015 | < 0.00010  | < 0.00010  | 0.00006   | < 0.00002 |
| Chromium (total)       | mg/L     | 0.05      | 0.011      | 0.012      | 0.022      | 0.02       | 0.017      | 0.009      | 0.006      | 0.015      | 0.019     | < 0.0050   | < 0.0050   | < 0.0002  | 0.0313    |
| Chromium (VI)          | mg/L     | -         |            |            |            |            |            | < 0.001    | < 0.001    | < 0.001    | <0.01     |            |            |           |           |
| Cobalt                 | mg/L     | -         | 0.013      | < 0.005    | < 0.03     | < 0.05     | 0.005      | < 0.005    | 0.005      | 0.025      | 0.0083    | < 0.00050  | < 0.00050  | < 0.005   | < 0.005   |
| Copper                 | mg/L     | 1         | 0.0033     | < 0.0002   | 0.0016     | 0.0013     | 0.0007     | 0.0005     | 0.0003     | 0.0005     | 0.0005    | < 0.0010   | < 0.0010   | 0.0003    | 0.0005    |
| Lead                   | mg/L     | 0.01      | 0.0005     | < 0.00009  | 0.00034    | 0.00022    | < 0.0002   | < 0.00009  | < 0.00009  | < 0.0002   | 0.00012   | < 0.00050  | < 0.00050  | < 0.00002 | 0.00007   |
| Mercury                | mg/L     | 0.001     | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | <0.00002  | < 0.00001  | < 0.00001  | < 0.00002 | < 0.00002 |
| Molybdenum             | mg/L     | -         | 0.0009     | 0.0002     | 0.0006     | 0.0005     | 0.0005     | 0.0002     | < 0.0002   | 0.0006     | 0.0005    | < 0.00050  | < 0.00050  | < 0.0001  | < 0.0001  |
| Nickel                 | mg/L     | -         | 0.03       | 0.01       | < 0.05     | < 0.1      | 0.02       | 0.01       | < 0.01     | 0.03       | 0.0241    | < 0.0010   | < 0.0010   | < 0.01    | < 0.01    |
| Selenium               | mg/L     | 0.01      | 0.003      | 0.002      | < 0.002    | 0.002      | 0.002      | 0.004      | 0.001      | 0.005      | <0.001    | < 0.0020   | < 0.0020   | < 0.001   | < 0.001   |
| Silver                 | mg/L     | -         | 0.0048     | < 0.0001   | < 0.0002   | 0.0006     | < 0.0002   | < 0.0001   | < 0.0001   | < 0.0002   | <0.0001   | < 0.00010  | < 0.00010  | < 0.00002 | < 0.00002 |
| Strontium              | mg/L     | -         | 1.34       | 1.32       | 1.84       | 1.49       | 1.21       | 0.907      | 0.782      | 1.4        | 1.09      | 0.74       | 0.76       | --        | --        |
| Thallium               | mg/L     | -         | 0.00025    | < 0.00005  | 0.00008    | 0.00006    | < 0.00005  | 0.008      | < 0.005    | 0.00007    | <0.00005  | < 0.000050 | < 0.000050 | < 0.00005 | < 0.00005 |
| Vanadium               | mg/L     | -         | 0.0071     | 0.0007     | 0.009      | 0.0064     | 0.0053     | 0.0039     | 0.004      | 0.0077     | 0.0066    | 0.0011     | 0.00068    | 0.0035    | 0.009     |
| Zinc                   | mg/L     | 5         | 0.015      | < 0.005    | < 0.03     | < 0.05     | < 0.005    | 0.005      | < 0.005    | 0.011      | 0.01      | 0.0086     | < 0.0050   | < 0.005   | < 0.005   |

ODWQS - Ontario Drinking Water Quality  
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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW23      | MW23      | MW23      | MW23      | MW23      | MW23      | MW23       | MW23       | MW23       | MW23       | MW23       | MW23       | MW23       |
|------------------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|
|                        |          |           | 24-Apr-14 | 16-Oct-14 | 16-Apr-15 | 07-Oct-15 | 28-Apr-16 | 04-Oct-16 | 18-Apr-17  | 24-Oct-17  | 25-Apr-18  | 16-Oct-18  | 11-Apr-19  | 21-Oct-19  | 22-Apr-20  |
| Total Alkalinity       | mg/L     | 500       | 384       | 381       | 382       | 389       | 239       | 262       | 391        | 382        | 391        | 379        | 357        | 367        | 359        |
| Calcium                | mg/L     | -         | 145       | 151       | 152       | 152       | 93.3      | 106       | 153        | 157        | 142        | 153        | 153        | 163        | 155        |
| Chloride               | mg/L     | 250       | 65.7      | 69.8      | 67.3      | 65.7      | 9.6       | 13.2      | 64.8       | 52.5       | 53.7       | 66.9       | 65.3       | 64.7       | 72.3       |
| COD                    | mg/L     | -         | 23        | 19        | 19        | 18        | 7         | 5         | 27         | 30         | 50         | 27         | 23         | 24         | 26         |
| Specific Conductivity  | umhos/cm | -         | 910       | 911       | 897       | 868       | 497       | 559       | 918        | 906        | 869        | 906        | 906        | 913        | 921        |
| DOC                    | mg/L     | 5         | 11        | 12.7      | 9.2       | 7.2       | 1.3       | 3.4       | 9.5        | 9.9        | 8.2        | 10.1       | 9.7        | 9.4        | 9.7        |
| Fluoride               | mg/L     | 1.5       | 0.2       | 0.2       | 0.2       | 0.1       | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | 4.8       | 5.12      | 4.99      | 5.03      | 0.066     | 0.218     | 5.19       | 5.08       | 0.043      | 5.01       | 4.99       | 5.55       | 5.36       |
| Magnesium              | mg/L     | -         | 13.2      | 14.1      | 13.8      | 14.1      | 5.76      | 6.38      | 14.2       | 14.8       | 14.3       | 13.3       | 14.1       | 14.6       | 15.3       |
| Manganese              | mg/L     | 0.05      | 0.13      | 0.137     | 0.161     | 0.13      | 0.019     | 0.039     | 0.133      | 0.134      | 0.032      | 0.131      | 0.129      | 0.138      | 0.134      |
| Nitrate                | mg/L     | 10        | <0.1      | <0.1      | < 0.1     | < 0.1     | 0.3       | 0.2       | 0.2        | < 0.05     | < 0.05     | < 0.05     | < 0.05     | 0.06       | 0.08       |
| Nitrite                | mg/L     | 1         | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | 0.3        | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.61      | 7.65      | 7.64      | 7.75      | 7.99      | 7.98      | 7.85       | 7.53       | 7.91       | 7.89       | 7.86       | 7.76       | 7.65       |
| Phenols                | mg/L     | -         | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.007     | < 0.001    | < 0.001    | < 0.001    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Phosphorus             | mg/L     | -         | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.01     | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 2.7       | 2.9       | 2.7       | 2.7       | 1.1       | 1         | 2.8        | 2.7        | 3.5        | 2.6        | 3          | 3.2        | 3          |
| Sodium                 | mg/L     | 200       | 26.4      | 28.2      | 28.3      | 28.8      | 5.9       | 7.6       | 28.6       | 29.2       | 29.8       | 27.4       | 29.7       | 30.6       | 30.4       |
| Sulphate               | mg/L     | 500       | <1        | 1         | 2         | 2         | 7         | 7         | 2          | 2          | 1          | < 1        | 2          | < 1        | 2          |
| Dissolved Solids       | mg/L     | 500       | 490       | 502       | 501       | 505       | 267       | 299       | 508        | 494        | 480        | 497        | 487        | 503        | 493        |
| Tot Kjel N             | mg/L     | -         | 0.7       | 0.6       | 0.8       | 0.9       | 0.2       | 0.4       | 0.7        | 0.7        | 1.7        | 0.7        | 0.8        | 0.7        | 0.7        |
| Ammonia (NH3-N)        | mg/L     | -         | 0.41      | 0.36      | 0.23      | 0.37      | 0.02      | 0.04      | 0.4        | 0.33       | 0.45       | 0.37       | 0.45       | 0.4        | 0.37       |
| Ammonia - Unionized    | mg/L     | -         |           |           |           |           |           |           |            |            |            |            |            |            |            |
| Hardness (CaCO3)       | mg/L     | 100       | 418       | 435       | 438       | 438       | 257       | 291       | 441        | 453        | 414        | 437        | 440        | 468        | 450        |
| BOD                    | mg/L     | -         | --        | --        | --        | --        | --        | --        | --         | --         |            |            |            |            |            |
| Cyanide (free)         | mg/L     | -         | --        | --        | --        | --        | --        | --        | --         | --         |            |            |            |            |            |
| Total Suspended Solids | mg/L     | -         | --        | --        | --        | --        | --        | --        | --         | --         |            |            |            |            |            |
| Aluminum               | mg/L     | 0.1       | 0.04      | 0.03      | 0.04      | 0.04      | 0.04      | 0.04      | 0.09       | 0.08       | 0.08       | 0.07       | 0.08       | 0.09       | 0.08       |
| Antimony               | mg/L     | 0.006     | <0.0001   | <0.0001   | < 0.0001  | < 0.0001  | < 0.0001  | 0.0004    | < 0.0001   | < 0.0001   | 0.0002     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | 0.0003    | 0.0005    | 0.0004    | 0.0003    | 0.0004    | < 0.0001  | 0.0003     | 0.0003     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Barium                 | mg/L     | 1         | 0.139     | 0.152     | 0.149     | 0.148     | 0.141     | 0.156     | 0.156      | 0.166      | 0.128      | 0.162      | 0.16       | 0.181      | 0.163      |
| Beryllium              | mg/L     | -         | <0.002    | <0.002    | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | 0.079     | 0.085     | 0.085     | 0.081     | 0.06      | 0.084     | 0.086      | 0.094      | 0.084      | 0.079      | 0.092      | 0.1        | 0.101      |
| Cadmium                | mg/L     | 0.005     | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.000020 | < 0.000014 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | <0.0002   | 0.0045    | 0.0005    | 0.003     | < 0.0002  | < 0.0002  | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | 0.001      |
| Chromium (VI)          | mg/L     | -         |           |           |           |           |           |           |            |            |            |            |            |            |            |
| Cobalt                 | mg/L     | -         | <0.005    | <0.005    | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | 0.01       | < 0.005    | < 0.005    | < 0.005    | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0005    | 0.0005    | 0.0002    | 0.0005    | 0.0006    | 0.0004    | 0.0008     | 0.0001     | 0.0011     | 0.0003     | 0.0004     | 0.0007     | < 0.0001   |
| Lead                   | mg/L     | 0.01      | 0.00012   | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | 0.00007    | < 0.00002  |
| Mercury                | mg/L     | 0.001     | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | <0.0001   | <0.0001   | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Nickel                 | mg/L     | -         | <0.01     | <0.01     | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | 0.001     | 0.003     | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.002      | < 0.001    | 0.003      | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Silver                 | mg/L     | -         | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Strontium              | mg/L     | -         | --        | 0.842     | 0.827     | 0.818     | 0.811     | 0.815     | 0.758      | 0.785      | 0.757      | 0.753      | 0.825      | 0.861      | 0.807      |
| Thallium               | mg/L     | -         | <0.00005  | <0.00005  | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | 0.0026    | 0.0087    | 0.0032    | 0.0015    | 0.0014    | 0.0017    | 0.0025     | 0.0009     | < 0.0001   | 0.0006     | 0.0007     | 0.0006     | 0.0007     |
| Zinc                   | mg/L     | 5         | <0.005    | <0.005    | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | 0.009      | < 0.005    | < 0.005    | < 0.005    | < 0.005    |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW23         | MW23         | MW23         | MW23         | MW23         | MW23       | MW23         | MW23A      | MW23A      | MW23A      | MW23A      | MW23A      | MW23A      |
|------------------------|----------|-----------|--------------|--------------|--------------|--------------|--------------|------------|--------------|------------|------------|------------|------------|------------|------------|
|                        |          |           | 19-Oct-20    | 19-Apr-21    | 27-Oct-21    | 20-Apr-22    | 26-Oct-22    | 19-Apr-23  | 11-Oct-23    | 23-May-12  | 01-Oct-12  | 23-May-13  | 01-Oct-13  | 24-Apr-14  | 16-Oct-14  |
| Total Alkalinity       | mg/L     | 500       | 353          | 355          | 396          | 373          | 389          | 146        | 423          | 230        | 240        | 231        | 239        | 242        | 252        |
| Calcium                | mg/L     | -         | 155          | 161          | 158          | 156          | 139          | 59.8       | 126          | 90         | 94         | 94.6       | 96.4       | 94         | 104        |
| Chloride               | mg/L     | 250       | 68.9         | 67.5         | 66.1         | 63.5         | 63.2         | 0.5        | 65.9         | 9          | 13         | 8.3        | 9.3        | 10.1       | 13.7       |
| COD                    | mg/L     | -         | 28           | 22           | 19           | 20           | 39           | 9          | 27           | 7.8        | < 4.0      | < 5        | < 5        | <5         | <5         |
| Specific Conductivity  | umhos/cm | -         | 905          | 908          | 898          | 918          | 924          | 289        | 950          | 480        | 510        | 497        | 509        | 512        | 548        |
| DOC                    | mg/L     | 5         | <b>7.6</b>   | <b>11.4</b>  | <b>9.4</b>   | <b>7.2</b>   | 6            | 4.2        | <b>12.6</b>  | 1.2        | 1.4        | 3.8        | 3.9        | 2.8        | 3.9        |
| Fluoride               | mg/L     | 1.5       | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1      | <0.1         | < 0.10     | < 0.10     | 0.2        | 0.1        | <0.1       | 0.2        |
| Iron                   | mg/L     | 0.3       | <b>5.4</b>   | <b>5.5</b>   | <b>5.38</b>  | <b>5.34</b>  | <b>5.13</b>  | 0.008      | <b>4.65</b>  | < 0.10     | < 0.10     | 0.042      | 0.061      | 0.058      | 0.259      |
| Magnesium              | mg/L     | -         | 14.4         | 14.6         | 14.6         | 14.1         | 14           | 1.21       | 13           | 5.3        | 5.8        | 5.8        | 5.71       | 5.53       | 6.21       |
| Manganese              | mg/L     | 0.05      | <b>0.133</b> | <b>0.143</b> | <b>0.135</b> | <b>0.133</b> | <b>0.121</b> | 0.015      | <b>0.113</b> | 0.02       | 0.028      | 0.016      | 0.015      | 0.016      | 0.039      |
| Nitrate                | mg/L     | 10        | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | 0.07       | <0.05        | 0.68       | 0.48       | 0.6        | 0.2        | 0.4        | 0.3        |
| Nitrite                | mg/L     | 1         | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05     | <0.05        | < 0.010    | < 0.010    | < 0.1      | < 0.1      | <0.1       | <0.1       |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.44         | 7.59         | 7.89         | 7.57         | 7.64         | 7.72       | 7.63         | 7.82       | 7.63       | 7.8        | 7.81       | 7.85       | 7.92       |
| Phenols                | mg/L     | -         | < 0.001      | < 0.001      | < 0.002      | < 0.001      | < 0.001      | < 0.001    | <0.001       | < 0.0010   | < 0.0010   | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Phosphorus             | mg/L     | -         | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1      | <0.1         | < 0.10     | < 0.10     | < 0.01     | < 0.01     | <0.1       | <0.1       |
| Potassium              | mg/L     | -         | 2.9          | 3            | 3.1          | 2.9          | 3            | 0.3        | 2.8          | 1.1        | 1.1        | 1          | 1          | 1          | 1.2        |
| Sodium                 | mg/L     | 200       | 28.1         | 30.4         | 30.7         | 29.2         | 28.2         | 0.8        | 26.6         | 5.2        | 5.6        | 5.5        | 5.3        | 5.5        | 7.7        |
| Sulphate               | mg/L     | 500       | < 1          | 1            | 1            | 1            | < 1          | < 1        | <1           | 9          | 10         | 9          | 8          | 8          | 8          |
| Dissolved Solids       | mg/L     | 500       | 486          | 492          | <b>517</b>   | 494          | 487          | 151        | <b>505</b>   | 262        | 288        | 266        | 270        | 271        | 294        |
| Tot Kjel N             | mg/L     | -         | 0.7          | 0.7          | 0.7          | 3            | 1            | 0.3        | 1.5          | < 0.10     | 0.29       | 0.07       | 0.11       | 0.3        | <0.1       |
| Ammonia (NH3-N)        | mg/L     | -         | 0.38         | 0.43         | 0.4          | 2.65         | 0.5          | 0.12       | 0.91         | < 0.050    | 0.04       | < 0.01     | 0.02       | 0.04       | <0.01      |
| Ammonia - Unionized    | mg/L     | -         |              |              |              |              |              |            |              |            |            |            |            |            |            |
| Hardness (CaCO3)       | mg/L     | 100       | <b>446</b>   | <b>463</b>   | <b>455</b>   | <b>448</b>   | <b>405</b>   | <b>154</b> | <b>368</b>   | <b>250</b> | <b>260</b> | <b>260</b> | <b>264</b> | <b>258</b> | <b>287</b> |
| BOD                    | mg/L     | -         |              |              |              |              |              |            |              | --         | --         | --         | --         | --         | --         |
| Cyanide (free)         | mg/L     | -         |              |              |              |              |              |            |              | --         | --         | --         | --         | --         | --         |
| Total Suspended Solids | mg/L     | -         |              |              |              |              |              |            |              | --         | --         | --         | --         | --         | --         |
| Aluminum               | mg/L     | 0.1       | 0.04         | 0.08         | 0.08         | 0.08         | 0.04         | < 0.01     | 0.09         | < 0.0050   | < 0.0050   | 0.03       | 0.03       | 0.02       | 0.02       |
| Antimony               | mg/L     | 0.006     | 0.0005       | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001   | <0.0001      | < 0.00050  | < 0.00050  | < 0.0001   | < 0.0001   | <0.0001    | <0.0001    |
| Arsenic                | mg/L     | 0.025     | 0.0006       | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001   | <0.0001      | < 0.0010   | < 0.0010   | 0.0002     | 0.0001     | <0.0001    | 0.0001     |
| Barium                 | mg/L     | 1         | 0.159        | 0.168        | 0.167        | 0.163        | 0.148        | 0.005      | 0.142        | 0.068      | 0.075      | 0.074      | 0.075      | 0.068      | 0.083      |
| Beryllium              | mg/L     | -         | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002    | <0.0001      | < 0.00050  | < 0.00050  | < 0.002    | < 0.002    | <0.002     | <0.002     |
| Boron                  | mg/L     | 5         | 0.092        | 0.092        | 0.093        | 0.087        | 0.094        | 0.007      | 0.091        | 0.016      | 0.02       | 0.015      | < 0.005    | 0.016      | 0.019      |
| Cadmium                | mg/L     | 0.005     | 0.000236     | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000010   | < 0.000010 | <0.000015    | < 0.00010  | < 0.00010  | < 0.00002  | < 0.00002  | 0.00004    | <0.00002   |
| Chromium (total)       | mg/L     | 0.05      | < 0.001      | 0.001        | < 0.001      | < 0.001      | < 0.001      | < 0.001    | <0.001       | < 0.0050   | < 0.0050   | < 0.0002   | 0.0183     | <0.0002    | 0.003      |
| Chromium (VI)          | mg/L     | -         |              |              |              | < 0.001      | < 0.001      | < 0.001    | <0.01        |            |            |            |            |            |            |
| Cobalt                 | mg/L     | -         | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005    | 0.0006       | < 0.00050  | < 0.00050  | < 0.005    | < 0.005    | <0.005     | <0.005     |
| Copper                 | mg/L     | 1         | 0.001        | 0.0011       | 0.0004       | 0.0002       | 0.0005       | 0.0008     | 0.0006       | 0.0014     | < 0.0010   | 0.0007     | 0.0011     | 0.001      | 0.001      |
| Lead                   | mg/L     | 0.01      | 0.00022      | 0.00004      | < 0.00002    | < 0.00002    | 0.00002      | < 0.00002  | <0.00002     | < 0.00050  | < 0.00050  | 0.00004    | 0.00007    | <0.00002   | <0.00002   |
| Mercury                | mg/L     | 0.001     | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002  | <0.00002     | < 0.00001  | < 0.00001  | < 0.00002  | < 0.00002  | <0.00002   | <0.00002   |
| Molybdenum             | mg/L     | -         | 0.0003       | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001   | <0.0001      | < 0.00050  | < 0.00050  | < 0.0001   | 0.0001     | 0.0001     | 0.0002     |
| Nickel                 | mg/L     | -         | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01     | 0.0007       | < 0.0010   | < 0.0010   | < 0.01     | < 0.01     | <0.01      | <0.01      |
| Selenium               | mg/L     | 0.01      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001    | <0.001       | < 0.0020   | < 0.0020   | < 0.001    | < 0.001    | <0.001     | 0.001      |
| Silver                 | mg/L     | -         | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001   | <0.0001      | < 0.00010  | < 0.00010  | < 0.00002  | < 0.00002  | <0.00002   | <0.00002   |
| Strontium              | mg/L     | -         | 0.794        | 0.819        | 0.83         | 0.782        | 0.758        | 0.105      | 0.722        | 0.17       | 0.19       | --         | --         | --         | 0.224      |
| Thallium               | mg/L     | -         | 0.00026      | < 0.000005   | < 0.000005   | < 0.005      | < 0.005      | < 0.00005  | <0.00005     | < 0.000050 | < 0.000050 | < 0.00005  | < 0.00005  | <0.00005   | <0.00005   |
| Vanadium               | mg/L     | -         | 0.001        | 0.0007       | 0.0006       | 0.0007       | 0.0006       | 0.0003     | 0.0006       | 0.00061    | < 0.00050  | 0.0019     | 0.0052     | 0.0013     | 0.0045     |
| Zinc                   | mg/L     | 5         | < 0.005      | < 0.005      | < 0.005      | < 0.005      | 0.009        | < 0.005    | <0.005       | 0.0069     | < 0.0050   | < 0.005    | < 0.005    | <0.005     | <0.005     |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW23A     | MW23A     | MW23A     | MW23A     | MW23A      | MW23A      | MW23A      | MW23A      | MW23A      | MW23A      | MW23A      | MW23A      | MW23A      |
|------------------------|----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|                        |          |           | 16-Apr-15 | 07-Oct-15 | 28-Apr-16 | 04-Oct-16 | 18-Apr-17  | 24-Oct-17  | 25-Apr-18  | 16-Oct-18  | 11-Apr-19  | 21-Oct-19  | 22-Apr-20  | 19-Oct-20  | 19-Apr-21  |
| Total Alkalinity       | mg/L     | 500       | 239       | 248       | 239       | 262       | 251        | 250        | 217        | 250        | 232        | 258        | 225        | 248        | 228        |
| Calcium                | mg/L     | -         | 94.1      | 98.8      | 93.3      | 106       | 96.4       | 104        | 96.3       | 101        | 97.7       | 121        | 96.1       | 107        | 101        |
| Chloride               | mg/L     | 250       | 8.1       | 9         | 9.6       | 13.2      | 11.3       | 10.6       | 4.7        | 14.7       | 12.8       | 17.9       | 13.9       | 18.8       | 15.5       |
| COD                    | mg/L     | -         | < 5       | < 5       | 7         | 5         | 5          | 9          | < 5        | < 5        | < 5        | 7          | < 5        | < 5        | < 5        |
| Specific Conductivity  | umhos/cm | -         | 488       | 483       | 497       | 559       | 526        | 530        | 419        | 533        | 512        | 571        | 502        | 570        | 520        |
| DOC                    | mg/L     | 5         | 2.4       | 1.8       | 1.3       | 3.4       | 2.2        | 2.6        | 2.3        | 3.5        | 2.8        | 3.1        | 2.6        | 2.9        | 2.9        |
| Fluoride               | mg/L     | 1.5       | 0.2       | 0.1       | < 0.1     | < 0.1     | 0.4        | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | 0.043     | 0.151     | 0.066     | 0.218     | 0.109      | 0.244      | < 0.005    | 0.261      | 0.142      | 0.296      | 0.127      | 0.313      | 0.186      |
| Magnesium              | mg/L     | -         | 5.55      | 5.89      | 5.76      | 6.38      | 5.77       | 6.29       | 5.68       | 5.7        | 5.77       | 6.91       | 5.9        | 6.39       | 5.99       |
| Manganese              | mg/L     | 0.05      | 0.013     | 0.034     | 0.019     | 0.039     | 0.027      | 0.027      | 0.011      | 0.038      | 0.02       | 0.039      | 0.018      | 0.029      | 0.025      |
| Nitrate                | mg/L     | 10        | 0.4       | 0.3       | 0.3       | 0.2       | 0.3        | 0.2        | 0.29       | 0.12       | 0.14       | 0.11       | 0.19       | < 0.05     | 0.07       |
| Nitrite                | mg/L     | 1         | < 0.1     | < 0.1     | < 0.1     | < 0.1     | 0.2        | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.92      | 7.85      | 7.99      | 7.98      | 8.07       | 7.84       | 8.02       | 7.92       | 8.02       | 7.92       | 7.88       | 7.64       | 7.83       |
| Phenols                | mg/L     | -         | < 0.001   | < 0.001   | < 0.001   | 0.007     | < 0.001    | 0.001      | < 0.001    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.001    | < 0.001    |
| Phosphorus             | mg/L     | -         | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 1         | 1.1       | 1.1       | 1         | 1          | 1          | 1          | 1          | 1.1        | 1.3        | 1          | 1.1        | 1.1        |
| Sodium                 | mg/L     | 200       | 7.1       | 7.9       | 5.9       | 7.6       | 5.9        | 7.7        | 6.5        | 7.8        | 6.7        | 9.5        | 6.3        | 7          | 7.7        |
| Sulphate               | mg/L     | 500       | 7         | 7         | 7         | 7         | 7          | 6          | 5          | 7          | 6          | 7          | 6          | 7          | 7          |
| Dissolved Solids       | mg/L     | 500       | 269       | 280       | 267       | 299       | 280        | 286        | 249        | 287        | 270        | 319        | 264        | 297        | 275        |
| Tot Kjel N             | mg/L     | -         | 0.4       | 0.4       | 0.2       | 0.4       | 0.2        | 0.2        | 0.1        | < 0.1      | 0.2        | 0.3        | 0.1        | 0.2        | 0.2        |
| Ammonia (NH3-N)        | mg/L     | -         | < 0.01    | 0.01      | 0.02      | 0.04      | 0.01       | < 0.01     | 0.02       | 0.03       | 0.06       | 0.03       | 0.01       | < 0.01     | 0.04       |
| Ammonia - Unionized    | mg/L     | -         |           |           |           |           |            |            |            |            |            |            |            |            |            |
| Hardness (CaCO3)       | mg/L     | 100       | 258       | 271       | 257       | 291       | 265        | 286        | 264        | 276        | 268        | 331        | 264        | 295        | 277        |
| BOD                    | mg/L     | -         | --        | --        | --        | --        | --         | --         |            |            |            |            |            |            |            |
| Cyanide (free)         | mg/L     | -         | --        | --        | --        | --        | --         | --         |            |            |            |            |            |            |            |
| Total Suspended Solids | mg/L     | -         | --        | --        | --        | --        | --         | --         |            |            |            |            |            |            |            |
| Aluminum               | mg/L     | 0.1       | 0.02      | 0.03      | 0.03      | 0.03      | 0.06       | 0.06       | 0.05       | 0.06       | 0.06       | 0.05       | 0.06       | 0.03       | 0.06       |
| Antimony               | mg/L     | 0.006     | < 0.0001  | < 0.0001  | < 0.0001  | 0.0002    | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | < 0.0001  | 0.0001    | < 0.0001  | < 0.0001  | 0.0001     | 0.0001     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Barium                 | mg/L     | 1         | 0.07      | 0.076     | 0.066     | 0.082     | 0.072      | 0.082      | 0.073      | 0.084      | 0.075      | 0.102      | 0.073      | 0.083      | 0.077      |
| Beryllium              | mg/L     | -         | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | 0.018     | 0.019     | < 0.005   | 0.018     | 0.017      | 0.021      | 0.015      | 0.018      | 0.02       | 0.027      | 0.017      | 0.021      | 0.019      |
| Cadmium                | mg/L     | 0.005     | 0.00011   | < 0.00002 | < 0.00002 | < 0.00002 | < 0.000020 | < 0.000014 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | < 0.0002  | 0.0019    | < 0.0002  | 0.0582    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | 0.001      | 0.001      | < 0.001    | < 0.001    |
| Chromium (VI)          | mg/L     | -         |           |           |           |           |            |            |            |            |            |            |            |            |            |
| Cobalt                 | mg/L     | -         | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | 0.009      | 0.017      | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0015    | 0.0009    | 0.001     | 0.0011    | 0.0014     | 0.0004     | 0.0006     | 0.001      | < 0.001    | 0.0014     | 0.0005     | 0.0021     | 0.002      |
| Lead                   | mg/L     | 0.01      | < 0.00002 | < 0.00002 | 0.00002   | 0.00004   | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | 0.00004    | < 0.00002  | 0.00006    | 0.00005    |
| Mercury                | mg/L     | 0.001     | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | < 0.0001  | 0.0001    | 0.0001    | 0.0001    | 0.0001     | < 0.0001   | < 0.0001   | < 0.0001   | 0.0001     | 0.0001     | < 0.0001   | 0.0001     | 0.0001     |
| Nickel                 | mg/L     | -         | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.002      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Silver                 | mg/L     | -         | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Strontium              | mg/L     | -         | 0.203     | 0.207     | 0.201     | 0.211     | 0.183      | 0.2        | 0.182      | 0.197      | 0.202      | 0.251      | 0.191      | 0.214      | 0.206      |
| Thallium               | mg/L     | -         | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | 0.0016    | 0.0008    | 0.0007    | < 0.0001  | 0.0013     | 0.0003     | 0.0001     | 0.0002     | 0.0002     | 0.0002     | 0.0002     | 0.0002     | 0.0002     |
| Zinc                   | mg/L     | 5         | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance



Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW23A      | MW23A      | MW23A      | MW23A     | MW23A     | MW23B      | MW23B      | MW23B     | MW23B     | MW23B     | MW23B     | MW23B     | MW23B     |
|------------------------|----------|-----------|------------|------------|------------|-----------|-----------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|
|                        |          |           | 27-Oct-21  | 20-Apr-22  | 26-Oct-22  | 19-Apr-23 | 11-Oct-23 | 23-May-12  | 01-Oct-12  | 23-May-13 | 01-Oct-13 | 24-Apr-14 | 16-Oct-14 | 16-Apr-15 | 07-Oct-15 |
| Total Alkalinity       | mg/L     | 500       | 268        | 233        | 255        | 235       | 268       | 170        | 170        | 134       | 153       | 146       | 167       | 160       | 169       |
| Calcium                | mg/L     | -         | 103        | 94.7       | 98.9       | 91.1      | 75.3      | 64         | 64         | 55.3      | 62.4      | 60.9      | 67.9      | 67.7      | 70        |
| Chloride               | mg/L     | 250       | 13.9       | 12.3       | 11.8       | 7.9       | 12        | < 1        | < 1        | 0.8       | 0.6       | 0.8       | 0.7       | 1.7       | 0.8       |
| COD                    | mg/L     | -         | < 5        | 9          | 8          | < 5       | <5        | 5.9        | 6.6        | < 5       | 5         | 9         | <5        | 25        | 14        |
| Specific Conductivity  | umhos/cm | -         | 537        | 503        | 532        | 482       | 523       | 320        | 320        | 272       | 305       | 297       | 332       | 313       | 307       |
| DOC                    | mg/L     | 5         | 2.2        | 2.3        | 2.7        | 1.6       | 5.3       | 1.6        | 1.6        | 3.5       | 2.8       | 2.5       | 3.3       | 2.3       | 1.6       |
| Fluoride               | mg/L     | 1.5       | < 0.1      | < 0.1      | < 0.1      | < 0.1     | <0.1      | < 0.10     | < 0.10     | 0.2       | 0.1       | 0.2       | 0.2       | 0.1       | 0.1       |
| Iron                   | mg/L     | 0.3       | 0.313      | 0.183      | 0.496      | 0.113     | 0.125     | < 0.10     | < 0.10     | 0.017     | 0.011     | <0.005    | <0.005    | 0.005     | 0.005     |
| Magnesium              | mg/L     | -         | 6.04       | 5.62       | 6.45       | 5.3       | 5.02      | 1.5        | 1.6        | 1.23      | 1.3       | 1.38      | 1.46      | 1.34      | 1.53      |
| Manganese              | mg/L     | 0.05      | 0.029      | 0.024      | 0.034      | 0.016     | 0.022     | 0.025      | 0.012      | 0.01      | 0.005     | 0.011     | 0.013     | 0.071     | 0.016     |
| Nitrate                | mg/L     | 10        | 0.1        | 0.11       | 0.12       | 0.14      | 0.11      | 0.14       | 0.38       | 0.1       | 0.3       | 0.2       | 0.3       | 0.1       | 0.3       |
| Nitrite                | mg/L     | 1         | < 0.05     | < 0.05     | < 0.05     | < 0.05    | <0.05     | < 0.010    | < 0.010    | < 0.1     | 0.2       | <0.1      | <0.1      | < 0.1     | < 0.1     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 8          | 7.57       | 7.81       | 7.77      | 7.37      | 7.82       | 7.62       | 8.04      | 8.01      | 8.03      | 8.12      | 8.06      | 7.9       |
| Phenols                | mg/L     | -         | < 0.002    | < 0.001    | < 0.001    | < 0.001   | <0.001    | < 0.0010   | < 0.0010   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   |
| Phosphorus             | mg/L     | -         | < 0.1      | < 0.1      | < 0.1      | < 0.1     | <0.1      | < 0.10     | < 0.10     | 0.07      | < 0.1     | <0.1      | <0.1      | < 0.1     | < 0.1     |
| Potassium              | mg/L     | -         | 1.1        | 1          | 1.3        | 1.1       | 0.8       | 0.34       | 0.37       | 0.2       | 0.3       | 0.3       | 0.3       | 0.2       | 0.3       |
| Sodium                 | mg/L     | 200       | 7.7        | 7          | 9.4        | 6         | 6.5       | 0.98       | 1.1        | 1         | 1.1       | 0.9       | 1.2       | 0.9       | 1.1       |
| Sulphate               | mg/L     | 500       | 6          | 6          | 6          | 5         | 6         | < 1        | 1          | 2         | 2         | 2         | 2         | 2         | 2         |
| Dissolved Solids       | mg/L     | 500       | 299        | 269        | 288        | 258       | 271       | 170        | 176        | 142       | 161       | 155       | 175       | 171       | 179       |
| Tot Kjel N             | mg/L     | -         | 0.2        | 0.6        | 0.3        | 0.2       | 0.5       | 0.18       | 0.16       | 0.22      | 0.22      | 0.4       | <0.1      | 0.7       | 0.3       |
| Ammonia (NH3-N)        | mg/L     | -         | 0.14       | 0.4        | 0.1        | 0.07      | 0.32      | < 0.050    | 0.04       | < 0.01    | < 0.01    | 0.03      | 0.02      | < 0.01    | < 0.01    |
| Ammonia - Unionized    | mg/L     | -         |            |            |            |           |           |            |            |           |           |           |           |           |           |
| Hardness (CaCO3)       | mg/L     | 100       | 282        | 260        | 274        | 249       | 209       | 170        | 170        | 143       | 161       | 158       | 176       | 175       | 181       |
| BOD                    | mg/L     | -         |            |            |            |           |           | --         | --         | --        | --        | --        | --        | --        | --        |
| Cyanide (free)         | mg/L     | -         |            |            |            |           |           | --         | --         | --        | --        | --        | --        | --        | --        |
| Total Suspended Solids | mg/L     | -         |            |            |            |           |           | --         | --         | --        | --        | --        | --        | --        | --        |
| Aluminum               | mg/L     | 0.1       | 0.06       | 0.05       | 0.02       | 0.02      | 0.06      | 0.012      | < 0.0050   | 0.02      | 0.02      | 0.02      | 0.02      | 0.02      | 0.02      |
| Antimony               | mg/L     | 0.006     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | < 0.00050  | < 0.00050  | < 0.0001  | < 0.0001  | <0.0001   | <0.0001   | 0.0001    | < 0.0001  |
| Arsenic                | mg/L     | 0.025     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | < 0.0010   | < 0.0010   | 0.0001    | 0.0001    | <0.0001   | <0.0001   | < 0.0001  | < 0.0001  |
| Barium                 | mg/L     | 1         | 0.08       | 0.072      | 0.081      | 0.067     | 0.061     | 0.0066     | 0.0081     | 0.005     | 0.005     | 0.005     | 0.007     | 0.006     | 0.007     |
| Beryllium              | mg/L     | -         | < 0.002    | < 0.002    | < 0.002    | < 0.002   | <0.0001   | < 0.00050  | < 0.00050  | < 0.002   | < 0.002   | <0.002    | <0.002    | < 0.002   | < 0.002   |
| Boron                  | mg/L     | 5         | 0.02       | 0.016      | 0.027      | 0.018     | 0.017     | < 0.010    | 0.011      | 0.005     | < 0.005   | 0.006     | 0.009     | 0.006     | 0.008     |
| Cadmium                | mg/L     | 0.005     | < 0.000015 | < 0.000015 | < 0.000010 | 0.000010  | <0.000015 | < 0.00010  | < 0.00010  | < 0.00002 | < 0.00002 | <0.00002  | <0.00002  | 0.00003   | < 0.00002 |
| Chromium (total)       | mg/L     | 0.05      | < 0.001    | < 0.001    | < 0.001    | < 0.001   | <0.001    | < 0.0050   | < 0.0050   | < 0.0002  | 0.0123    | <0.0002   | 0.0023    | 0.0003    | 0.0012    |
| Chromium (VI)          | mg/L     | -         |            | < 0.001    | < 0.001    | < 0.001   | <0.01     |            |            |           |           |           |           |           |           |
| Cobalt                 | mg/L     | -         | < 0.005    | < 0.005    | < 0.005    | < 0.005   | 0.0003    | < 0.00050  | < 0.00050  | < 0.005   | < 0.005   | <0.005    | <0.005    | < 0.005   | < 0.005   |
| Copper                 | mg/L     | 1         | 0.0011     | 0.0171     | 0.0011     | 0.0007    | 0.001     | 0.0012     | < 0.0010   | 0.0006    | 0.0006    | 0.0007    | 0.0009    | 0.0013    | 0.0009    |
| Lead                   | mg/L     | 0.01      | 0.00004    | 0.00003    | < 0.00002  | < 0.00002 | <0.00002  | < 0.00050  | < 0.00050  | < 0.00002 | < 0.00002 | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 |
| Mercury                | mg/L     | 0.001     | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002 | <0.00002  | < 0.00001  | < 0.00001  | < 0.00002 | < 0.00002 | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 |
| Molybdenum             | mg/L     | -         | < 0.0001   | 0.0001     | 0.0001     | 0.0001    | 0.0001    | < 0.00050  | < 0.00050  | 0.0001    | 0.0001    | 0.0001    | 0.0001    | < 0.0001  | 0.0001    |
| Nickel                 | mg/L     | -         | < 0.01     | < 0.01     | < 0.01     | < 0.01    | 0.0004    | < 0.0010   | < 0.0010   | < 0.01    | < 0.01    | <0.01     | <0.01     | < 0.01    | < 0.01    |
| Selenium               | mg/L     | 0.01      | < 0.001    | < 0.001    | < 0.001    | < 0.001   | <0.001    | < 0.0020   | < 0.0020   | < 0.001   | < 0.001   | <0.001    | <0.001    | < 0.001   | < 0.001   |
| Silver                 | mg/L     | -         | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | < 0.00010  | < 0.00010  | < 0.00002 | < 0.00002 | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 |
| Strontium              | mg/L     | -         | 0.213      | 0.192      | 0.223      | 0.18      | 0.171     | 0.11       | 0.12       | --        | --        | --        | 0.135     | 0.131     | 0.13      |
| Thallium               | mg/L     | -         | < 0.00005  | < 0.005    | < 0.005    | < 0.00005 | <0.00005  | < 0.000050 | < 0.000050 | < 0.00005 | < 0.00005 | <0.00005  | <0.00005  | < 0.00005 | < 0.00005 |
| Vanadium               | mg/L     | -         | 0.0003     | 0.0002     | 0.0002     | 0.0002    | 0.0002    | 0.00054    | < 0.00050  | 0.0011    | 0.0036    | 0.0006    | 0.0033    | 0.0011    | 0.0005    |
| Zinc                   | mg/L     | 5         | < 0.005    | < 0.005    | < 0.005    | < 0.005   | <0.005    | 0.0092     | < 0.0050   | < 0.005   | < 0.005   | <0.005    | <0.005    | < 0.005   | 0.013     |

ODWQS - Ontario Drinking Water Quality  
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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW23B     | MW23B     | MW23B      | MW23B      | MW23B      | MW23B      | MW23B     | MW23B      | MW23B      | MW23B      | MW23B      | MW23B      | MW23B      |
|------------------------|----------|-----------|-----------|-----------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|
|                        |          |           | 28-Apr-16 | 04-Oct-16 | 18-Apr-17  | 24-Oct-17  | 25-Apr-18  | 16-Oct-18  | 12-Apr-19 | 21-Oct-19  | 22-Apr-20  | 19-Oct-20  | 19-Apr-21  | 27-Oct-21  | 20-Apr-22  |
| Total Alkalinity       | mg/L     | 500       | 149       | 159       | 154        | 132        | 141        | 153        | Dry       | 141        | 139        | 149        | 136        | 150        | 153        |
| Calcium                | mg/L     | -         | 62.9      | 68.3      | 60.3       | 62.4       | 59.2       | 60.9       |           | 63.1       | 61         | 69.5       | 62.4       | 63.1       | 64.1       |
| Chloride               | mg/L     | 250       | 1         | < 0.5     | 1.1        | 0.8        | 0.8        | < 0.5      |           | 1.4        | 0.9        | 1.2        | 0.7        | 1.3        | 0.6        |
| COD                    | mg/L     | -         | 7         | < 5       | 8          | 20         | 5          | < 5        |           | 43         | 5          | 68         | 7          | < 5        | 11         |
| Specific Conductivity  | umhos/cm | -         | 289       | 322       | 295        | 261        | 264        | 294        |           | 285        | 287        | 308        | 287        | 277        | 297        |
| DOC                    | mg/L     | 5         | 1.7       | 3         | 2.2        | 2.6        | 2.7        | 2.3        |           | 1.5        | 2.3        | 2.7        | 3          | 2.2        | 3          |
| Fluoride               | mg/L     | 1.5       | < 0.1     | 0.2       | < 0.1      | < 0.1      | < 0.1      | < 0.1      |           | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | 0.012     | 0.013     | 0.011      | 0.005      | 0.018      | 0.053      |           | 0.02       | 0.02       | < 0.005    | 0.006      | 0.016      | 0.017      |
| Magnesium              | mg/L     | -         | 1.34      | 1.54      | 1.27       | 1.25       | 1.1        | 1.24       |           | 1.43       | 1.37       | 1.49       | 1.35       | 1.25       | 1.35       |
| Manganese              | mg/L     | 0.05      | 0.015     | 0.004     | 0.005      | 0.009      | 0.024      | 0.023      |           | 0.305      | 0.011      | < 0.001    | 0.003      | 0.001      | 0.014      |
| Nitrate                | mg/L     | 10        | 0.2       | 0.4       | 0.2        | 0.14       | 0.08       | 0.15       |           | 0.28       | 0.16       | 0.25       | 0.21       | 0.24       | 0.08       |
| Nitrite                | mg/L     | 1         | < 0.1     | < 0.1     | 0.2        | < 0.05     | < 0.05     | < 0.05     |           | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 8.13      | 8.08      | 8.17       | 7.99       | 7.98       | 7.94       |           | 7.97       | 7.92       | 7.93       | 7.99       | 7.99       | 7.4        |
| Phenols                | mg/L     | -         | < 0.001   | 0.002     | 0.001      | 0.004      | < 0.001    | 0.002      |           | < 0.002    | < 0.002    | < 0.001    | 0.001      | < 0.002    | < 0.001    |
| Phosphorus             | mg/L     | -         | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |           | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 0.2       | 0.2       | 0.2        | 0.1        | 0.3        | 0.2        |           | 0.4        | 0.2        | 0.3        | 0.2        | 0.3        | 0.2        |
| Sodium                 | mg/L     | 200       | 1         | 1.1       | 0.7        | 1          | 1.1        | 0.9        |           | 1          | 0.9        | 0.9        | 0.9        | 1          | 0.8        |
| Sulphate               | mg/L     | 500       | 2         | 2         | 2          | 3          | 2          | < 1        |           | 1          | 1          | 1          | 2          | < 1        | 1          |
| Dissolved Solids       | mg/L     | 500       | 159       | 171       | 160        | 147        | 149        | 156        |           | 154        | 149        | 164        | 149        | 157        | 162        |
| Tot Kjel N             | mg/L     | -         | 0.3       | 0.3       | 0.4        | 0.2        | 0.3        | 0.2        |           | 0.6        | 0.2        | 0.6        | 0.3        | 0.3        | 0.3        |
| Ammonia (NH3-N)        | mg/L     | -         | 0.03      | 0.04      | 0.02       | 0.04       | < 0.1      | 0.03       |           | 0.12       | < 0.01     | 0.02       | 0.03       | 0.03       | 0.2        |
| Ammonia - Unionized    | mg/L     | -         |           |           |            |            |            |            |           |            |            |            |            |            |            |
| Hardness (CaCO3)       | mg/L     | 100       | 163       | 177       | 156        | 161        | 153        | 157        |           | 164        | 158        | 180        | 162        | 163        | 166        |
| BOD                    | mg/L     | -         | --        | --        | --         | --         |            |            |           |            |            |            |            |            |            |
| Cyanide (free)         | mg/L     | -         | --        | --        | --         | --         |            |            |           |            |            |            |            |            |            |
| Total Suspended Solids | mg/L     | -         | --        | --        | --         | --         |            |            |           |            |            |            |            |            |            |
| Aluminum               | mg/L     | 0.1       | 0.02      | 0.03      | 0.04       | 0.04       | 0.05       | 0.05       |           | 0.05       | 0.03       | 0.01       | 0.05       | 0.04       | 0.03       |
| Antimony               | mg/L     | 0.006     | < 0.0001  | < 0.0001  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |           | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | < 0.0001  | < 0.0001  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |           | 0.0001     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Barium                 | mg/L     | 1         | 0.005     | 0.008     | 0.005      | 0.005      | 0.004      | 0.007      |           | 0.009      | 0.005      | 0.007      | 0.005      | 0.007      | 0.005      |
| Beryllium              | mg/L     | -         | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    | < 0.002    |           | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | < 0.005   | 0.005     | 0.006      | 0.008      | < 0.005    | < 0.005    |           | 0.01       | 0.006      | 0.008      | 0.007      | 0.008      | < 0.005    |
| Cadmium                | mg/L     | 0.005     | < 0.00002 | < 0.00002 | < 0.000020 | < 0.000014 | < 0.000015 | < 0.000015 |           | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | < 0.0002  | < 0.0002  | < 0.001    | < 0.001    | < 0.001    | < 0.001    |           | 0.001      | 0.001      | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Chromium (VI)          | mg/L     | -         |           |           |            |            |            |            |           |            |            |            |            |            | < 0.001    |
| Cobalt                 | mg/L     | -         | < 0.005   | < 0.005   | 0.005      | < 0.005    | < 0.005    | < 0.005    |           | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0009    | 0.0009    | 0.0014     | 0.0003     | 0.0008     | 0.0008     |           | 0.0006     | 0.0004     | 0.0023     | 0.0024     | 0.0009     | 0.0007     |
| Lead                   | mg/L     | 0.01      | 0.00003   | 0.00002   | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |           | < 0.00002  | < 0.00002  | 0.00007    | 0.00005    | < 0.00002  | < 0.00002  |
| Mercury                | mg/L     | 0.001     | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |           | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | < 0.0001  | 0.0001    | 0.0001     | 0.0001     | 0.0001     | 0.0002     |           | 0.0002     | < 0.0001   | 0.0001     | 0.0001     | 0.0001     | 0.0001     |
| Nickel                 | mg/L     | -         | < 0.01    | < 0.01    | < 0.01     | < 0.01     | < 0.01     | < 0.01     |           | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | < 0.001   | < 0.001   | 0.002      | < 0.001    | < 0.001    | < 0.001    |           | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Silver                 | mg/L     | -         | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.0001   | < 0.0001   |           | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Strontium              | mg/L     | -         | 0.119     | 0.124     | 0.103      | 0.111      | 0.106      | 0.103      |           | 0.118      | 0.106      | 0.118      | 0.108      | 0.109      | 0.109      |
| Thallium               | mg/L     | -         | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  |           | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.005    |
| Vanadium               | mg/L     | -         | 0.0005    | 0.0007    | 0.0008     | 0.0001     | < 0.0001   | 0.0002     |           | 0.0004     | 0.0002     | 0.0003     | 0.0002     | 0.0003     | 0.0003     |
| Zinc                   | mg/L     | 5         | < 0.005   | < 0.005   | < 0.005    | < 0.005    | < 0.005    | < 0.005    |           | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW23B      | MW23B      | MW23B        | Office       | Office      | Office        | Office       | Office     | Office       | Office       | Office       | Office      | Office      | Office       |
|------------------------|----------|-----------|------------|------------|--------------|--------------|-------------|---------------|--------------|------------|--------------|--------------|--------------|-------------|-------------|--------------|
|                        |          |           | 26-Oct-22  | 19-Apr-23  | 11-Oct-23    | 30-May-12    | 01-Oct-12   | 22-May-13     | 01-Oct-13    | 23-Apr-14  | 15-Oct-14    | 15-Apr-15    | 07-Oct-15    | 27-Apr-16   | 03-Oct-16   | 17-Apr-17    |
| Total Alkalinity       | mg/L     | 500       | 153        | 157        | 160          | 240          | 240         | 230           | 229          | 231        | 228          | 231          | 242          | 237         | 231         | 238          |
| Calcium                | mg/L     | -         | 61.2       | 61.5       | 49.3         | 66           | 66          | 66.2          | 71.8         | 69.2       | 69.3         | 70.4         | 72.8         | 73.4        | 71.6        | 72.2         |
| Chloride               | mg/L     | 250       | < 0.5      | < 0.5      | <0.5         | 14           | 13          | 11.1          | 10.3         | 11.6       | 10.9         | 11.9         | 13.1         | 14.2        | 11.5        | 12           |
| COD                    | mg/L     | -         | 7          | 6          | 15           | 16           | 17          | 8             | 14           | 16         | 10           | 11           | 10           | 5           | 15          | 15           |
| Specific Conductivity  | umhos/cm | -         | 296        | 301        | 297          | 490          | 460         | 474           | 476          | 470        | 470          | 470          | 471          | 494         | 487         | 482          |
| DOC                    | mg/L     | 5         | 2.5        | 3          | <b>5.2</b>   | 4.8          | <b>5.1</b>  | <b>8</b>      | <b>7.3</b>   | <b>6.2</b> | <b>8.1</b>   | <b>5.9</b>   | <b>6.1</b>   | <b>5.7</b>  | <b>7</b>    | <b>6.3</b>   |
| Fluoride               | mg/L     | 1.5       | < 0.1      | < 0.1      | <0.1         | 0.18         | 0.21        | 0.3           | 0.2          | 0.3        | 0.3          | 0.2          | 0.2          | 0.3         | 0.2         | 0.6          |
| Iron                   | mg/L     | 0.3       | 0.018      | 0.007      | 0.031        | <b>12</b>    | <b>4.3</b>  | <b>2.08</b>   | <b>3.67</b>  | <b>3.6</b> | <b>3.92</b>  | <b>7.87</b>  | <b>4.26</b>  | <b>3.69</b> | <b>3.55</b> | <b>4.61</b>  |
| Magnesium              | mg/L     | -         | 1.5        | 1.32       | 1.17         | 15           | 15          | 14.3          | 14.7         | 14.2       | 14.6         | 15.4         | 15.8         | 16          | 16.4        | 15.6         |
| Manganese              | mg/L     | 0.05      | 0.003      | 0.004      | <b>0.158</b> | <b>0.078</b> | <b>0.06</b> | <b>0.051</b>  | <b>0.053</b> | 0.049      | <b>0.052</b> | <b>0.081</b> | <b>0.057</b> | 0.047       | 0.049       | <b>0.062</b> |
| Nitrate                | mg/L     | 10        | 0.18       | 0.06       | 0.27         | < 0.10       | < 0.10      | < 0.1         | < 0.1        | <0.1       | <0.1         | < 0.1        | < 0.1        | < 0.1       | < 0.1       | < 0.1        |
| Nitrite                | mg/L     | 1         | < 0.05     | < 0.05     | <0.05        | < 0.010      | < 0.010     | < 0.1         | < 0.1        | <0.1       | <0.1         | < 0.1        | < 0.1        | < 0.1       | < 0.1       | 0.2          |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.89       | 7.87       | 7.02         | 7.93         | 7.79        | 8             | 8.01         | 8.09       | 8.02         | 7.99         | 7.96         | 8.11        | 8.08        | 8.19         |
| Phenols                | mg/L     | -         | < 0.001    | < 0.001    | 0.004        | < 0.0010     | < 0.0010    | < 0.001       | < 0.001      | < 0.001    | < 0.001      | < 0.001      | < 0.001      | < 0.001     | 0.006       | < 0.001      |
| Phosphorus             | mg/L     | -         | < 0.1      | < 0.1      | <0.1         | < 0.10       | < 0.10      | < 0.01        | < 0.01       | <0.1       | <0.1         | < 0.1        | < 0.1        | < 0.1       | < 0.1       | < 0.1        |
| Potassium              | mg/L     | -         | 0.4        | 0.3        | 0.2          | 3.4          | 3.3         | 3.3           | 3.4          | 3.4        | 3.5          | 3.5          | 3.5          | 3.6         | 3.5         | 3.6          |
| Sodium                 | mg/L     | 200       | 1.2        | 0.8        | 0.9          | 11           | 9.6         | 10            | 9.9          | 9.8        | 10.5         | 11           | 11.9         | 12.1        | 12.1        | 10.7         |
| Sulphate               | mg/L     | 500       | < 1        | < 1        | 1            | < 1          | < 1         | 1             | 2            | 1          | 2            | 2            | < 1          | 1           | 1           | 1            |
| Dissolved Solids       | mg/L     | 500       | 156        | 158        | 152          | 286          | 273         | 247           | 253          | 253        | 252          | 262          | 268          | 268         | 260         | 264          |
| Tot Kjel N             | mg/L     | -         | 0.4        | 0.3        | 0.6          | 0.57         | 0.38        | 0.4           | 0.54         | 0.6        | 0.4          | 0.6          | 0.6          | 0.6         | 0.7         | 0.6          |
| Ammonia (NH3-N)        | mg/L     | -         | 0.03       | 0.11       | 0.18         | 0.3          | 0.37        | 0.363         | 0.34         | 0.34       | 0.38         | 0.32         | 0.39         | 0.39        | 0.44        | 0.41         |
| Ammonia - Unionized    | mg/L     | -         |            |            |              |              |             |               |              |            |              |              |              |             |             |              |
| Hardness (CaCO3)       | mg/L     | 100       | <b>159</b> | <b>159</b> | <b>128</b>   | <b>230</b>   | <b>230</b>  | <b>224</b>    | <b>240</b>   | <b>232</b> | <b>233</b>   | <b>239</b>   | <b>247</b>   | <b>249</b>  | <b>246</b>  | <b>245</b>   |
| BOD                    | mg/L     | -         |            |            |              | --           | --          | --            | --           | --         | --           | --           | --           | --          | --          | --           |
| Cyanide (free)         | mg/L     | -         |            |            |              | --           | --          | --            | --           | --         | --           | --           | --           | --          | --          | --           |
| Total Suspended Solids | mg/L     | -         |            |            |              | --           | --          | --            | --           | --         | --           | --           | --           | --          | --          | --           |
| Aluminum               | mg/L     | 0.1       | 0.02       | 0.01       | 0.04         | 0.007        | < 0.0050    | 0.02          | 0.03         | 0.02       | 0.01         | 0.03         | 0.02         | 0.02        | 0.02        | 0.05         |
| Antimony               | mg/L     | 0.006     | < 0.0001   | < 0.0001   | <0.0001      | < 0.00050    | < 0.00050   | < 0.0001      | < 0.0001     | <0.0001    | <0.0001      | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001    | < 0.0001     |
| Arsenic                | mg/L     | 0.025     | < 0.0001   | < 0.0001   | 0.0001       | < 0.0010     | < 0.0010    | 0.0002        | 0.0002       | 0.0001     | 0.0001       | 0.0001       | < 0.0001     | 0.0002      | < 0.0001    | < 0.0001     |
| Barium                 | mg/L     | 1         | 0.008      | 0.005      | 0.006        | 0.1          | 0.087       | 0.091         | 0.094        | 0.082      | 0.088        | 0.095        | 0.088        | 0.085       | 0.091       | 0.089        |
| Beryllium              | mg/L     | -         | < 0.002    | < 0.002    | <0.0001      | < 0.00050    | < 0.00050   | < 0.002       | < 0.002      | <0.002     | <0.002       | < 0.002      | < 0.002      | < 0.002     | < 0.002     | < 0.002      |
| Boron                  | mg/L     | 5         | 0.007      | 0.006      | <0.005       | 0.08         | 0.077       | 0.055         | 0.056        | 0.074      | 0.077        | 0.084        | 0.078        | 0.06        | 0.081       | 0.087        |
| Cadmium                | mg/L     | 0.005     | < 0.000010 | 0.000010   | <0.000015    | < 0.00010    | < 0.00010   | 0.00003       | < 0.00002    | <0.00002   | <0.00002     | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002   | < 0.000020   |
| Chromium (total)       | mg/L     | 0.05      | < 0.001    | < 0.001    | <0.001       | < 0.0050     | < 0.0050    | < 0.0002      | 0.0157       | <0.0002    | 0.0025       | 0.0006       | 0.0014       | < 0.0002    | < 0.0002    | < 0.001      |
| Chromium (VI)          | mg/L     | -         | < 0.001    | < 0.001    | <0.01        |              |             |               |              |            |              |              |              |             |             |              |
| Cobalt                 | mg/L     | -         | < 0.005    | < 0.005    | 0.0004       | < 0.00050    | < 0.00050   | < 0.005       | < 0.005      | <0.005     | <0.005       | < 0.005      | < 0.005      | < 0.005     | < 0.005     | < 0.005      |
| Copper                 | mg/L     | 1         | 0.0014     | 0.0008     | 0.0007       | 0.0036       | 0.051       | 0.0276        | 0.0612       | 0.0485     | 0.0364       | 0.0093       | 0.0027       | 0.003       | 0.001       | 0.0027       |
| Lead                   | mg/L     | 0.01      | 0.00003    | < 0.00002  | <0.00002     | 0.0024       | 0.0065      | <b>0.0414</b> | 0.00452      | 0.00326    | 0.00174      | 0.00213      | 0.00099      | 0.00042     | 0.00012     | 0.00021      |
| Mercury                | mg/L     | 0.001     | < 0.00002  | < 0.00002  | 0.00004      | < 0.00001    | < 0.00001   | < 0.00002     | < 0.00002    | <0.00002   | <0.00002     | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002   | < 0.00002    |
| Molybdenum             | mg/L     | -         | 0.0001     | 0.0001     | 0.0002       | < 0.00050    | < 0.00050   | < 0.0001      | < 0.0001     | <0.0001    | <0.0001      | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001    | < 0.0001     |
| Nickel                 | mg/L     | -         | < 0.01     | < 0.01     | <0.0002      | < 0.0010     | < 0.0010    | < 0.01        | < 0.01       | <0.01      | <0.01        | < 0.01       | < 0.01       | < 0.01      | < 0.01      | < 0.01       |
| Selenium               | mg/L     | 0.01      | < 0.001    | < 0.001    | <0.001       | < 0.0020     | < 0.0020    | < 0.001       | < 0.001      | <0.001     | 0.001        | < 0.001      | < 0.001      | < 0.001     | < 0.001     | 0.002        |
| Silver                 | mg/L     | -         | < 0.0001   | < 0.0001   | <0.0001      | < 0.00010    | < 0.00010   | 0.00003       | < 0.00002    | <0.00002   | <0.00002     | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002   | < 0.00002    |
| Strontium              | mg/L     | -         | 0.114      | 0.105      | 0.096        | 0.92         | 0.9         | --            | --           | --         | 0.98         | 1.13         | 1.1          | 1.09        | 1.07        | 0.987        |
| Thallium               | mg/L     | -         | < 0.005    | < 0.00005  | <0.00005     | < 0.000050   | < 0.000050  | < 0.00005     | < 0.00005    | <0.00005   | <0.00005     | < 0.00005    | < 0.00005    | < 0.00005   | < 0.00005   | < 0.00005    |
| Vanadium               | mg/L     | -         | 0.0003     | 0.0002     | 0.0004       | < 0.00050    | < 0.00050   | 0.0015        | 0.0045       | 0.0011     | 0.0047       | 0.0015       | 0.0007       | 0.0007      | 0.0009      | 0.0009       |
| Zinc                   | mg/L     | 5         | < 0.005    | < 0.005    | <0.005       | 0.38         | 0.055       | 0.074         | 0.034        | 0.025      | 0.023        | 0.014        | 0.006        | 0.006       | < 0.005     | 0.006        |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | Office<br>23-Oct-17 | Office<br>25-Apr-18 | Office<br>15-Oct-18 | Office<br>24-Apr-19 | Office<br>21-Oct-19 | Office<br>22-Apr-20 | Office<br>19-Oct-20 | Office<br>19-Apr-21 | Office<br>27-Oct-21 | Office<br>21-Apr-22 | Office<br>24-Oct-22                 | Office<br>19-Apr-23                 | OFFICE<br>##### |
|------------------------|----------|-----------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------------------------------------|-------------------------------------|-----------------|
| Total Alkalinity       | mg/L     | 500       | 225                 | 233                 | 225                 | 215                 | 214                 | Closed              | 203                 | 205                 | 236                 | 232                 | No<br>Sample,<br>Landfill<br>Closed | No<br>Sample,<br>Landfill<br>Closed | 239             |
| Calcium                | mg/L     | -         | 69.4                | 69.4                | 67                  | 66.8                | 69                  | 67.3                | 67.9                | 69.4                | 68.5                |                     |                                     |                                     | 52.5            |
| Chloride               | mg/L     | 250       | 10.8                | 11.3                | 14.4                | 14.3                | 12.7                | < 0.1               | 13.9                | 14                  | 13.5                |                     |                                     |                                     | 32.3            |
| COD                    | mg/L     | -         | 23                  | 12                  | 35                  | 18                  | 11                  | 13                  | 12                  | 5                   | 12                  |                     |                                     |                                     | 20              |
| Specific Conductivity  | umhos/cm | -         | 465                 | 460                 | 467                 | 469                 | 457                 | 452                 | 463                 | 468                 | 465                 |                     |                                     |                                     | 471             |
| DOC                    | mg/L     | 5         | 6.4                 | 6.8                 | 6                   | 29.1                | 5.8                 | 6.2                 | 7.1                 | 6.3                 | 5.9                 |                     |                                     |                                     | 8.4             |
| Fluoride               | mg/L     | 1.5       | 0.2                 | < 0.1               | < 0.1               | < 0.1               | 0.2                 |                     | 0.1                 | 0.1                 | < 0.1               |                     |                                     |                                     | <0.1            |
| Iron                   | mg/L     | 0.3       | 4.39                | 4.58                | 3.05                | 4.49                | 4.64                |                     | 4.06                | 4.32                | 2.51                |                     |                                     |                                     | 2.44            |
| Magnesium              | mg/L     | -         | 15.6                | 15.8                | 14.7                | 15.4                | 16.1                | 15.5                | 15.6                | 16                  | 15.7                |                     |                                     |                                     | 13.6            |
| Manganese              | mg/L     | 0.05      | 0.067               | 0.053               | 0.043               | 0.061               | 0.06                | 0.066               | 0.058               | 0.054               | 0.061               |                     |                                     |                                     | 0.049           |
| Nitrate                | mg/L     | 10        | < 0.05              | < 0.05              | < 0.05              | < 0.05              | 0.05                | < 0.05              | < 0.05              | < 0.05              | < 0.05              |                     |                                     |                                     | <0.05           |
| Nitrite                | mg/L     | 1         | < 0.05              | < 0.05              | < 0.05              | < 0.05              | < 0.05              | < 0.05              | < 0.05              | < 0.05              | < 0.05              |                     |                                     |                                     | <0.05           |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 8.12                | 8.07                | 8.06                | 8                   | 8.01                | 7.9                 | 8.02                | 8.14                | 7.96                |                     |                                     |                                     | 7.55            |
| Phenols                | mg/L     | -         | 0.004               | < 0.001             | < 0.002             | < 0.002             | < 0.002             | < 0.001             | 0.001               | < 0.002             | < 0.001             |                     |                                     |                                     | <0.001          |
| Phosphorus             | mg/L     | -         | < 0.1               | < 0.1               | < 0.1               | < 0.01              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               |                     |                                     |                                     | <0.1            |
| Potassium              | mg/L     | -         | 3.5                 | 3.9                 | 3.3                 | 3.4                 | 4                   | 3.6                 | 3.8                 | 3.7                 | 3.6                 |                     |                                     |                                     | 3.3             |
| Sodium                 | mg/L     | 200       | 11.3                | 11.8                | 11.3                | 11.1                | 12.1                | 11.1                | 11.8                | 11.7                | 10.7                |                     |                                     |                                     | 9.6             |
| Sulphate               | mg/L     | 500       | 1                   | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | 2                   |                     |                                     |                                     | <1              |
| Dissolved Solids       | mg/L     | 500       | 252                 | 258                 | 250                 | 246                 | 249                 | 233                 | 237                 | 261                 | 257                 |                     |                                     |                                     | 244             |
| Tot Kjel N             | mg/L     | -         | 0.6                 | 0.6                 | 0.5                 | 0.6                 | 0.5                 | 0.5                 | 0.5                 | 0.6                 | 1                   |                     |                                     |                                     | 0.8             |
| Ammonia (NH3-N)        | mg/L     | -         | 0.38                | 0.4                 | 0.4                 | 0.48                | 0.41                | 0.41                | 0.39                | 0.43                | 0.68                |                     |                                     |                                     | 0.58            |
| Ammonia - Unionized    | mg/L     | -         |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                                     |                                     |                 |
| Hardness (CaCO3)       | mg/L     | 100       | 238                 | 238                 | 228                 | 230                 | 239                 | 232                 | 234                 | 239                 | 236                 |                     |                                     |                                     | 187             |
| BOD                    | mg/L     | -         | --                  |                     |                     |                     |                     | 13.6                |                     |                     |                     |                     |                                     |                                     |                 |
| Cyanide (free)         | mg/L     | -         | --                  |                     |                     |                     |                     |                     |                     |                     |                     |                     |                                     |                                     |                 |
| Total Suspended Solids | mg/L     | -         | --                  |                     |                     |                     |                     |                     |                     |                     |                     |                     |                                     |                                     |                 |
| Aluminum               | mg/L     | 0.1       | 0.04                | 0.05                | 0.05                | 0.05                | 0.05                | < 0.01              | 0.05                | 0.04                | 0.01                |                     |                                     |                                     | 0.04            |
| Antimony               | mg/L     | 0.006     | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            |                     |                                     |                                     | 0.0002          |
| Arsenic                | mg/L     | 0.025     | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            |                     |                                     |                                     | <0.0001         |
| Barium                 | mg/L     | 1         | 0.088               | 0.094               | 0.096               | 0.085               | 0.097               | 0.092               | 0.092               | 0.094               | 0.091               |                     |                                     |                                     | 0.072           |
| Beryllium              | mg/L     | -         | < 0.002             | < 0.002             | < 0.002             | < 0.002             | < 0.002             | < 0.002             | < 0.002             | < 0.002             | < 0.002             |                     |                                     |                                     | <0.0001         |
| Boron                  | mg/L     | 5         | 0.089               | 0.087               | 0.078               | 0.084               | 0.1                 | 0.09                | 0.087               | 0.088               | 0.088               |                     |                                     |                                     | 0.079           |
|                        |          |           |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                                     |                                     | <0.00001        |
| Cadmium                | mg/L     | 0.005     | < 0.000015          | < 0.000015          | < 0.000015          | < 0.000015          | < 0.000015          | < 0.000015          | < 0.000015          | < 0.000015          | < 0.000015          |                     |                                     |                                     | 5               |
| Chromium (total)       | mg/L     | 0.05      | < 0.001             | < 0.001             | < 0.001             | < 0.001             | < 0.001             | < 0.001             | < 0.001             | < 0.001             | < 0.001             |                     |                                     |                                     | <0.001          |
| Chromium (VI)          | mg/L     | -         |                     |                     |                     |                     |                     |                     |                     |                     | < 0.001             |                     |                                     |                                     | <0.01           |
| Cobalt                 | mg/L     | -         | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             |                     |                                     |                                     | 0.0001          |
| Copper                 | mg/L     | 1         | 0.0111              | 0.0024              | 0.0024              | 0.0013              | 0.0015              | 0.0023              | 0.0001              | < 0.0001            | 0.0015              |                     |                                     |                                     | 0.0005          |
| Lead                   | mg/L     | 0.01      | 0.00138             | 0.00013             | 0.00024             | 0.0001              | 0.00011             | 0.00013             | < 0.00002           | < 0.00002           | 0.00166             |                     |                                     |                                     | <0.00002        |
| Mercury                | mg/L     | 0.001     | < 0.00002           | < 0.00002           | < 0.00002           | < 0.00002           | < 0.00002           | < 0.00002           | < 0.00002           | < 0.00002           | < 0.00002           |                     |                                     |                                     | 0.00004         |
| Molybdenum             | mg/L     | -         | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            |                     |                                     |                                     | <0.0001         |
| Nickel                 | mg/L     | -         | < 0.01              | < 0.01              | < 0.01              | < 0.01              | < 0.01              | < 0.01              | < 0.01              | < 0.01              | < 0.01              |                     |                                     |                                     | 0.0007          |
| Selenium               | mg/L     | 0.01      | < 0.001             | 0.001               | < 0.001             | < 0.001             | < 0.001             | < 0.001             | < 0.001             | < 0.001             | < 0.001             |                     |                                     |                                     | <0.001          |
| Silver                 | mg/L     | -         | < 0.00002           | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            |                     |                                     |                                     | <0.0001         |
| Strontium              | mg/L     | -         | 0.979               | 1.08                | 1.06                | 1.06                | 1.18                | 1.11                | 1.1                 | 1.15                | 1.03                |                     |                                     |                                     | 0.956           |
| Thallium               | mg/L     | -         | < 0.00005           | < 0.00005           | < 0.00005           | < 0.00005           | < 0.00005           | < 0.00005           | < 0.00005           | < 0.00005           | < 0.005             |                     |                                     |                                     | <0.00005        |
| Vanadium               | mg/L     | -         | 0.0002              | 0.0002              | 0.0002              | 0.0002              | 0.0001              | 0.0002              | < 0.0001            | 0.0002              | < 0.0001            |                     |                                     |                                     | 0.0001          |
| Zinc                   | mg/L     | 5         | 0.014               | < 0.005             | 0.006               | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | 0.018               |                     |                                     |                                     | <0.005          |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance



Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | RUP<br>(BR/L. OB)) | RUP<br>(S. OB) | MW 26<br>23-May-12 | MW 26<br>01-Oct-12 | MW 26<br>23-May-13 | MW 26<br>01-Oct-13 | MW 26<br>24-Apr-14 | MW 26<br>15-Oct-14 | MW 26<br>15-Apr-15 | MW 26<br>07-Oct-15 | MW 26<br>27-Apr-16 | MW 26<br>03-Oct-16 | MW 26<br>17-Apr-17 | MW 26<br>23-Oct-17 | MW 26<br>25-Apr-18 |
|------------------------|----------|-----------|--------------------|----------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Total Alkalinity       | mg/L     | 500       | 360                | 379            | 280                | 270                | 330                | 287                | 303                | 269                | 273                | 271                | 297                | 266                | 292                | 262                | 283                |
| Calcium                | mg/L     | -         | -                  | -              | 110                | 100                | 131                | 120                | 119                | 115                | 117                | 118                | 123                | 117                | 131                | 116                | 120                |
| Chloride               | mg/L     | 250       | 131                | 176            | 39                 | 39                 | 47.4               | 44.5               | 46                 | 42.6               | 43.4               | 43                 | 42.6               | 40.7               | 42.9               | 31.2               | 51.9               |
| COD                    | mg/L     | -         | -                  | -              | 25                 | 150                | 49                 | 357                | 59                 | 160                | 264                | 150                | 544                | 132                | 11                 | 175                | 5                  |
| Specific Conductivity  | umhos/cm | -         | -                  | -              | 680                | 660                | 778                | 716                | 726                | 694                | 678                | 683                | 715                | 684                | 710                | 658                | 669                |
| DOC                    | mg/L     | 5         | 7.0                | 6.6            | 2.5                | 2.6                | 9.3                | 5.5                | 5.1                | 5                  | 3.8                | 2.4                | 3.2                | 4.3                | 4.2                | 4.7                | 4.7                |
| Fluoride               | mg/L     | 1.5       | 0.46               | 0.45           | < 0.10             | < 0.10             | 0.2                | 0.1                | 0.2                | 0.2                | < 0.1              | 0.1                | < 0.1              | 0.1                | < 0.1              | < 0.1              | < 0.1              |
| Iron                   | mg/L     | 0.3       | 2.1                | 1.2            | 0.66               | 0.52               | 0.813              | 0.714              | 0.696              | 0.653              | 0.57               | 0.697              | 0.618              | 0.66               | 0.741              | 0.576              | 0.521              |
| Magnesium              | mg/L     | -         | -                  | -              | 10                 | 10                 | 12.2               | 10.8               | 10.9               | 10.6               | 10.6               | 10.9               | 11.6               | 11                 | 11.1               | 10.7               | 11.3               |
| Manganese              | mg/L     | 0.05      | 0.05               | 0.12           | 0.031              | 0.028              | 0.037              | 0.033              | 0.032              | 0.032              | 0.032              | 0.033              | 0.035              | 0.035              | 0.037              | 0.033              | 0.037              |
| Nitrate                | mg/L     | 10        | 2.5                | 2.5            | < 0.10             | < 0.10             | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | 0.1                | < 0.1              | < 0.05             | < 0.05             |
| Nitrite                | mg/L     | 1         | 0.3                | 0.3            | < 0.010            | < 0.010            | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.05             | < 0.05             |
| pH Lab                 | pH unit  | 6.5 - 8.5 | -                  | -              | 7.88               | 7.71               | 7.86               | 7.79               | 7.88               | 7.87               | 7.99               | 8.11               | 7.88               | 7.79               | 8.07               | 7.95               | 7.89               |
| Phenols                | mg/L     | -         | -                  | -              | < 0.0010           | < 0.0010           | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | 0.003              | < 0.001            | 0.004              | 0.004              | < 0.001            |
| Phosphorus             | mg/L     | -         | -                  | -              | < 0.10             | < 0.10             | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              |
| Potassium              | mg/L     | -         | -                  | -              | 2.7                | 2.5                | 2.7                | 2.6                | 2.6                | 2.6                | 2.5                | 2.5                | 2.6                | 2.4                | 2.5                | 2.5                | 2.9                |
| Sodium                 | mg/L     | 200       | 106                | 118            | 17                 | 16                 | 20.8               | 18.4               | 18.3               | 17.3               | 17.2               | 18.1               | 18.8               | 18.2               | 17.2               | 17.3               | 18.4               |
| Sulphate               | mg/L     | 500       | 250                | 253            | 18                 | 20                 | 11                 | 19                 | 18                 | 27                 | 27                 | 25                 | 21                 | 38                 | 22                 | 26                 | 6                  |
| Dissolved Solids       | mg/L     | 500       | 374                | 475            | 372                | 364                | 424                | 389                | 397                | 378                | 382                | 381                | 399                | 388                | 403                | 362                | 381                |
| Tot Kjel N             | mg/L     | -         | -                  | -              | 0.6                | 2.9                | 0.67               | 1.03               | 0.6                | < 0.1              | 0.8                | 0.6                | 0.4                | 0.8                | 0.3                | 0.5                | 1.4                |
| Ammonia (NH3-N)        | mg/L     | -         | -                  | -              | < 0.050            | 0.15               | < 0.01             | < 0.01             | 0.11               | 0.09               | 0.17               | 0.13               | 0.06               | 0.09               | 0.05               | 0.05               | 0.12               |
| Ammonia - Unionized    | mg/L     | -         | -                  | -              |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| Hardness (CaCO3)       | mg/L     | 100       | 167                | 236            | 330                | 300                | 377                | 345                | 343                | 332                | 335                | 341                | 354                | 337                | 373                | 334                | 346                |
| BOD                    | mg/L     | -         | -                  | -              | --                 | --                 | --                 | --                 | --                 | --                 | < 2                | < 3                | < 3                | < 3                | < 3                | < 3                | < 3                |
| Cyanide (free)         | mg/L     | -         | -                  | -              | --                 | --                 | --                 | --                 | --                 | --                 | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            |
| Total Suspended Solids | mg/L     | -         | -                  | -              | --                 | --                 | --                 | --                 | --                 | --                 | 51600              | 48600              | --                 | --                 | 20                 | 48500              | 115000             |
| Aluminum               | mg/L     | 0.1       | 0.07               | 0.10           | < 0.0050           | < 0.0050           | 0.04               | 0.04               | 0.03               | 0.03               | 0.03               | 0.03               | 0.03               | 0.06               | 0.06               | 0.06               | 0.12               |
| Antimony               | mg/L     | 0.006     | 0.002              | 0.002          | < 0.00050          | < 0.00050          | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | 0.0001             | < 0.0001           | < 0.0001           | 0.0002             | < 0.0001           | < 0.0001           | 0.0001             |
| Arsenic                | mg/L     | 0.025     | 0.006              | 0.013          | < 0.0010           | < 0.0010           | 0.0003             | 0.0004             | 0.0002             | 0.0002             | 0.0002             | 0.0003             | 0.0002             | < 0.0001           | 0.0002             | 0.0002             | < 0.0001           |
| Barium                 | mg/L     | 1         | 0.32               | 0.28           | 0.16               | 0.15               | 0.188              | 0.178              | 0.158              | 0.157              | 0.157              | 0.164              | 0.161              | 0.162              | 0.21               | 0.167              | 0.164              |
| Beryllium              | mg/L     | -         | -                  | -              | < 0.00050          | < 0.00050          | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            |
| Boron                  | mg/L     | 5         | 1.3                | 1.3            | 0.038              | 0.036              | 0.042              | 0.02               | 0.04               | 0.038              | 0.04               | 0.039              | 0.02               | 0.036              | 0.042              | 0.042              | 0.041              |
| Cadmium                | mg/L     | 0.005     | 0.0013             | 0.0013         | < 0.00010          | < 0.00010          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.000014         | < 0.000015         |
| Chromium (total)       | mg/L     | 0.05      | 0.013              | 0.013          | < 0.0050           | < 0.0050           | < 0.0002           | 0.0241             | < 0.0002           | 0.0037             | 0.0006             | 0.0017             | < 0.0002           | < 0.0002           | 0.001              | < 0.001            | < 0.001            |
| Chromium (VI)          | mg/L     | -         | -                  | -              |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| Cobalt                 | mg/L     | -         | -                  | -              | < 0.00050          | < 0.00050          | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            |
| Copper                 | mg/L     | 1         | 0.5                | 0.5            | < 0.0010           | < 0.0010           | 0.0002             | 0.0005             | 0.0004             | 0.0004             | 0.001              | 0.0006             | 0.0005             | 0.0002             | < 0.0001           | 0.0002             | 0.0003             |
| Lead                   | mg/L     | 0.01      | 0.003              | 0.003          | < 0.00050          | 0.00069            | < 0.00002          | 0.00007            | 0.00003            | < 0.00002          | < 0.00002          | 0.00003            | 0.00003            | 0.00003            | < 0.00002          | < 0.00002          | 0.0001             |
| Mercury                | mg/L     | 0.001     | 0.0003             | 0.0003         | < 0.00001          | < 0.00001          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | 0.00003            | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          |
| Molybdenum             | mg/L     | -         | -                  | -              | < 0.00050          | < 0.00050          | < 0.0001           | 0.0002             | 0.0001             | 0.0001             | < 0.0001           | 0.0002             | 0.0001             | 0.0002             | 0.0002             | 0.0001             | 0.0001             |
| Nickel                 | mg/L     | -         | -                  | -              | < 0.0010           | < 0.0010           | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             |
| Selenium               | mg/L     | 0.01      | 0.003              | 0.004          | < 0.0020           | < 0.0020           | < 0.001            | < 0.001            | < 0.001            | 0.002              | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            |
| Silver                 | mg/L     | -         | -                  | -              | < 0.00010          | < 0.00010          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.0001           |
| Strontium              | mg/L     | -         | -                  | -              | 0.34               | 0.33               | --                 | --                 | --                 | 0.382              | 0.392              | 0.397              | 0.41               | 0.362              | 0.336              | 0.352              | 0.358              |
| Thallium               | mg/L     | -         | -                  | -              | < 0.000050         | < 0.000050         | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          |
| Vanadium               | mg/L     | -         | -                  | -              | < 0.00050          | < 0.00050          | 0.0026             | 0.0069             | 0.001              | 0.0059             | 0.0023             | 0.0008             | 0.0009             | 0.001              | 0.002              | 0.0009             | 0.0008             |
| Zinc                   | mg/L     | 5         | 2.5                | 2.5            | 0.0075             | < 0.0050           | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            |

ODWQS - Ontario Drinking Water Quality  
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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW 26<br>15-Oct-18 | MW 26<br>11-Apr-19 | MW 26<br>21-Oct-19 | MW 26<br>22-Apr-20 | MW 26<br>19-Oct-20 | MW 26<br>19-Apr-21 | MW 26<br>27-Oct-21 | MW 26<br>20-Apr-22 | MW 26<br>24-Oct-22 | MW26<br>23 | MW26<br>##### | MW26-1<br>23-May-12 | MW26-1<br>01-Oct-12 | MW26-1<br>23-May-13 | MW26-1<br>01-Oct-13 |
|------------------------|----------|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|------------|---------------|---------------------|---------------------|---------------------|---------------------|
| Total Alkalinity       | mg/L     | 500       | 273                | 281                | 254                | 353                | 265                | 266                | 287                | 301                | 264                | 289        | 288           | 350                 | 340                 | 345                 | 343                 |
| Calcium                | mg/L     | -         | 107                | 125                | 118                | 149                | 112                | 122                | 119                | 121                | 117                | 120        | 108           | 130                 | 120                 | 132                 | 133                 |
| Chloride               | mg/L     | 250       | 40.2               | 43.2               | 38.7               | 52.3               | 42.7               | 43.8               | 42.7               | 44                 | 56.2               | 39.8       | 42.4          | 43                  | 44                  | 50.3                | 49.8                |
| COD                    | mg/L     | -         | 8                  | 99                 | 148                | 18                 | < 5                | 9                  | 8                  | 29                 | 105                | 34         | 19            | 12                  | 11                  | 8                   | 8                   |
| Specific Conductivity  | umhos/cm | -         | 661                | 723                | 676                | 832                | 670                | 710                | 670                | 695                | 677                | 686        | 688           | 800                 | 780                 | 811                 | 810                 |
| DOC                    | mg/L     | 5         | 3.4                | 4.5                | 4.4                | 7.3                | 3.5                | 4.8                | 3.7                | 3.4                | 2.8                | 2.4        | 6             | 3.8                 | 4.4                 | 8.3                 | 7.7                 |
| Fluoride               | mg/L     | 1.5       | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1      | < 0.1         | < 0.10              | < 0.10              | 0.2                 | 0.2                 |
| Iron                   | mg/L     | 0.3       | 0.6                | 0.655              | 0.764              | 3.51               | 0.645              | 0.702              | 0.73               | 0.684              | 0.777              | 0.73       | 0.719         | 1.3                 | 1.1                 | 1.36                | 1.33                |
| Magnesium              | mg/L     | -         | 9.83               | 11.1               | 11.1               | 12.5               | 10.6               | 11.1               | 10.9               | 11                 | 10.7               | 11.4       | 10.4          | 13                  | 13                  | 13.5                | 12.9                |
| Manganese              | mg/L     | 0.05      | 0.031              | 0.036              | 0.035              | 0.098              | 0.03               | 0.034              | 0.034              | 0.034              | 0.038              | 0.038      | 0.031         | 0.064               | 0.063               | 0.071               | 0.068               |
| Nitrate                | mg/L     | 10        | < 0.05             | < 0.05             | 0.05               | 0.08               | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05     | < 0.05        | < 0.10              | < 0.10              | < 0.1               | < 0.1               |
| Nitrite                | mg/L     | 1         | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05             | < 0.05     | < 0.05        | < 0.010             | < 0.010             | < 0.1               | < 0.1               |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.8                | 7.68               | 7.94               | 7.74               | 7.89               | 7.78               | 8                  | 7.79               | 7.74               | 8.09       | 7.33          | 7.99                | 7.65                | 7.6                 | 7.73                |
| Phenols                | mg/L     | -         | 0.007              | < 0.002            | < 0.001            | < 0.002            | < 0.001            | < 0.002            | < 0.002            | < 0.001            | < 0.001            | < 0.001    | < 0.001       | < 0.0010            | < 0.0010            | < 0.001             | < 0.001             |
| Phosphorus             | mg/L     | -         | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1              | < 0.1      | < 0.1         | < 0.10              | < 0.10              | 0.01                | < 0.01              |
| Potassium              | mg/L     | -         | 2.5                | 2.7                | 2.7                | 2.2                | 2.7                | 2.7                | 2.7                | 2.6                | 2.5                | 3          | 2.7           | 2.7                 | 2.5                 | 2.6                 | 2.6                 |
| Sodium                 | mg/L     | 200       | 16.2               | 18.9               | 17.4               | 22.1               | 17                 | 18.7               | 18.4               | 18.2               | 16.2               | 18.6       | 17.1          | 22                  | 21                  | 23.6                | 23                  |
| Sulphate               | mg/L     | 500       | 26                 | 17                 | 26                 | < 1                | 21                 | 17                 | 18                 | 16                 | 24                 | 17         | 21            | 5                   | 7                   | 6                   | 7                   |
| Dissolved Solids       | mg/L     | 500       | 366                | 387                | 367                | 454                | 366                | 376                | 385                | 394                | 386                | 383        | 357           | 428                 | 428                 | 437                 | 436                 |
| Tot Kjeh N             | mg/L     | -         | 0.3                | 0.1                | 1                  | 0.5                | 0.2                | 0.2                | 0.3                | 0.3                | 0.5                | 0.3        | 0.3           | 0.33                | 0.39                | 0.29                | 0.27                |
| Ammonia (NH3-N)        | mg/L     | -         | 0.05               | 0.12               | 0.07               | 0.18               | 0.04               | 0.04               | 0.04               | 0.06               | 0.08               | 0.06       | 0.22          | < 0.050             | 0.11                | 0.07                | 0.07                |
| Ammonia - Unionized    | mg/L     | -         |                    | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01     | < 0.01        |                     |                     |                     |                     |
| Hardness (CaCO3)       | mg/L     | 100       | 308                | 358                | 341                | 424                | 324                | 351                | 342                | 348                | 336                | 346        | 313           | 380                 | 360                 | 385                 | 386                 |
| BOD                    | mg/L     | -         | 5                  | < 3                | < 3                | < 3                | < 3                | < 3                | < 3                | < 3                | < 3                | < 3        | < 3           | --                  | --                  | --                  | --                  |
| Cyanide (free)         | mg/L     | -         | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005    | < 0.005       | --                  | --                  | --                  | --                  |
| Total Suspended Solids | mg/L     | -         | 109000             | 36200              | 32000              | 18                 | 5400               | 9400               | 21000              | 40200              | 30100              | 30500      | 11800         | --                  | --                  | --                  | --                  |
| Aluminum               | mg/L     | 0.1       | 0.06               | 0.07               | 0.08               | 0.08               | 0.07               | 0.08               | 0.07               | 0.07               | 0.09               | 0.03       | 0.07          | < 0.0050            | < 0.0050            | 0.04                | 0.04                |
| Antimony               | mg/L     | 0.006     | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001   | < 0.0001      | < 0.000050          | < 0.000050          | < 0.0001            | < 0.0001            |
| Arsenic                | mg/L     | 0.025     | < 0.0001           | < 0.0001           | 0.0001             | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001   | < 0.0001      | < 0.0010            | < 0.0010            | 0.0004              | 0.0006              |
| Barium                 | mg/L     | 1         | 0.154              | 0.172              | 0.17               | 0.2                | 0.158              | 0.17               | 0.166              | 0.166              | 0.16               | 0.173      | 0.157         | 0.2                 | 0.19                | 0.211               | 0.21                |
| Beryllium              | mg/L     | -         | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002            | < 0.002    | < 0.0001      | < 0.000050          | < 0.000050          | < 0.002             | < 0.002             |
| Boron                  | mg/L     | 5         | 0.037              | 0.045              | 0.045              | 0.043              | 0.045              | 0.045              | 0.049              | 0.044              | 0.044              | 0.049      | 0.045         | 0.041               | 0.047               | 0.045               | 0.025               |
| Cadmium                | mg/L     | 0.005     | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000015         | < 0.000010 | < 0.00001     | < 0.00010           | < 0.00010           | < 0.00002           | < 0.00002           |
| Chromium (total)       | mg/L     | 0.05      | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001    | < 0.001       | < 0.0050            | < 0.0050            | < 0.0002            | 0.0271              |
| Chromium (VI)          | mg/L     | -         |                    |                    |                    |                    |                    |                    |                    | < 0.001            | < 0.001            | < 0.001    | < 0.01        |                     |                     |                     |                     |
| Cobalt                 | mg/L     | -         | < 0.0001           | < 0.005            | < 0.005            | 0.005              | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005    | 0.0003        | < 0.00050           | < 0.00050           | < 0.005             | < 0.005             |
| Copper                 | mg/L     | 1         | 0.0003             | 0.0001             | 0.0006             | 0.0007             | 0.0016             | 0.0015             | 0.0007             | 0.0003             | 0.0006             | 0.0003     | 0.0006        | < 0.0010            | < 0.0010            | 0.0002              | 0.0005              |
| Lead                   | mg/L     | 0.01      | < 0.00002          | 0.00006            | 0.0001             | < 0.00002          | 0.0001             | 0.00006            | < 0.00002          | 0.00003            | 0.00012            | 0.00002    | 0.00003       | < 0.00050           | < 0.00050           | < 0.00002           | 0.00006             |
| Mercury                | mg/L     | 0.001     | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | < 0.00002          | 0.00002    | < 0.00002     | < 0.00001           | < 0.00001           | < 0.00002           | < 0.00002           |
| Molybdenum             | mg/L     | -         | 0.0002             | 0.0002             | 0.0002             | 0.0001             | 0.0002             | 0.0001             | 0.0001             | 0.0001             | 0.0002             | 0.0002     | 0.0004        | < 0.00050           | < 0.00050           | < 0.0001            | 0.0001              |
| Nickel                 | mg/L     | -         | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01             | < 0.01     | 0.0003        | < 0.0010            | < 0.0010            | < 0.01              | < 0.01              |
| Selenium               | mg/L     | 0.01      | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | < 0.001            | 0.001              | < 0.001    | < 0.001       | < 0.0020            | < 0.0020            | < 0.001             | < 0.001             |
| Silver                 | mg/L     | -         | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001           | < 0.0001   | < 0.0001      | < 0.00010           | < 0.00010           | < 0.00002           | < 0.00002           |
| Strontium              | mg/L     | -         | 0.35               | 0.401              | 0.374              | 0.576              | 0.362              | 0.386              | 0.381              | 0.374              | 0.363              | 0.408      | 0.37          | 0.48                | 0.49                | --                  | --                  |
| Thallium               | mg/L     | -         | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.00005          | < 0.05             | < 0.00005          | < 0.00005          | 0.00005    | < 0.00005     | < 0.000050          | < 0.000050          | < 0.00005           | < 0.00005           |
| Vanadium               | mg/L     | -         | 0.0002             | 0.0003             | 0.0003             | 0.0006             | 0.0002             | 0.0002             | 0.0002             | 0.0003             | 0.0004             | 0.0002     | 0.0002        | < 0.00050           | < 0.00050           | 0.0026              | 0.0078              |
| Zinc                   | mg/L     | 5         | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005            | < 0.005    | < 0.005       | 0.0082              | < 0.0050            | < 0.005             | < 0.005             |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW26-1    | MW26-1    | MW26-1    | MW26-1    | MW26-1    | MW26-1    | MW26-1    | MW26-1    | MW26-1     | MW26-1     | MW26-1     | MW26-1     | MW26-1     | MW26-1     |
|------------------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|
|                        |          |           | 24-Apr-14 | 15-Oct-14 | 15-Apr-15 | 07-Oct-15 | 27-Apr-16 | 03-Oct-16 | 17-Apr-17 | 23-Oct-17 | 25-Apr-18  | 15-Oct-18  | 11-Apr-19  | 21-Oct-19  | 22-Apr-20  | 19-Oct-20  |
| Total Alkalinity       | mg/L     | 500       | 344       | 332       | 341       | 326       | 333       | 321       | 329       | 316       | 338        | 303        | 313        | 303        | 306        | 334        |
| Calcium                | mg/L     | -         | 128       | 129       | 131       | 133       | 131       | 130       | 137       | 129       | 131        | 123        | 135        | 129        | 131        | 130        |
| Chloride               | mg/L     | 250       | 50.1      | 51.1      | 51.4      | 50.5      | 48.4      | 48.5      | 49.3      | 38.9      | 121        | 49.3       | 49         | 46.5       | 51.3       | 50.8       |
| COD                    | mg/L     | -         | 10        | 8         | 10        | 60        | < 5       | 9         | 20        | 15        | 11         | < 5        | 16         | 10         | 14         | < 5        |
| Specific Conductivity  | umhos/cm | -         | 802       | 787       | 793       | 777       | 774       | 774       | 786       | 753       | 773        | 754        | 779        | 771        | 763        | 753        |
| DOC                    | mg/L     | 5         | 6.7       | 8.2       | 5.5       | 3.6       | 4.3       | 5.4       | 5.7       | 5.3       | 5.5        | 5.4        | 6.5        | 5.1        | 5.6        | 4.7        |
| Fluoride               | mg/L     | 1.5       | 0.2       | 0.1       | 0.2       | 0.1       | < 0.1     | 0.1       | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | 1.32      | 1.29      | 1.33      | 1.35      | 1.34      | 1.29      | 1.43      | 1.19      | 0.615      | 1.17       | 1.29       | 1.28       | 1.27       | 1.31       |
| Magnesium              | mg/L     | -         | 12.5      | 13        | 12.8      | 13.2      | 13.3      | 13.3      | 12.8      | 13        | 13.1       | 12.1       | 12.9       | 13.2       | 13.2       | 12.6       |
| Manganese              | mg/L     | 0.05      | 0.068     | 0.064     | 0.065     | 0.065     | 0.064     | 0.063     | 0.065     | 0.063     | 0.073      | 0.059      | 0.063      | 0.061      | 0.062      | 0.061      |
| Nitrate                | mg/L     | 10        | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.05    | < 0.05     | < 0.05     | < 0.05     | < 0.05     | 0.07       | < 0.05     |
| Nitrite                | mg/L     | 1         | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.05    | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.78      | 7.78      | 7.73      | 7.87      | 7.82      | 7.83      | 7.85      | 7.88      | 7.88       | 7.78       | 7.61       | 7.99       | 7.74       | 7.84       |
| Phenols                | mg/L     | -         | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.001     | < 0.001   | < 0.001   | 0.003     | < 0.001    | < 0.002    | < 0.002    | < 0.001    | < 0.002    | < 0.001    |
| Phosphorus             | mg/L     | -         | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | <0.1      | <0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 2.6       | 2.7       | 2.5       | 2.5       | 2.6       | 2.4       | 2.5       | 2.6       | 2.8        | 2.5        | 2.7        | 2.8        | 2.6        | 2.8        |
| Sodium                 | mg/L     | 200       | 22.3      | 23.3      | 23        | 23.7      | 23        | 23.8      | 20.8      | 22.6      | 23.1       | 21.8       | 23.3       | 22.7       | 22.3       | 22.3       |
| Sulphate               | mg/L     | 500       | 7         | 9         | 9         | 11        | 9         | 12        | 11        | 10        | < 1        | 10         | 6          | 9          | 8          | 9          |
| Dissolved Solids       | mg/L     | 500       | 431       | 429       | 436       | 432       | 429       | 424       | 432       | 407       | 494        | 402        | 419        | 406        | 413        | 430        |
| Tot Kjeh N             | mg/L     | -         | 0.5       | 0.1       | 0.3       | 0.3       | 0.4       | 0.4       | 0.3       | 0.4       | 0.3        | 0.3        | 0.4        | 0.3        | 0.4        | 0.3        |
| Ammonia (NH3-N)        | mg/L     | -         | 0.1       | 0.11      | 0.1       | 0.07      | 0.09      | 0.1       | 0.09      | 0.09      | 0.11       | 0.1        | 0.13       | 0.1        | 0.08       | 0.09       |
| Ammonia - Unionized    | mg/L     | -         |           |           |           |           |           |           |           |           |            |            | <0.01      | <0.01      | < 0.01     | < 0.01     |
| Hardness (CaCO3)       | mg/L     | 100       | 372       | 375       | 380       | 388       | 381       | 380       | 395       | 376       | 381        | 357        | 391        | 377        | 382        | 377        |
| BOD                    | mg/L     | -         | --        | --        | < 2       | < 3       | < 3       | < 3       | < 3       | < 3       | < 3        | 4          | < 3        | < 3        | < 3        | < 3        |
| Cyanide (free)         | mg/L     | -         | --        | --        | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |
| Total Suspended Solids | mg/L     | -         | --        | --        | 26        | 18        | --        | --        | 3         | 28        | 14         | 6          | 7          | 18         | 14         | 7          |
| Aluminum               | mg/L     | 0.1       | 0.03      | 0.03      | 0.03      | 0.04      | 0.04      | 0.04      | 0.06      | 0.06      | 0.08       | 0.07       | 0.07       | 0.09       | 0.07       | 0.07       |
| Antimony               | mg/L     | 0.006     | <0.0001   | <0.0001   | < 0.0001  | < 0.0001  | < 0.0001  | 0.0003    | < 0.0001  | < 0.0001  | < 0.0001   | < 0.0001   | 0.0004     | < 0.0001   | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | 0.0004    | 0.0005    | 0.0003    | 0.0003    | 0.0003    | < 0.0001  | 0.0003    | 0.0003    | 0.0001     | < 0.0001   | 0.0001     | < 0.0001   | < 0.0001   | < 0.0001   |
| Barium                 | mg/L     | 1         | 0.189     | 0.2       | 0.196     | 0.198     | 0.186     | 0.199     | 0.226     | 0.209     | 0.197      | 0.194      | 0.208      | 0.201      | 0.206      | 0.202      |
| Beryllium              | mg/L     | -         | <0.002    | <0.002    | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | 0.044     | 0.045     | 0.045     | 0.045     | 0.024     | 0.043     | 0.049     | 0.051     | 0.046      | 0.046      | 0.049      | 0.052      | 0.052      | 0.054      |
| Cadmium                | mg/L     | 0.005     | 0.00002   | <0.00002  | 0.00003   | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | <0.0002   | 0.0047    | 0.0006    | 0.0034    | < 0.0002  | < 0.0002  | 0.001     | < 0.001   | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Chromium (VI)          | mg/L     | -         |           |           |           |           |           |           |           |           |            |            |            |            |            |            |
| Cobalt                 | mg/L     | -         | <0.005    | <0.005    | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | 0.005      | 0.0001     | < 0.005    | < 0.005    | < 0.005    | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0005    | 0.0004    | 0.0005    | 0.0007    | 0.0004    | 0.0002    | 0.0005    | 0.0002    | 0.0002     | 0.0003     | 0.0004     | 0.0008     | 0.0006     | 0.0012     |
| Lead                   | mg/L     | 0.01      | 0.00002   | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | 0.00007    | < 0.00002  | 0.00005    |
| Mercury                | mg/L     | 0.001     | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | <0.0001   | <0.0001   | < 0.0001  | < 0.0001  | 0.0001    | < 0.0001  | 0.0001    | < 0.0001  | < 0.0001   | < 0.0001   | 0.0001     | 0.0001     | 0.0001     | < 0.0001   |
| Nickel                 | mg/L     | -         | <0.01     | <0.01     | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | 0.001     | 0.002     | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.002     | < 0.001   | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Silver                 | mg/L     | -         | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Strontium              | mg/L     | -         | --        | 0.558     | 0.548     | 0.543     | 0.548     | 0.511     | 0.455     | 0.499     | 0.492      | 0.508      | 0.539      | 0.531      | 0.504      | 0.51       |
| Thallium               | mg/L     | -         | <0.00005  | <0.00005  | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | 0.0014    | 0.0075    | 0.0027    | 0.0015    | 0.0013    | 0.0012    | 0.0022    | 0.0014    | 0.0003     | 0.0003     | 0.0004     | 0.0004     | 0.0004     | 0.0004     |
| Zinc                   | mg/L     | 5         | <0.005    | <0.005    | 0.012     | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | 0.007      | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW 26-1<br>19-Apr-21 | MW 26-1<br>27-Oct-21 | MW 26-1<br>20-Apr-22 | MW 26-1<br>24-Oct-22 | MW26-1<br>19-Apr-23 | MW26-1<br>12-Oct-23 | MW26-2<br>23-May-12 | MW26-2<br>01-Oct-12 | MW26-2<br>23-May-13 | MW26-2<br>01-Oct-13 | MW26-2<br>24-Apr-14 | MW26-2<br>15-Oct-14 | MW26-2<br>15-Apr-15 | MW26-2<br>07-Oct-15 |
|------------------------|----------|-----------|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Total Alkalinity       | mg/L     | 500       | 300                  | 335                  | 326                  | 323                  | 329                 | 331                 | <b>370</b>          | <b>370</b>          | <b>371</b>          | <b>371</b>          | <b>380</b>          | <b>378</b>          | <b>376</b>          | <b>379</b>          |
| Calcium                | mg/L     | -         | 133                  | 129                  | 127                  | 126                  | 130                 | 118                 | 140                 | 140                 | 146                 | 149                 | 145                 | 148                 | 148                 | 152                 |
| Chloride               | mg/L     | 250       | 49.7                 | 50.3                 | 50.7                 | 68.8                 | 47                  | 51.8                | 42                  | 43                  | 47.7                | 47.7                | 47.7                | 49.8                | 49.7                | 48.5                |
| COD                    | mg/L     | -         | 11                   | 7                    | 12                   | 5                    | 15                  | 10                  | 22                  | 20                  | 15                  | 18                  | 16                  | 15                  | 9                   | 12                  |
| Specific Conductivity  | umhos/cm | -         | 773                  | 754                  | 738                  | 780                  | 760                 | 766                 | 830                 | 820                 | 840                 | 854                 | 828                 | 846                 | 836                 | 840                 |
| DOC                    | mg/L     | 5         | <b>6</b>             | <b>5.1</b>           | 4.2                  | 3.6                  | 2.1                 | <b>7.7</b>          | 5                   | <b>5.8</b>          | <b>9.9</b>          | <b>10.7</b>         | <b>8.6</b>          | <b>10.7</b>         | <b>7.5</b>          | <b>5.3</b>          |
| Fluoride               | mg/L     | 1.5       | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1               | <0.1                | < 0.10              | < 0.10              | 0.2                 | 0.1                 | <0.1                | 0.1                 | 0.2                 | 0.1                 |
| Iron                   | mg/L     | 0.3       | <b>1.33</b>          | <b>1.25</b>          | <b>1.24</b>          | <b>1.19</b>          | <b>1.31</b>         | <b>1.16</b>         | <b>11</b>           | <b>10</b>           | <b>8.02</b>         | <b>6.58</b>         | <b>5.2</b>          | <b>4.63</b>         | <b>4.3</b>          | <b>4.06</b>         |
| Magnesium              | mg/L     | -         | 13.1                 | 12.8                 | 12.6                 | 12.6                 | 13.3                | 12.3                | 12                  | 13                  | 12.6                | 12.2                | 11.8                | 12.5                | 11.9                | 12.7                |
| Manganese              | mg/L     | 0.05      | <b>0.061</b>         | <b>0.058</b>         | <b>0.057</b>         | <b>0.057</b>         | <b>0.062</b>        | <b>0.053</b>        | <b>0.12</b>         | <b>0.12</b>         | <b>0.114</b>        | <b>0.106</b>        | <b>0.096</b>        | <b>0.097</b>        | <b>0.1</b>          | <b>0.098</b>        |
| Nitrate                | mg/L     | 10        | < 0.05               | < 0.05               | < 0.05               | < 0.05               | < 0.05              | <0.05               | < 0.10              | < 0.10              | < 0.1               | < 0.1               | <0.1                | <0.1                | < 0.1               | < 0.1               |
| Nitrite                | mg/L     | 1         | < 0.05               | < 0.05               | < 0.05               | < 0.05               | < 0.05              | <0.05               | < 0.010             | < 0.010             | < 0.1               | < 0.1               | <0.1                | <0.1                | < 0.1               | < 0.1               |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.69                 | 7.92                 | 7.75                 | 7.68                 | 7.96                | 7.35                | 7.96                | 7.66                | 7.54                | 7.66                | 7.67                | 7.68                | 7.68                | 7.74                |
| Phenols                | mg/L     | -         | < 0.002              | < 0.002              | < 0.001              | < 0.001              | < 0.001             | <0.001              | < 0.0010            | < 0.0010            | < 0.001             | < 0.001             | < 0.001             | < 0.001             | < 0.001             | < 0.001             |
| Phosphorus             | mg/L     | -         | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1               | <0.1                | < 0.10              | < 0.10              | 0.01                | < 0.01              | <0.1                | <0.1                | < 0.1               | < 0.1               |
| Potassium              | mg/L     | -         | 2.7                  | 2.7                  | 2.6                  | 2.6                  | 3                   | 2.8                 | 2.3                 | 2.2                 | 2.2                 | 2.2                 | 2.2                 | 2.4                 | 2.2                 | 2.2                 |
| Sodium                 | mg/L     | 200       | 22.9                 | 22.6                 | 21.8                 | 20.9                 | 22.9                | 22                  | 19                  | 19                  | 20.5                | 20.2                | 19.4                | 21.3                | 20.3                | 22.2                |
| Sulphate               | mg/L     | 500       | 8                    | 7                    | 10                   | 8                    | 8                   | 9                   | < 1                 | < 1                 | < 1                 | < 1                 | <1                  | <1                  | < 1                 | < 1                 |
| Dissolved Solids       | mg/L     | 500       | <b>411</b>           | <b>427</b>           | <b>422</b>           | <b>434</b>           | <b>422</b>          | <b>401</b>          | <b>452</b>          | <b>469</b>          | <b>461</b>          | <b>460</b>          | <b>459</b>          | <b>466</b>          | <b>463</b>          | <b>470</b>          |
| Tot Kjeh N             | mg/L     | -         | 0.4                  | 0.3                  | 0.3                  | 0.4                  | 0.5                 | 0.2                 | 0.41                | 0.54                | 0.48                | 0.46                | 0.6                 | 0.3                 | 0.5                 | 0.4                 |
| Ammonia (NH3-N)        | mg/L     | -         | 0.1                  | 0.09                 | 0.14                 | 0.1                  | 0.36                | 0.18                | 0.069               | 0.21                | 0.17                | 0.17                | 0.2                 | 0.23                | 0.19                | 0.18                |
| Ammonia - Unionized    | mg/L     | -         | < 0.01               | < 0.01               | < 0.01               | < 0.01               | < 0.01              | <0.01               |                     |                     |                     |                     |                     |                     |                     |                     |
| Hardness (CaCO3)       | mg/L     | 100       | <b>386</b>           | <b>375</b>           | <b>369</b>           | <b>367</b>           | <b>379</b>          | <b>346</b>          | <b>400</b>          | <b>410</b>          | <b>417</b>          | <b>422</b>          | <b>410</b>          | <b>421</b>          | <b>418</b>          | <b>431</b>          |
| BOD                    | mg/L     | -         | < 3                  | < 3                  | < 3                  | < 3                  | < 3                 | <3                  | --                  | --                  | --                  | --                  | --                  | --                  | < 2                 | 3                   |
| Cyanide (free)         | mg/L     | -         | < 0.005              | < 0.005              | < 0.005              | < 0.005              | < 0.005             | <0.005              | --                  | --                  | --                  | --                  | --                  | --                  | < 0.005             | < 0.005             |
| Total Suspended Solids | mg/L     | -         | 3                    | < 3                  | 11                   | 12                   | 17                  | 8                   | --                  | --                  | --                  | --                  | --                  | --                  | 22                  | 12                  |
| Aluminum               | mg/L     | 0.1       | <b>0.08</b>          | <b>0.08</b>          | 0.07                 | <b>0.09</b>          | 0.03                | <b>0.09</b>         | 0.0051              | < 0.0050            | 0.05                | 0.05                | 0.03                | 0.03                | 0.04                | 0.04                |
| Antimony               | mg/L     | 0.006     | < 0.0001             | < 0.0001             | < 0.0001             | < 0.0001             | < 0.0001            | 0.0001              | < 0.00050           | < 0.00050           | < 0.0001            | < 0.0001            | <0.0001             | <0.0001             | 0.0001              | < 0.0001            |
| Arsenic                | mg/L     | 0.025     | < 0.0001             | < 0.0001             | < 0.0001             | < 0.0001             | < 0.0001            | <0.0001             | < 0.0010            | < 0.0010            | 0.0004              | 0.0006              | 0.0003              | 0.0004              | 0.0003              | 0.0003              |
| Barium                 | mg/L     | 1         | 0.205                | 0.197                | 0.194                | 0.2                  | 0.208               | 0.19                | 0.18                | 0.18                | 0.191               | 0.189               | 0.174               | 0.191               | 0.181               | 0.187               |
| Beryllium              | mg/L     | -         | < 0.002              | < 0.002              | < 0.002              | < 0.002              | < 0.002             | <0.0001             | < 0.00050           | < 0.00050           | < 0.002             | < 0.002             | <0.002              | <0.002              | < 0.002             | < 0.002             |
| Boron                  | mg/L     | 5         | 0.053                | 0.053                | 0.053                | 0.054                | 0.057               | 0.058               | 0.029               | 0.034               | 0.032               | 0.012               | 0.032               | 0.033               | 0.034               | 0.034               |
| Cadmium                | mg/L     | 0.005     | < 0.000015           | < 0.000015           | < 0.000015           | < 0.000010           | 0.000010            | <0.00001            | < 0.00010           | < 0.00010           | < 0.00002           | < 0.00002           | <0.00002            | <0.00002            | 0.00005             | < 0.00002           |
| Chromium (total)       | mg/L     | 0.05      | < 0.001              | < 0.001              | < 0.001              | < 0.001              | < 0.001             | <0.001              | < 0.0050            | < 0.0050            | < 0.0002            | <b>0.0302</b>       | <0.0002             | 0.005               | 0.0009              | 0.0041              |
| Chromium (VI)          | mg/L     | -         |                      |                      | < 0.001              | < 0.001              | < 0.001             | <0.01               |                     |                     |                     |                     |                     |                     |                     |                     |
| Cobalt                 | mg/L     | -         | < 0.005              | < 0.005              | < 0.005              | < 0.005              | < 0.005             | 0.0004              | 0.0019              | 0.0028              | < 0.005             | < 0.005             | <0.005              | <0.005              | < 0.005             | < 0.005             |
| Copper                 | mg/L     | 1         | 0.0009               | 0.0006               | 0.0003               | 0.0005               | 0.0003              | 0.0005              | 0.0017              | < 0.0010            | 0.0005              | 0.0004              | 0.0004              | 0.0005              | 0.0007              | 0.0004              |
| Lead                   | mg/L     | 0.01      | 0.00004              | < 0.00002            | 0.00002              | 0.00003              | < 0.00002           | <0.00002            | < 0.00050           | < 0.00050           | < 0.00002           | 0.00005             | <0.00002            | <0.00002            | < 0.00002           | < 0.00002           |
| Mercury                | mg/L     | 0.001     | < 0.00002            | < 0.00002            | < 0.00002            | < 0.00002            | < 0.00002           | <0.00002            | < 0.00001           | --                  | < 0.00002           | < 0.00002           | <0.00002            | <0.00002            | < 0.00002           | < 0.00002           |
| Molybdenum             | mg/L     | -         | < 0.0001             | 0.0001               | < 0.0001             | < 0.0001             | 0.0001              | <0.0001             | < 0.00050           | < 0.00050           | 0.0003              | 0.0003              | 0.0002              | 0.0002              | < 0.0001            | 0.0001              |
| Nickel                 | mg/L     | -         | < 0.01               | < 0.01               | < 0.01               | < 0.01               | < 0.01              | 0.0006              | 0.0041              | 0.0046              | < 0.01              | < 0.01              | <0.01               | <0.01               | < 0.01              | < 0.01              |
| Selenium               | mg/L     | 0.01      | < 0.001              | < 0.001              | < 0.001              | 0.001                | < 0.001             | <0.001              | < 0.0020            | < 0.0020            | < 0.001             | < 0.001             | <0.001              | 0.002               | < 0.001             | < 0.001             |
| Silver                 | mg/L     | -         | < 0.0001             | < 0.0001             | < 0.0001             | < 0.0001             | < 0.0001            | <0.0001             | < 0.00010           | < 0.00010           | < 0.00002           | < 0.00002           | <0.00002            | <0.00002            | < 0.00002           | < 0.00002           |
| Strontium              | mg/L     | -         | 0.531                | 0.526                | 0.508                | 0.501                | 0.556               | 0.513               | 0.55                | 0.56                | --                  | --                  | --                  | 0.631               | 0.626               | 0.619               |
| Thallium               | mg/L     | -         | < 0.00005            | < 0.05               | < 0.00005            | < 0.00005            | < 0.00005           | <0.00005            | < 0.000050          | < 0.000050          | < 0.00005           | < 0.00005           | <0.00005            | <0.00005            | < 0.00005           | < 0.00005           |
| Vanadium               | mg/L     | -         | 0.0004               | 0.0004               | 0.0004               | 0.0004               | 0.0004              | 0.0004              | < 0.00050           | 0.00055             | 0.0029              | 0.0088              | 0.0019              | 0.008               | 0.0033              | 0.002               |
| Zinc                   | mg/L     | 5         | < 0.005              | 0.005                | < 0.005              | < 0.005              | < 0.005             | <0.005              | 0.012               | < 0.0050            | 0.006               | < 0.005             | <0.005              | 0.006               | 0.015               | < 0.005             |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance



Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW26-2       | MW26-2       | MW26-2       | MW26-2       | MW26-2       | MW26-2      | MW 26-2      | MW 26-2      | MW 26-2      | MW 26-2      | MW 26-2      | MW 26-2      | MW 26-2     | MW 26-2      |
|------------------------|----------|-----------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|
|                        |          |           | 27-Apr-16    | 03-Oct-16    | 17-Apr-17    | 23-Oct-17    | 25-Apr-18    | 15-Oct-18   | 11-Apr-19    | 21-Oct-19    | 22-Apr-20    | 19-Oct-20    | 19-Apr-21    | 27-Oct-21    | 20-Apr-22   | 24-Oct-22    |
| Total Alkalinity       | mg/L     | 500       | <b>380</b>   | <b>374</b>   | <b>382</b>   | <b>369</b>   | <b>384</b>   | 360         | 357          | <b>380</b>   | 270          | <b>365</b>   | 343          | <b>384</b>   | <b>386</b>  | <b>371</b>   |
| Calcium                | mg/L     | -         | 148          | 150          | 158          | 153          | 149          | 143         | 153          | 151          | 117          | 149          | 153          | 151          | 149         | 147          |
| Chloride               | mg/L     | 250       | 47.5         | 47.4         | 49.2         | 40.1         | 53.4         | 49.8        | 49           | 46.3         | 42.8         | 51.1         | 50           | 50.4         | 50.9        | 68.8         |
| COD                    | mg/L     | -         | 7            | 16           | 14           | 28           | 18           | 18          | 23           | 15           | 14           | 9            | 17           | 14           | 23          | 10           |
| Specific Conductivity  | umhos/cm | -         | 830          | 848          | 855          | 828          | 837          | 841         | 841          | 846          | 683          | 836          | 853          | 826          | 828         | 871          |
| DOC                    | mg/L     | 5         | <b>6</b>     | <b>7.7</b>   | <b>7.4</b>   | <b>7.7</b>   | <b>6.6</b>   | <b>7.6</b>  | <b>8.6</b>   | <b>7.4</b>   | 4            | <b>6.4</b>   | <b>8.2</b>   | <b>7.1</b>   | <b>5.9</b>  | <b>5.2</b>   |
| Fluoride               | mg/L     | 1.5       | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1       | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1       | < 0.1        |
| Iron                   | mg/L     | 0.3       | <b>3.94</b>  | <b>3.64</b>  | <b>4.07</b>  | <b>3.64</b>  | <b>2.98</b>  | <b>3.33</b> | <b>3.44</b>  | <b>3.4</b>   | <b>0.656</b> | <b>3.51</b>  | <b>3.51</b>  | <b>3.4</b>   | <b>3.37</b> | <b>3.32</b>  |
| Magnesium              | mg/L     | -         | 12.6         | 13           | 12.5         | 12.8         | 12.6         | 12.1        | 12.2         | 13.1         | 11           | 12.5         | 12.7         | 12.6         | 12.4        | 12.5         |
| Manganese              | mg/L     | 0.05      | <b>0.096</b> | <b>0.099</b> | <b>0.101</b> | <b>0.096</b> | <b>0.094</b> | <b>0.09</b> | <b>0.092</b> | <b>0.093</b> | 0.034        | <b>0.093</b> | <b>0.092</b> | <b>0.092</b> | <b>0.09</b> | <b>0.093</b> |
| Nitrate                | mg/L     | 10        | 0.1          | < 0.1        | < 0.1        | < 0.05       | < 0.05       | < 0.05      | < 0.05       | 0.07         | 0.1          | < 0.05       | < 0.05       | < 0.05       | < 0.05      | < 0.05       |
| Nitrite                | mg/L     | 1         | < 0.1        | < 0.1        | < 0.1        | < 0.05       | < 0.05       | < 0.05      | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05      | < 0.05       |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.66         | 7.77         | 7.73         | 7.82         | 7.87         | 7.69        | 7.5          | 7.89         | 7.81         | 7.77         | 7.62         | 7.96         | 7.7         | 7.59         |
| Phenols                | mg/L     | -         | 0.001        | < 0.001      | < 0.001      | 0.002        | < 0.001      | < 0.002     | < 0.002      | < 0.001      | < 0.002      | < 0.001      | < 0.002      | < 0.002      | < 0.001     | < 0.001      |
| Phosphorus             | mg/L     | -         | < 0.1        | < 0.1        | < 0.01       | 0.02         | < 0.1        | < 0.1       | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1       | < 0.1        |
| Potassium              | mg/L     | -         | 2.2          | 2.1          | 2.2          | 2.2          | 2.5          | 2.3         | 2.3          | 2.5          | 2.5          | 2.5          | 2.4          | 2.4          | 2.3         | 2.3          |
| Sodium                 | mg/L     | 200       | 21.2         | 23           |              |              | 23.6         | 22.2        | 22.4         | 23.5         | 17.3         | 22.9         | 23.3         | 23.4         | 22.5        | 22           |
| Sulphate               | mg/L     | 500       | < 1          | < 1          | 5            | 1            | < 1          | < 1         | < 1          | < 1          | 21           | < 1          | < 1          | 1            | < 1         | < 1          |
| Dissolved Solids       | mg/L     | 500       | <b>464</b>   | <b>465</b>   | <b>481</b>   | <b>457</b>   | <b>475</b>   | <b>449</b>  | <b>458</b>   | <b>469</b>   | 374          | <b>460</b>   | <b>451</b>   | <b>475</b>   | <b>472</b>  | <b>479</b>   |
| Tot Kjeh N             | mg/L     | -         | 0.5          | 0.6          | 0.5          | 0.5          | 0.5          | 0.5         | 0.5          | 0.4          | 0.3          | 0.5          | 0.6          | 0.5          | 0.5         | 0.6          |
| Ammonia (NH3-N)        | mg/L     | -         | 0.2          | 0.22         | 0.2          | 0.19         | 0.27         | 0.19        | 0.2          | 0.19         | 0.03         | 0.2          | 0.2          | 0.2          | 0.21        | 0.19         |
| Ammonia - Unionized    | mg/L     | -         |              |              |              |              |              |             | <0.01        | <0.01        | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01      | < 0.01       |
| Hardness (CaCO3)       | mg/L     | 100       | <b>421</b>   | <b>429</b>   | <b>446</b>   | <b>435</b>   | <b>424</b>   | <b>407</b>  | <b>433</b>   | <b>431</b>   | <b>338</b>   | <b>424</b>   | <b>435</b>   | <b>429</b>   | <b>423</b>  | <b>419</b>   |
| BOD                    | mg/L     | -         | < 3          | < 3          | < 3          | < 3          | < 3          | 4           | < 3          | < 3          | < 3          | < 3          | < 3          | < 3          | < 3         | < 3          |
| Cyanide (free)         | mg/L     | -         | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005     | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005     | < 0.005      |
| Total Suspended Solids | mg/L     | -         | --           | --           | 10           | 28           | 80           | 10          | 33           | 20           | 33900        | 14           | < 3          | 5            | 11          | 17           |
| Aluminum               | mg/L     | 0.1       | 0.04         | 0.04         | <b>0.08</b>  | <b>0.08</b>  | 0.07         | 0.06        | <b>0.08</b>  | <b>0.09</b>  | <b>0.08</b>  | <b>0.08</b>  | <b>0.09</b>  | <b>0.1</b>   | <b>0.08</b> | <b>0.08</b>  |
| Antimony               | mg/L     | 0.006     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001     |
| Arsenic                | mg/L     | 0.025     | 0.0003       | < 0.0001     | 0.0003       | 0.0003       | 0.0001       | < 0.0001    | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001     |
| Barium                 | mg/L     | 1         | 0.176        | 0.192        | 0.222        | 0.21         | 0.187        | 0.193       | 0.197        | 0.2          | 0.164        | 0.195        | 0.201        | 0.199        | 0.195       | 0.2          |
| Beryllium              | mg/L     | -         | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002     | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002     | < 0.002      |
| Boron                  | mg/L     | 5         | 0.012        | 0.033        | 0.035        | 0.039        | 0.038        | 0.035       | 0.04         | 0.044        | 0.044        | 0.045        | 0.041        | 0.043        | 0.04        | 0.042        |
| Cadmium                | mg/L     | 0.005     | < 0.00002    | < 0.00002    | < 0.000020   | < 0.000014   | < 0.000015   | < 0.000015  | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000015  | < 0.000010   |
| Chromium (total)       | mg/L     | 0.05      | < 0.0002     | < 0.0002     | 0.001        | < 0.001      | < 0.001      | < 0.001     | < 0.001      | 0.001        | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001     | < 0.001      |
| Chromium (VI)          | mg/L     | -         |              |              |              |              |              |             |              |              |              |              |              |              | < 0.001     | < 0.001      |
| Cobalt                 | mg/L     | -         | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | 0.0017      | 0.007        | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005     | < 0.005      |
| Copper                 | mg/L     | 1         | 0.0003       | < 0.0001     | 0.0008       | 0.0002       | 0.0001       | 0.0002      | 0.0009       | 0.0013       | 0.0006       | 0.001        | < 0.0001     | 0.0007       | 0.0003      | 0.0004       |
| Lead                   | mg/L     | 0.01      | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002    | 0.00008      | 0.00005      | 0.00004      | < 0.00002    | < 0.00002    | < 0.00002   | 0.00003      |
| Mercury                | mg/L     | 0.001     | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002    |
| Molybdenum             | mg/L     | -         | 0.0002       | 0.0001       | 0.0001       | < 0.0001     | 0.0001       | < 0.0001    | 0.0002       | 0.0001       | 0.0002       | 0.0001       | < 0.0001     | < 0.0001     | 0.0001      | 0.0001       |
| Nickel                 | mg/L     | -         | < 0.01       | < 0.01       | < 0.01       | < 0.01       | 0.01         | < 0.01      | 0.01         | 0.01         | < 0.01       | 0.01         | < 0.01       | 0.01         | 0.01        | 0.01         |
| Selenium               | mg/L     | 0.01      | < 0.001      | < 0.001      | 0.002        | < 0.001      | < 0.001      | < 0.001     | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001     | 0.001        |
| Silver                 | mg/L     | -         | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.0001     | < 0.0001    | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001     |
| Strontium              | mg/L     | -         | 0.608        | 0.587        | 0.519        | 0.575        | 0.565        | 0.581       | 0.611        | 0.604        | 0.362        | 0.578        | 0.59         | 0.594        | 0.571       | 0.578        |
| Thallium               | mg/L     | -         | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005   | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.05       | < 0.00005   | < 0.00005    |
| Vanadium               | mg/L     | -         | 0.0017       | 0.0018       | 0.0027       | 0.002        | 0.0007       | 0.0006      | 0.0007       | 0.0007       | 0.0002       | 0.0007       | 0.0007       | 0.0007       | 0.0007      | 0.0007       |
| Zinc                   | mg/L     | 5         | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005     | < 0.005      | < 0.005      | < 0.005      | 0.005        | < 0.005      | 0.006        | < 0.005     | < 0.005      |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW26-2<br>19-Apr-23 | MW26-2<br>12-Oct-23 | MW27-I<br>24-Apr-14 | MW27-I<br>15-Oct-14 | MW27-I<br>15-Apr-15 | MW27-I<br>07-Oct-15 | MW27-I<br>09-Nov-15 | MW27-I<br>27-Apr-16 | MW27-I<br>07-Jul-16 | MW27-I<br>03-Oct-16 | MW27-I<br>22-Feb-17 | MW27-I<br>17-Apr-17 | MW27-I<br>20-Jul-17 | MW27-I<br>23-Oct-17 |
|------------------------|----------|-----------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Total Alkalinity       | mg/L     | 500       | <b>387</b>          | <b>393</b>          | 219                 | 200                 | 172                 | 142                 | 160                 | 160                 | 163                 | 161                 | 160                 | 167                 | 158                 | 157                 |
| Calcium                | mg/L     | -         | 150                 | 139                 | 127                 | 251                 | 339                 | 436                 | 331                 | 767                 | 395                 | 385                 | 489                 | 345                 | 316                 | 387                 |
| Chloride               | mg/L     | 250       | 48.3                | 53.9                | <b>407</b>          | <b>2100</b>         | <b>3540</b>         | <b>3230</b>         | <b>3640</b>         | <b>5110</b>         | <b>4070</b>         | <b>3790</b>         | <b>3590</b>         | <b>3420</b>         | <b>3050</b>         | <b>3260</b>         |
| COD                    | mg/L     | -         | 17                  | 21                  | 139                 | <5                  | 21                  | 28                  | 44                  | 207                 | 24                  | 22                  | 21                  | 25                  | 78                  | 307                 |
| Specific Conductivity  | umhos/cm | -         | 849                 | 873                 | 1750                | 5840                | 9750                | 10100               | 10400               | 11800               | 10300               | 10300               | 11200               | 10100               | 10600               | 11100               |
| DOC                    | mg/L     | 5         | 3.5                 | <b>10.8</b>         | <b>25.8</b>         | 4.3                 | 0.7                 | < 0.2               | < 0.2               | < 0.2               | < 0.2               | 0.4                 | 0.6                 | 0.7                 | < 0.2               | 0.3                 |
| Fluoride               | mg/L     | 1.5       | < 0.1               | <0.1                | 0.3                 | 0.4                 | <b>0.9</b>          | <b>1.2</b>          | <b>0.9</b>          | < 3                 | <b>0.8</b>          | < 3                 | <b>1.4</b>          | < 3                 | < 3                 | < 3                 |
| Iron                   | mg/L     | 0.3       | <b>3.59</b>         | <b>3.27</b>         | 0.005               | 0.225               | <b>0.738</b>        | <b>1.21</b>         | <b>0.576</b>        | <b>0.632</b>        | <b>0.274</b>        | <b>0.432</b>        | <b>1.08</b>         | <b>0.816</b>        | <b>0.503</b>        | <b>0.59</b>         |
| Magnesium              | mg/L     | -         | 13                  | 12.2                | 22.1                | 115                 | 179                 | 228                 | 192                 | 386                 | 217                 | 214                 | 256                 | 200                 | 186                 | 204                 |
| Manganese              | mg/L     | 0.05      | <b>0.097</b>        | <b>0.089</b>        | 0.045               | 0.03                | 0.018               | 0.03                | 0.011               | 0.016               | 0.017               | 0.017               | 0.026               | 0.017               | 0.01                | 0.015               |
| Nitrate                | mg/L     | 10        | < 0.05              | <0.05               | 0.8                 | 0.2                 | < 0.1               | < 0.1               | < 0.1               | < 3                 | < 5                 | < 3                 | < 1                 | < 3                 | < 1                 | < 1                 |
| Nitrite                | mg/L     | 1         | < 0.05              | <0.05               | <0.1                | <0.1 (16)           | < 0.1               | < 0.1               | < 0.1               | < 3                 | < 5                 | < 3                 | < 1                 | < 3                 | < 1                 | < 1                 |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.94                | 7.39                | 7.73                | 7.83                | 7.66                | 7.68                | 7.55                | 7.56                | 7.54                | 7.7                 | 7.57                | 7.73                | 7.68                | 7.69                |
| Phenols                | mg/L     | -         | < 0.001             | <0.001              | < 0.001             | < 0.001             | < 0.001             | < 0.001             | < 0.001             | 0.009               | 0.009               | 0.031               | 0.027               | < 0.001             | 0.02                | 0.131               |
| Phosphorus             | mg/L     | -         | < 0.1               | <0.1                | <0.1                | <0.1                | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | <0.1                | < 0.1               | <0.1                |
| Potassium              | mg/L     | -         | 2.7                 | 2.5                 | 6.5                 | 33.5                | 50.8                | 53.4                | 44.8                | 60.2                | 53.7                | 52.8                | 54.1                | 53                  | 45.5                | 56.3                |
| Sodium                 | mg/L     | 200       | 24.3                | 23.3                | <b>207</b>          | <b>838</b>          | <b>1300</b>         | <b>1500</b>         | <b>1140</b>         | <b>1950</b>         | <b>1430</b>         | <b>1300</b>         | <b>1350</b>         | <b>1150</b>         | <b>1140</b>         | <b>1190</b>         |
| Sulphate               | mg/L     | 500       | < 1                 | <1                  | 51                  | 15                  | < 1                 | < 1                 | < 1                 | < 30                | 2                   | < 30                | < 10                | 65                  | < 30                | < 30                |
| Dissolved Solids       | mg/L     | 500       | <b>475</b>          | <b>462</b>          | <b>957</b>          | <b>3480</b>         | <b>5520</b>         | <b>5550</b>         | <b>5450</b>         | <b>8390</b>         | <b>6270</b>         | <b>5860</b>         | <b>5860</b>         | <b>5360</b>         | <b>4870</b>         | <b>5206</b>         |
| Tot Kjeh N             | mg/L     | -         | 0.6                 | 0.4                 | 1.7                 | 5.4                 | 9.1                 | 11.1                | 10.7                | 13.2                | < 2                 | 13                  | 12.3                | 10.8                | 11                  | 10.6                |
| Ammonia (NH3-N)        | mg/L     | -         | 0.29                | 0.25                | 1                   | 5.38                | 7.99                | 8.8                 | 9.62                | 10.4                | 0.07                | 10.3                | 9.45                | 11.8                | 8.61                | 8.58                |
| Ammonia - Unionized    | mg/L     | -         | < 0.01              | <0.01               |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Hardness (CaCO3)       | mg/L     | 100       | <b>430</b>          | <b>398</b>          | <b>408</b>          | <b>1100</b>         | <b>1580</b>         | <b>2030</b>         | <b>1620</b>         | <b>3500</b>         | <b>1880</b>         | <b>1840</b>         | <b>2270</b>         | <b>1830</b>         | <b>1560</b>         | <b>1810</b>         |
| BOD                    | mg/L     | -         | < 3                 | <3                  | --                  | --                  | < 2                 | 12                  | 18                  | 10                  | 3                   | < 3                 | 11                  | 4                   | 17                  | 5                   |
| Cyanide (free)         | mg/L     | -         | < 0.005             | <0.005              | --                  | --                  | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             |
| Total Suspended Solids | mg/L     | -         | 9                   | 10                  | --                  | --                  | 436                 | 460                 | 102                 | --                  | --                  | --                  | 265                 | 156                 | 180                 | 188                 |
| Aluminum               | mg/L     | 0.1       | 0.04                | <b>0.1</b>          | 0.03                | 0.05                | 0.06                | <b>0.08</b>         | <b>0.08</b>         | 0.07                | <b>0.08</b>         | <b>0.08</b>         | <b>0.09</b>         | <b>0.19</b>         | 0.07                | <b>0.13</b>         |
| Antimony               | mg/L     | 0.006     | < 0.0001            | <0.0001             | <0.0001             | <0.0001             | < 0.0001            | 0.0002              | < 0.0001            | < 0.0001            | 0.0002              | 0.0003              | 0.0004              | < 0.0001            | < 0.0001            | < 0.0001            |
| Arsenic                | mg/L     | 0.025     | < 0.0001            | <0.0001             | 0.0023              | <0.001              | 0.0003              | < 0.0001            | < 0.0001            | 0.0003              | < 0.0001            | 0.0003              | <b>0.0783</b>       | <b>0.0168</b>       | <b>0.0226</b>       | <b>0.023</b>        |
| Barium                 | mg/L     | 1         | 0.207               | 0.194               | 0.131               | <b>1.09</b>         | <b>1.71</b>         | <b>1.73</b>         | <b>1.76</b>         | <b>1.9</b>          | <b>2.07</b>         | 2                   | <b>2.05</b>         | <b>2.45</b>         | <b>1.69</b>         | <b>2.34</b>         |
| Beryllium              | mg/L     | -         | < 0.002             | <0.0001             | <0.002              | <0.002              | < 0.002             | < 0.002             | < 0.002             | < 0.002             | < 0.002             | < 0.002             | < 0.002             | < 0.002             | < 0.002             | < 0.002             |
| Boron                  | mg/L     | 5         | 0.046               | 0.043               | 0.126               | 0.719               | 1.06                | 1.04                | 0.96                | 1.09                | 1.12                | 1.13                | 1.04                | 1.1                 | 0.971               | 1.13                |
| Cadmium                | mg/L     | 0.005     | < 0.00001           | <0.00001            |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Chromium (total)       | mg/L     | 0.005     | 0.000010            | 5                   | <0.00002            | <0.00002            | 0.00003             | 0.00003             | 0.00002             | 0.00003             | 0.00003             | 0.00005             | 0.00003             | 0.000093            | 0.000032            | 0.000028            |
| Chromium (VI)          | mg/L     | -         | < 0.001             | <0.01               | <0.0002             | 0.0028              | 0.0006              | 0.0022              | 0.0007              | < 0.0002            | < 0.0002            | < 0.0002            | 0.0017              | < 0.001             | 0.003               | < 0.001             |
| Cobalt                 | mg/L     | -         | < 0.005             | 0.002               | <0.005              | <0.005              | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             |
| Copper                 | mg/L     | 1         | 0.0005              | 0.0003              | 0.003               | 0.006               | 0.0057              | 0.0068              | 0.0073              | 0.0082              | 0.0077              | 0.0088              | 0.0119              | 0.0124              | 0.0073              | 0.0053              |
| Lead                   | mg/L     | 0.01      | < 0.00002           | <0.00002            | 0.00016             | <0.00002            | 0.00046             | 0.00004             | 0.00003             | 0.00005             | 0.00002             | < 0.00002           | < 0.00002           | 0.00006             | 0.00009             | < 0.00002           |
| Mercury                | mg/L     | 0.001     | < 0.00002           | <0.00002            | <0.00002            | <0.00002            | < 0.00002           | < 0.00002           | < 0.00002           | 0.00005             | < 0.00002           | < 0.00002           | 0.00009             | < 0.00002           | < 0.00002           | < 0.00002           |
| Molybdenum             | mg/L     | -         | 0.0001              | <0.0001             | 0.0019              | 0.0006              | < 0.0001            | 0.0003              | < 0.0001            | < 0.0001            | 0.0001              | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            |
| Nickel                 | mg/L     | -         | 0.01                | 0.0153              | <0.01               | <0.01               | < 0.01              | < 0.01              | < 0.01              | < 0.01              | < 0.01              | < 0.01              | < 0.01              | < 0.01              | < 0.01              | < 0.01              |
| Selenium               | mg/L     | 0.01      | < 0.001             | <0.001              | <b>0.01</b>         | <b>0.1</b>          | < 0.001             | <b>0.14</b>         | < 0.001             | < 0.001             | < 0.02              | <b>0.085</b>        | <b>0.134</b>        | < 0.001             | 0.002               | <b>0.016</b>        |
| Silver                 | mg/L     | -         | < 0.0001            | <0.0001             | <0.00002            | <0.00002            | 0.00006             | 0.00003             | 0.00004             | 0.00007             | 0.00003             | 0.00003             | 0.00004             | 0.00004             | 0.00002             | 0.00002             |
| Strontium              | mg/L     | -         | 0.632               | 0.582               | --                  | 17.5                | 26.5                | 33                  | 27.7                | 31.2                | 31.5                | 31.2                | 37.3                | 27.5                | 26.1                | 30.5                |
| Thallium               | mg/L     | -         | < 0.00005           | <0.00005            | <0.00005            | <0.00005            | < 0.00005           | < 0.00005           | < 0.00005           | < 0.00005           | < 0.00005           | < 0.00005           | < 0.00005           | < 0.00005           | < 0.00005           | < 0.00005           |
| Vanadium               | mg/L     | -         | 0.0007              | 0.0007              | 0.0015              | 0.0041              | < 0.0001            | < 0.0001            | 0.0004              | < 0.0001            | < 0.0001            | 0.0007              | < 0.0001            | < 0.0001            | < 0.0001            | < 0.0001            |
| Zinc                   | mg/L     | 5         | < 0.005             | <0.005              | 0.008               | 0.006               | < 0.005             | 0.011               | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             | < 0.005             |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW27-I       | MW27-I       | MW27-I       | MW27-I       | MW27-I       | MW27-I       | MW27-I       | MW27-I       | MW27-I      | MW27-I      | MW27-I       | MW27-I       | MW27-II    | MW27-II    |
|------------------------|----------|-----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|------------|------------|
|                        |          |           | 25-Apr-18    | 15-Oct-18    | 11-Apr-19    | 21-Oct-19    | 22-Apr-20    | 19-Oct-20    | 19-Apr-21    | 27-Oct-21    | 20-Apr-22   | 26-Oct-22   | 19-Apr-23    | 12-Oct-23    | 24-Apr-14  | 15-Oct-14  |
| Total Alkalinity       | mg/L     | 500       | 174          | 158          | 151          | 152          | 158          | 155          | 147          | 166          | 170         | 172         | 173          | 173          | 196        | 196        |
| Calcium                | mg/L     | -         | 396          | 362          | 394          | 417          | 344          | 464          | 403          | 479          | 410         | 357         | 361          | 344          | 78.2       | 82.2       |
| Chloride               | mg/L     | 250       | <b>3010</b>  | <b>3130</b>  | <b>3300</b>  | <b>3020</b>  | <b>2790</b>  | <b>3490</b>  | <b>3090</b>  | <b>3760</b>  | <b>3040</b> | <b>2610</b> | <b>2920</b>  | <b>3640</b>  | 3.7        | 5.6        |
| COD                    | mg/L     | -         | 187          | 32           | 107          | 214          | 323          | 71           | 313          | 64           | 57          | 55          | 129          | 151          | 33         | 102        |
| Specific Conductivity  | umhos/cm | -         | 8560         | 9200         | 9350         | 9670         | 8300         | 10200        | 9360         | 9760         | 8950        | 8750        | 8480         | 9220         | 424        | 449        |
| DOC                    | mg/L     | 5         | 0.7          | 0.6          | 0.8          | 0.3          | 0.5          | 0.3          | 0.6          | < 0.2        | < 0.2       | < 0.2       | < 0.2        | < 0.2        | 2.8        | 2.8        |
| Fluoride               | mg/L     | 1.5       | < 3          | < 3          | < 0.1        | < 3          | < 10         | < 3          | < 0.1        | < 0.1        | < 3         | < 0.1       | < 0.1        | < 0.1        | 0.2        | 0.2        |
| Iron                   | mg/L     | 0.3       | <b>0.659</b> | <b>0.578</b> | <b>0.614</b> | <b>0.758</b> | <b>0.569</b> | <b>1.12</b>  | <b>0.71</b>  | <b>0.892</b> | <b>0.71</b> | <b>0.7</b>  | <b>0.635</b> | <b>0.621</b> | 0.007      | <0.005     |
| Magnesium              | mg/L     | -         | 209          | 185          | 198          | 225          | 183          | 268          | 214          | 246          | 219         | 195         | 193          | 188          | 6.54       | 6.93       |
| Manganese              | mg/L     | 0.05      | 0.021        | 0.014        | 0.013        | 0.016        | 0.012        | 0.022        | 0.01         | 0.018        | 0.015       | 0.032       | 0.013        | 0.013        | 0.025      | 0.015      |
| Nitrate                | mg/L     | 10        | < 1          | < 1          | < 0.05       | < 1          | < 5          | 1.25         | < 0.05       | < 0.05       | < 1         | < 0.05      | < 0.05       | < 0.05       | 0.6        | 0.6        |
| Nitrite                | mg/L     | 1         | < 1          | < 1          | < 0.05       | < 1          | < 5          | < 1          | <b>0.37</b>  | < 0.05       | < 1         | < 0.05      | < 0.05       | < 0.05       | < 0.1      | < 0.1      |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.76         | 8.05         | 7.5          | 7.71         | 7.59         | 7.56         | <b>7.6</b>   | 7.76         | 7.61        | 7.66        | 7.76         | 7.28         | 8.03       | 8.01       |
| Phenols                | mg/L     | -         | < 0.001      | 0.031        | < 0.002      | < 0.001      | < 0.002      | < 0.001      | < 0.002      | < 0.002      | < 0.001     | < 0.001     | < 0.001      | < 0.001      | < 0.001    | < 0.001    |
| Phosphorus             | mg/L     | -         | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1       | < 0.1       | < 0.1        | < 0.1        | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 61           | 52.5         | 53.1         | 60.6         | 53.8         | 67.6         | 48           | 60.9         | 49.9        | 49.9        | 51.9         | 56.3         | 1.7        | 1.9        |
| Sodium                 | mg/L     | 200       | <b>1350</b>  | <b>1210</b>  | <b>1220</b>  | <b>1300</b>  | <b>1130</b>  | <b>1250</b>  | <b>1220</b>  | <b>1300</b>  | <b>1180</b> | <b>1140</b> | <b>995</b>   | <b>1070</b>  | 2.8        | 3.7        |
| Sulphate               | mg/L     | 500       | < 30         | < 30         | < 1          | < 30         | < 100        | < 30         | < 1          | 2            | < 30        | < 1         | < 1          | < 2          | 19         | 21         |
| Dissolved Solids       | mg/L     | 500       | <b>5147</b>  | <b>5042</b>  | <b>5262</b>  | <b>5128</b>  | <b>4604</b>  | <b>5638</b>  | <b>5070</b>  | <b>5961</b>  | <b>5009</b> | <b>4464</b> | <b>4626</b>  | <b>5300</b>  | 232        | 242        |
| Tot Kjeh N             | mg/L     | -         | 9.6          | 9.4          | 8.3          | 10.3         | 8.9          | 11.8         | 9.2          | 11.3         | 10.6        | 8.6         | 9.4          | 10.8         | 0.7        | 0.3        |
| Ammonia (NH3-N)        | mg/L     | -         | 8.25         | 8.65         | 7.97         | 9.06         | 8.05         | 9.39         | 8.38         | 8.93         | 8.08        | 8.46        | 6.66         | 9.78         | 0.03       | 0.05       |
| Ammonia - Unionized    | mg/L     | -         |              |              | 0.04         | 0.02         | < 0.01       | < 0.01       | < 0.01       | 0.03         | 0.18        | 0.05        | 0.01         | 0.03         |            |            |
| Hardness (CaCO3)       | mg/L     | 100       | <b>1850</b>  | <b>1670</b>  | <b>1800</b>  | <b>1970</b>  | <b>1610</b>  | <b>2260</b>  | <b>1890</b>  | <b>2210</b>  | <b>1930</b> | <b>1690</b> | <b>1690</b>  | <b>1630</b>  | <b>222</b> | <b>234</b> |
| BOD                    | mg/L     | -         | < 3          | 9            | 13           | 18           | 15           | 16           | 16           | 7            | 3           | < 3         | < 3          | < 3          | --         | --         |
| Cyanide (free)         | mg/L     | -         | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005     | < 0.005     | < 0.005      | < 0.005      | --         | --         |
| Total Suspended Solids | mg/L     | -         | 190          | 140          | 37           | 66           | 59           | 31           | 23           | 49           | 15          | 11          | 16           | 17           | --         | --         |
| Aluminum               | mg/L     | 0.1       | <b>0.14</b>  | <b>0.13</b>  | <b>0.15</b>  | <b>0.16</b>  | <b>0.13</b>  | <b>0.15</b>  | <b>0.31</b>  | <b>0.15</b>  | <b>0.27</b> | <b>0.08</b> | <b>0.08</b>  | <b>0.12</b>  | 0.02       | 0.02       |
| Antimony               | mg/L     | 0.006     | < 0.0002     | < 0.0001     | < 0.0001     | < 0.0005     | < 0.0002     | < 0.0005     | 0.0006       | < 0.0005     | < 0.0002    | < 0.0001    | 0.0003       | 0.0003       | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | < 0.0005     | < 0.0001     | < 0.0001     | < 0.001      | < 0.0005     | < 0.001      | < 0.001      | < 0.001      | < 0.0005    | < 0.0001    | < 0.0005     | < 0.0003     | 0.0016     | 0.0008     |
| Barium                 | mg/L     | 1         | <b>2.15</b>  | <b>2.17</b>  | <b>2.24</b>  | <b>2.38</b>  | <b>2.06</b>  | <b>2.26</b>  | <b>2.02</b>  | <b>2.45</b>  | <b>2.13</b> | <b>1.93</b> | <b>2.07</b>  | <b>2.08</b>  | 0.077      | 0.072      |
| Beryllium              | mg/L     | -         | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.02       | < 0.002      | < 0.01      | < 0.002     | < 0.002      | < 0.0001     | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | 1.14         | 1.02         | 1.1          | 1.18         | 1.11         | 1.15         | 1.09         | 1.13         | 1.08        | 1.1         | 1.12         | 1.12         | 0.011      | 0.011      |
| Cadmium                | mg/L     | 0.005     | < 0.000059   | < 0.000015   | 0.000018     | < 0.00012    | < 0.000059   | < 0.00012    | < 0.00012    | < 0.00012    | < 0.000059  | 0.000013    | 0.000059     | < 0.000003   | < 0.00002  | < 0.00002  |
| Chromium (total)       | mg/L     | 0.05      | < 0.001      | < 0.001      | < 0.001      | < 0.001      | 0.001        | < 0.001      | < 0.01       | < 0.001      | < 0.001     | < 0.001     | < 0.001      | < 0.001      | < 0.0002   | 0.0027     |
| Chromium (VI)          | mg/L     | -         |              |              |              |              |              |              |              |              |             | < 0.001     | < 0.001      | < 0.001      | < 0.01     |            |
| Cobalt                 | mg/L     | -         | < 0.005      | < 0.0001     | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.05       | < 0.005      | < 0.03      | < 0.005     | 0.006        | 0.0006       | < 0.005    | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0006       | 0.0003       | 0.0004       | 0.0112       | 0.0144       | 0.0016       | 0.002        | 0.0024       | 0.0007      | 0.0003      | 0.0004       | 0.0004       | 0.0006     | 0.0007     |
| Lead                   | mg/L     | 0.01      | 0.00018      | 0.00004      | 0.00006      | < 0.0004     | < 0.0002     | < 0.0004     | 0.00036      | < 0.0004     | < 0.0002    | 0.00002     | < 0.0002     | < 0.00009    | < 0.00002  | 0.00005    |
| Mercury                | mg/L     | 0.001     | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002   | < 0.00002    | < 0.00002    | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | < 0.0004     | < 0.0001     | < 0.0001     | < 0.0009     | < 0.0004     | < 0.0009     | 0.0017       | < 0.0009     | < 0.0004    | < 0.0001    | < 0.0004     | < 0.0002     | 0.0007     | 0.0003     |
| Nickel                 | mg/L     | -         | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.1        | < 0.01       | < 0.05      | < 0.01      | < 0.01       | < 0.0002     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | <b>0.004</b> | < 0.02       | <b>0.141</b> | <b>0.102</b> | <b>0.067</b> | <b>0.071</b> | <b>0.075</b> | < 0.03       | < 0.1       | < 0.02      | < 0.002      | < 0.001      | < 0.001    | 0.002      |
| Silver                 | mg/L     | -         | < 0.0002     | < 0.0001     | < 0.0001     | < 0.0005     | 0.0042       | < 0.0005     | < 0.0005     | 0.0016       | < 0.0002    | < 0.0001    | < 0.0002     | < 0.0001     | < 0.00002  | < 0.00002  |
| Strontium              | mg/L     | -         | 30.4         | 30.3         | 31.7         | 34           | 27.4         | 38.2         | 33.4         | 38.9         | 33.6        | 29.1        | 31.2         | 30.7         | --         | 0.187      |
| Thallium               | mg/L     | -         | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00008    | < 0.00005    | < 0.00008    | < 0.00008    | < 0.05       | < 0.00005   | < 0.00005   | 0.00007      | < 0.00005    | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | < 0.0007     | < 0.0001     | 0.0001       | < 0.001      | < 0.0007     | < 0.001      | < 0.001      | < 0.001      | < 0.0007    | < 0.0001    | < 0.0007     | < 0.0004     | 0.001      | 0.0046     |
| Zinc                   | mg/L     | 5         | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | 0.006        | < 0.05       | 0.007        | < 0.03      | 0.013       | < 0.005      | < 0.005      | < 0.005    | < 0.005    |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW27-II   | MW27-II   | MW27-II   | MW27-II   | MW27-II   | MW27-II   | MW27-II   | MW27-II   | MW27-II    | MW27-II    | MW27-II    | MW27-II    | MW27-II    | MW27-II    |
|------------------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|
|                        |          |           | 15-Apr-15 | 07-Oct-15 | 10-Nov-15 | 27-Apr-16 | 07-Jul-16 | 03-Oct-16 | 22-Feb-17 | 17-Apr-17 | 20-Jul-17  | 23-Oct-17  | 26-Apr-18  | 15-Oct-18  | 11-Apr-19  | 21-Oct-19  |
| Total Alkalinity       | mg/L     | 500       | 197       | 196       | 201       | 198       | 201       | 200       | 200       | 205       | 201        | 199        | 210        | 213        | 193        | 197        |
| Calcium                | mg/L     | -         | 82.1      | 91        | 76.7      | 88.6      | 97.2      | 101       | 92.1      | 99.6      | 86.7       | 97.3       | 95.8       | 86.1       | 90.6       | 86.5       |
| Chloride               | mg/L     | 250       | 9.9       | 15.3      | 16.6      | 21.3      | 26.1      | 36.5      | 31.9      | 31.4      | 26.6       | 29.8       | 33.1       | 29.5       | 25.3       | 21.6       |
| COD                    | mg/L     | -         | 92        | 171       | 137       | 402       | 5         | < 5       | 104       | 181       | 75         | 67         | < 5        | 17         | < 5        | 7          |
| Specific Conductivity  | umhos/cm | -         | 440       | 470       | 488       | 495       | 510       | 536       | 529       | 540       | 545        | 536        | 518        | 530        | 516        | 498        |
| DOC                    | mg/L     | 5         | 1.2       | 0.4       | 1.4       | 0.6       | 1.1       | 2.5       | 2         | 1.8       | 1.4        | 3.1        | 2.3        | 1.6        | 1.5        | 1.4        |
| Fluoride               | mg/L     | 1.5       | 0.2       | 0.1       | 0.1       | < 0.1     | 0.1       | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | 0.014     | < 0.005   | < 0.005   | < 0.005   | < 0.005   | 0.119     | 0.143     | < 0.005   | < 0.005    | 0.005      | 0.008      | 0.005      | < 0.005    | 0.006      |
| Magnesium              | mg/L     | -         | 6.85      | 7.59      | 6.87      | 7.68      | 8.28      | 8.51      | 7.79      | 7.88      | 7.58       | 8.19       | 8.13       | 7.3        | 7.65       | 7.73       |
| Manganese              | mg/L     | 0.05      | 0.009     | 0.011     | 0.008     | 0.006     | 0.01      | 0.014     | 0.009     | 0.008     | 0.005      | 0.006      | 0.003      | 0.004      | 0.004      | 0.003      |
| Nitrate                | mg/L     | 10        | 0.8       | 0.6       | 0.6       | 0.7       | 0.6       | < 0.1     | 0.7       | 0.7       | 0.65       | 0.63       | 0.99       | 0.6        | 0.57       | 0.64       |
| Nitrite                | mg/L     | 1         | < 0.1     | 0.2       | 0.1       | 0.2       | 0.3       | < 0.1     | 0.1       | < 0.1     | 0.1        | < 0.05     | < 0.05     | < 0.05     | 0.05       | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.98      | 7.98      | 7.9       | 7.86      | 7.86      | 7.99      | 7.95      | 8.1       | 7.96       | 7.96       | 8          | 8.05       | 7.86       | 8.06       |
| Phenols                | mg/L     | -         | < 0.001   | < 0.001   | < 0.001   | 0.002     | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.004      | < 0.001    | < 0.001    | 0.006      | < 0.002    | < 0.001    |
| Phosphorus             | mg/L     | -         | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 1.4       | 1.7       | 1.3       | 1.5       | 1.6       | 1.5       | 1.4       | 1.4       | 1.4        | 1.5        | 1.8        | 1.4        | 1.5        | 1.5        |
| Sodium                 | mg/L     | 200       | 3         | 3.5       | 3.2       | 3.9       | 4.5       | 4.9       | 6         | 5.7       | 6.7        | 7.8        | 11.7       | 10.6       | 9.6        | 12.1       |
| Sulphate               | mg/L     | 500       | 20        | 20        | 19        | 22        | 21        | < 1       | 21        | 21        | 17         | 19         | 18         | 19         | 17         | 16         |
| Dissolved Solids       | mg/L     | 500       | 245       | 260       | 247       | 267       | 283       | 273       | 284       | 293       | 266        | 283        | 294        | 282        | 268        | 263        |
| Tot Kjeh N             | mg/L     | -         | 1.6       | 1.2       | 0.6       | 0.2       | 4.1       | 0.9       | 2         | 1         | 0.9        | 0.7        | 0.2        | 0.4        | 0.2        | 0.2        |
| Ammonia (NH3-N)        | mg/L     | -         | 0.09      | 0.06      | 0.07      | 0.07      | 0.12      | 0.1       | 0.03      | 0.07      | 0.06       | 0.04       | 0.02       | 0.05       | 0.05       | 0.05       |
| Ammonia - Unionized    | mg/L     | -         |           |           |           |           |           |           |           |           |            |            |            |            | <0.01      | <0.01      |
| Hardness (CaCO3)       | mg/L     | 100       | 233       | 259       | 220       | 253       | 277       | 288       | 262       | 281       | 248        | 277        | 273        | 245        | 258        | 248        |
| BOD                    | mg/L     | -         | < 2       | < 3       | < 3       | < 3       | 6         | < 3       | < 3       | < 3       | < 3        | < 3        | < 3        | 4          | < 3        | < 3        |
| Cyanide (free)         | mg/L     | -         | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |
| Total Suspended Solids | mg/L     | -         | 4200      | 47000     | 18700     | --        | --        | --        | 26300     | 64        | 35000      | 51500      | 575        | 2200       | 92         | 2510       |
| Aluminum               | mg/L     | 0.1       | 0.03      | 0.03      | 0.03      | 0.03      | 0.03      | 0.15      | 0.17      | 0.07      | 0.03       | 0.06       | 0.05       | 0.05       | 0.03       | 0.06       |
| Antimony               | mg/L     | 0.006     | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001  | 0.0002    | 0.0002    | < 0.0001  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | 0.0003    | 0.0005    | 0.0005    | 0.0002    | 0.0004    | < 0.0001  | 0.0003    | 0.0004    | 0.0004     | 0.0006     | < 0.0001   | < 0.0001   | 0.0003     | 0.0002     |
| Barium                 | mg/L     | 1         | 0.06      | 0.073     | 0.063     | 0.064     | 0.081     | 0.088     | 0.076     | 0.086     | 0.066      | 0.079      | 0.072      | 0.07       | 0.07       | 0.068      |
| Beryllium              | mg/L     | -         | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | 0.012     | 0.012     | 0.01      | < 0.005   | 0.012     | 0.009     | < 0.005   | 0.041     | 0.01       | 0.014      | 0.011      | 0.01       | 0.013      | 0.014      |
| Cadmium                | mg/L     | 0.005     | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.000014 | < 0.000014 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | 0.001     | 0.0022    | < 0.0002  | < 0.0002  | < 0.0002  | < 0.0002  | 0.0012    | < 0.001   | < 0.002    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Chromium (VI)          | mg/L     | -         |           |           |           |           |           |           |           |           |            |            |            |            |            |            |
| Cobalt                 | mg/L     | -         | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | 0.009      | 0.0004     | 0.008      | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0013    | 0.0007    | 0.0003    | 0.0006    | 0.0007    | 0.0007    | 0.0007    | 0.0012    | 0.0011     | 0.0004     | 0.001      | 0.0007     | 0.0008     | 0.0012     |
| Lead                   | mg/L     | 0.01      | 0.00006   | < 0.00002 | < 0.00002 | < 0.00002 | 0.00005   | 0.00014   | 0.00015   | < 0.00002 | 0.00007    | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | 0.00004    |
| Mercury                | mg/L     | 0.001     | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | < 0.0001  | 0.0003    | 0.0003    | 0.0003    | 0.0003    | 0.0003    | 0.0003    | 0.0003    | 0.0003     | 0.0003     | 0.0002     | 0.0003     | 0.0004     | 0.0003     |
| Nickel                 | mg/L     | -         | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | < 0.001   | 0.001     | < 0.001   | < 0.001   | 0.001     | < 0.001   | < 0.001   | 0.002     | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Silver                 | mg/L     | -         | < 0.00002 | < 0.00002 | < 0.00002 | 0.00003   | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Strontium              | mg/L     | -         | 0.181     | 0.194     | 0.167     | 0.196     | 0.199     | 0.209     | 0.214     | 0.173     | 0.187      | 0.201      | 0.195      | 0.197      | 0.194      | 0.193      |
| Thallium               | mg/L     | -         | 0.00011   | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | 0.0015    | 0.0011    | 0.0003    | 0.0009    | 0.0009    | 0.0012    | 0.0014    | 0.001     | 0.0014     | < 0.0001   | < 0.0001   | 0.0003     | 0.0004     | 0.0003     |
| Zinc                   | mg/L     | 5         | 0.012     | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | 0.055      | < 0.005    | < 0.005    | < 0.005    |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW27-II    | MW27-II    | MW27-II    | MW27-II    | MW27-II    | MW27-II    | MW27-II   | MW27-II   | MW27-II   | MW27-III  | MW27-III  | MW27-III  | MW27-III  | MW27-III  | MW27-III |
|------------------------|----------|-----------|------------|------------|------------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|
|                        |          |           | 22-Apr-20  | 19-Oct-20  | 19-Apr-21  | 27-Oct-21  | 20-Apr-22  | 26-Oct-22  | 19-Apr-23 | 12-Oct-23 | 24-Apr-14 | 15-Oct-14 | 15-Apr-15 | 07-Oct-15 | 09-Nov-15 | 21-Jan-16 |          |
| Total Alkalinity       | mg/L     | 500       | 192        | 204        | 194        | 216        | 222        | 217        | 217       | 229       | 177       | 175       | 168       | 172       | 175       | 174       |          |
| Calcium                | mg/L     | -         | 87.2       | 84.5       | 85.4       | 84.1       | 84.8       | 80         | 83.4      | 76.6      | 66.4      | 71.8      | 68.1      | 73.9      | 61.1      | 61.9      |          |
| Chloride               | mg/L     | 250       | 24.3       | 18.6       | 16.7       | 15         | 15.1       | 15         | 12.5      | 13        | 2.9       | 3         | 2.7       | 2.8       | 2.9       | 2.7       |          |
| COD                    | mg/L     | -         | < 5        | 159        | 10         | < 5        | 39         | 97         | < 5       | 12        | 1380      | 3180      | 581       | 638       | 236       | 730       |          |
| Specific Conductivity  | umhos/cm | -         | 497        | 488        | 486        | 471        | 474        | 470        | 471       | 481       | 388       | 407       | 363       | 382       | 386       | 380       |          |
| DOC                    | mg/L     | 5         | 1.8        | 1.8        | 1.9        | 1.5        | 1.5        | 1          | 1.4       | 2.7       | 2.9       | 3         | 2         | 1         | 1.4       | 3.5       |          |
| Fluoride               | mg/L     | 1.5       | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1     | <0.1      | 0.2       | 0.2       | 0.2       | 0.1       | 0.1       | < 0.1     |          |
| Iron                   | mg/L     | 0.3       | 0.018      | 0.005      | 0.021      | 0.015      | 0.119      | < 0.005    | 0.024     | 0.006     | 0.065     | 0.266     | 0.172     | 0.157     | 0.176     | 0.114     |          |
| Magnesium              | mg/L     | -         | 7.91       | 7.02       | 7.37       | 7.08       | 7.15       | 7.17       | 7.51      | 7.04      | 6.18      | 6.57      | 6.31      | 6.88      | 6.1       | 6.13      |          |
| Manganese              | mg/L     | 0.05      | 0.005      | 0.003      | 0.004      | 0.004      | 0.005      | < 0.001    | 0.005     | 0.004     | 0.043     | 0.035     | 0.021     | 0.021     | 0.018     | 0.016     |          |
| Nitrate                | mg/L     | 10        | 0.43       | 0.54       | 0.81       | 0.65       | 0.63       | 0.67       | 0.58      | 0.7       | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     |          |
| Nitrite                | mg/L     | 1         | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05    | <0.05     | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     |          |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.92       | 7.97       | 7.96       | 8.13       | 7.91       | 7.98       | 8.1       | 7.44      | 8.04      | 8.06      | 7.99      | 8.03      | 8         | 8.04      |          |
| Phenols                | mg/L     | -         | < 0.002    | < 0.001    | < 0.002    | < 0.002    | < 0.001    | < 0.001    | < 0.001   | <0.001    | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   |          |
| Phosphorus             | mg/L     | -         | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1     | <0.1      | <0.1      | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     |          |
| Potassium              | mg/L     | -         | 1.7        | 1.6        | 1.5        | 1.6        | 1.5        | 1.6        | 1.9       | 1.7       | 1.8       | 1.8       | 1.3       | 1.5       | 1.2       | 1.2       |          |
| Sodium                 | mg/L     | 200       | 10.3       | 12.1       | 11         | 12.1       | 11.2       | 11         | 12.3      | 11.7      | 4         | 4.3       | 3.1       | 3.6       | 3.2       | 3.2       |          |
| Sulphate               | mg/L     | 500       | 18         | 17         | 15         | 15         | 15         | 16         | 14        | 15        | 22        | 23        | 23        | 22        | 21        | 20        |          |
| Dissolved Solids       | mg/L     | 500       | 265        | 263        | 253        | 264        | 268        | 260        | 261       | 249       | 211       | 217       | 206       | 214       | 201       | 200       |          |
| Tot Kjeh N             | mg/L     | -         | < 0.1      | 1.5        | 0.3        | 0.3        | 0.1        | 1.6        | 0.2       | <0.1      | 6.5       | 29.6      | 28.3      | 5.9       | 3.5       | 8.8       |          |
| Ammonia (NH3-N)        | mg/L     | -         | 0.03       | 0.13       | 0.06       | 0.07       | 0.05       | 0.06       | 0.06      | 0.07      | 0.07      | 0.89      | 0.2       | 0.13      | 0.19      | 0.09      |          |
| Ammonia - Unionized    | mg/L     | -         | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01    | <0.01     |           |           |           |           |           |           |          |
| Hardness (CaCO3)       | mg/L     | 100       | 251        | 240        | 244        | 239        | 241        | 271        | 239       | 220       | 192       | 206       | 196       | 213       | 178       | 180       |          |
| BOD                    | mg/L     | -         | < 3        | < 3        | < 3        | < 3        | < 3        | < 3        | < 3       | <3        | --        | --        | < 2       | < 3       | < 3       | < 3       |          |
| Cyanide (free)         | mg/L     | -         | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005   | <0.005    | --        | --        | < 0.005   | < 0.005   | < 0.005   | < 0.005   |          |
| Total Suspended Solids | mg/L     | -         | 1330       | 28700      | 30300      | 15000      | 208        | 26400      | 267       | 253       | --        | --        | 8200      | 19000     | 7800      | --        |          |
| Aluminum               | mg/L     | 0.1       | 0.06       | 0.05       | 0.05       | 0.06       | 0.05       | 0.04       | 0.02      | 0.06      | 0.02      | 0.11      | 0.02      | 0.03      | 0.02      | 0.03      |          |
| Antimony               | mg/L     | 0.006     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | <0.0001   | <0.0001   | < 0.0001  | 0.0001    | < 0.0001  | < 0.0001  |          |
| Arsenic                | mg/L     | 0.025     | 0.0004     | 0.0003     | 0.0002     | 0.0002     | 0.0003     | 0.0003     | 0.0002    | 0.0002    | 0.0013    | 0.0015    | 0.0005    | 0.0005    | 0.0003    | 0.0004    |          |
| Barium                 | mg/L     | 1         | 0.07       | 0.068      | 0.065      | 0.068      | 0.066      | 0.062      | 0.069     | 0.064     | 0.129     | 0.127     | 0.107     | 0.121     | 0.109     | 0.104     |          |
| Beryllium              | mg/L     | -         | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002   | <0.0001   | <0.002    | <0.002    | < 0.002   | < 0.002   | < 0.002   | < 0.002   |          |
| Boron                  | mg/L     | 5         | 0.013      | 0.014      | 0.012      | 0.014      | 0.009      | 0.005      | 0.013     | 0.012     | 0.01      | 0.009     | 0.009     | 0.01      | 0.007     | 0.007     |          |
| Cadmium                | mg/L     | 0.005     | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000010 | 0.000010  | <0.00001  | 5         | 0.00005   | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 |          |
| Chromium (total)       | mg/L     | 0.05      | 0.001      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001   | <0.001    | <0.0002   | 0.0019    | 0.0006    | 0.0015    | < 0.0002  | < 0.0002  |          |
| Chromium (VI)          | mg/L     | -         |            |            |            |            | < 0.001    | < 0.001    | < 0.001   | <0.01     |           |           |           |           |           |           |          |
| Cobalt                 | mg/L     | -         | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005   | 0.0003    | <0.005    | <0.005    | < 0.005   | < 0.005   | < 0.005   | < 0.005   |          |
| Copper                 | mg/L     | 1         | 0.0009     | 0.0021     | 0.0017     | 0.001      | 0.0005     | 0.001      | 0.0005    | 0.0016    | 0.0013    | 0.0004    | 0.0009    | 0.0006    | < 0.0001  | 0.0004    |          |
| Lead                   | mg/L     | 0.01      | 0.00002    | 0.00008    | 0.00005    | < 0.00002  | 0.00004    | 0.00011    | < 0.00002 | <0.00002  | 0.00003   | 0.00008   | < 0.00002 | 0.00003   | < 0.00002 | 0.00002   |          |
| Mercury                | mg/L     | 0.001     | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002 | <0.00002  | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 |          |
| Molybdenum             | mg/L     | -         | 0.0003     | 0.0003     | 0.0003     | 0.0003     | 0.0003     | 0.0003     | 0.0003    | 0.0003    | 0.0026    | 0.0007    | 0.0004    | 0.0007    | 0.0006    | 0.0007    |          |
| Nickel                 | mg/L     | -         | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01    | 0.0007    | <0.01     | <0.01     | < 0.01    | < 0.01    | < 0.01    | < 0.01    |          |
| Selenium               | mg/L     | 0.01      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001   | <0.001    | <0.001    | 0.001     | < 0.001   | < 0.001   | < 0.001   | < 0.001   |          |
| Silver                 | mg/L     | -         | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | <0.00002  | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 |          |
| Strontium              | mg/L     | -         | 0.185      | 0.181      | 0.182      | 0.181      | 0.175      | 0.171      | 0.192     | 0.177     | --        | 0.166     | 0.153     | 0.161     | 0.14      | 0.132     |          |
| Thallium               | mg/L     | -         | < 0.00005  | < 0.00005  | < 0.00005  | < 0.05     | < 0.00005  | < 0.00005  | < 0.00005 | <0.00005  | <0.00005  | <0.00005  | 0.00006   | < 0.00005 | < 0.00005 | < 0.00005 |          |
| Vanadium               | mg/L     | -         | 0.0003     | 0.0003     | 0.0003     | 0.0003     | 0.0004     | 0.0005     | 0.0003    | 0.0003    | 0.0007    | 0.0039    | 0.0013    | 0.0007    | 0.0002    | 0.0005    |          |
| Zinc                   | mg/L     | 5         | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005   | <0.005    | 0.022     | <0.005    | < 0.005   | 0.008     | < 0.005   | < 0.005   |          |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW27-III  | MW27-III  | MW27-III  | MW27-III  | MW27-III   | MW27-III   | MW27-III   | MW27-III   | MW27-III   | MW27-III   | MW27-III   | MW27-III   | MW27-III   | MW27-III   |
|------------------------|----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|                        |          |           | 27-Apr-16 | 07-Jul-16 | 03-Oct-16 | 22-Feb-17 | 17-Apr-17  | 20-Jul-17  | 23-Oct-17  | 25-Apr-18  | 15-Oct-18  | 11-Apr-19  | 21-Oct-19  | 22-Apr-20  | 19-Oct-20  | 19-Apr-21  |
| Total Alkalinity       | mg/L     | 500       | 176       | 178       | 175       | 179       | 181        | 178        | 175        | 188        | 190        | 172        | 171        | 173        | 178        | 175        |
| Calcium                | mg/L     | -         | 70.3      | 74.8      | 73.6      | 69.8      | 76.3       | 65         | 71.7       | 74.6       | 70.4       | 73.2       | 73.1       | 74.6       | 77.7       | 92.2       |
| Chloride               | mg/L     | 250       | 2.6       | 3         | 3         | 3.7       | 3          | 2.9        | 3          | 4.7        | 4.8        | 5.7        | 9          | 13.4       | 15         | 19.6       |
| COD                    | mg/L     | -         | 304       | < 5       | 6         | 183       | 221        | 174        | 180        | < 5        | < 5        | 162        | 450        | 630        | 461        | 363        |
| Specific Conductivity  | umhos/cm | -         | 378       | 379       | 384       | 385       | 395        | 390        | 382        | 384        | 398        | 402        | 415        | 422        | 426        | 449        |
| DOC                    | mg/L     | 5         | 0.9       | 1.3       | 4.2       | 2.5       | 2.2        | 1.4        | 3.5        | 2.2        | 1.6        | 1.7        | 1.3        | 1.7        | 1.9        | 2.3        |
| Fluoride               | mg/L     | 1.5       | < 0.1     | 0.1       | 0.1       | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | 0.077     | 0.207     | 0.111     | 0.142     | 0.065      | 0.027      | 0.088      | 0.083      | 0.181      | 0.146      | 0.173      | 0.213      | 0.209      | 0.519      |
| Magnesium              | mg/L     | -         | 6.75      | 7.26      | 7.08      | 6.65      | 6.79       | 6.51       | 6.96       | 7.24       | 6.51       | 6.73       | 7.38       | 7.37       | 7.34       | 8.17       |
| Manganese              | mg/L     | 0.05      | 0.023     | 0.024     | 0.023     | 0.022     | 0.02       | 0.019      | 0.026      | 0.019      | 0.02       | 0.022      | 0.022      | 0.021      | 0.021      | 0.046      |
| Nitrate                | mg/L     | 10        | 0.1       | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | 0.06       | 0.07       | < 0.05     | < 0.05     |
| Nitrite                | mg/L     | 1         | < 0.1     | < 0.1     | < 0.1     | 0.1       | < 0.1      | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 8.04      | 8         | 8.1       | 8.03      | 8.13       | 8.11       | 8.07       | 8.05       | 8.08       | 8          | 8.07       | 7.9        | 7.98       | 8.03       |
| Phenols                | mg/L     | -         | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001    | 0.004      | 0.002      | < 0.001    | 0.018      | < 0.002    | < 0.001    | < 0.002    | < 0.001    | < 0.002    |
| Phosphorus             | mg/L     | -         | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 1.4       | 1.5       | 1.5       | 1.3       | 1.3        | 1.3        | 1.8        | 1.8        | 1.5        | 1.4        | 1.7        | 1.4        | 1.7        | 1.6        |
| Sodium                 | mg/L     | 200       | 3.2       | 3.5       | 3.6       | 3.4       | 3          | 3.4        | 4.6        | 4.4        | 3.3        | 3.4        | 3.5        | 3.3        | 3.5        | 3.5        |
| Sulphate               | mg/L     | 500       | 22        | 23        | 22        | 21        | 22         | 18         | 19         | 22         | 25         | 21         | 23         | 23         | 22         | 22         |
| Dissolved Solids       | mg/L     | 500       | 212       | 221       | 216       | 214       | 221        | 204        | 212        | 228        | 226        | 216        | 221        | 227        | 234        | 253        |
| Tot Kjeh N             | mg/L     | -         | 0.6       | 6.5       | 2.5       | 3.2       | 4.8        | 1.1        | 1.4        | 1          | 7.2        | 3.6        | 3.1        | 3.7        | 11.3       | 3.1        |
| Ammonia (NH3-N)        | mg/L     | -         | 0.1       | 0.07      | 0.1       | 0.06      | 0.1        | 0.08       | 0.11       | 0.1        | 0.07       | 0.18       | 0.15       | 0.04       | 0.09       | 0.07       |
| Ammonia - Unionized    | mg/L     | -         |           |           |           |           |            |            |            |            |            | <0.01      | <0.01      | < 0.01     | < 0.01     | < 0.01     |
| Hardness (CaCO3)       | mg/L     | 100       | 203       | 217       | 213       | 202       | 219        | 189        | 208        | 216        | 203        | 211        | 213        | 217        | 224        | 264        |
| BOD                    | mg/L     | -         | < 3       | 6         | < 3       | < 3       | < 3        | < 3        | < 3        | < 3        | 14         | < 3        | 4          | < 3        | 6          | < 3        |
| Cyanide (free)         | mg/L     | -         | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |
| Total Suspended Solids | mg/L     | -         | --        | --        | --        | 5600      | 6000       | 4400       | 10000      | 4320       | 73000      | 10900      | 44000      | 22000      | 46100      | 20800      |
| Aluminum               | mg/L     | 0.1       | 0.05      | 0.06      | 0.11      | 0.13      | 0.04       | 0.02       | 0.05       | 0.05       | 0.05       | 0.05       | 0.06       | 0.05       | 0.05       | 0.24       |
| Antimony               | mg/L     | 0.006     | < 0.0001  | < 0.0001  | 0.0004    | 0.0002    | < 0.0001   | 0.0001     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | 0.0003    | 0.0004    | 0.0002    | 0.0004    | 0.0004     | 0.0003     | 0.0005     | < 0.0001   | 0.0006     | 0.0002     | 0.0003     | 0.0003     | 0.0003     | 0.0003     |
| Barium                 | mg/L     | 1         | 0.1       | 0.103     | 0.129     | 0.119     | 0.134      | 0.096      | 0.124      | 0.117      | 0.128      | 0.114      | 0.119      | 0.119      | 0.147      | 0.133      |
| Beryllium              | mg/L     | -         | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | < 0.005   | 0.01      | 0.008     | < 0.005   | 0.034      | 0.008      | 0.011      | 0.008      | 0.007      | 0.008      | 0.012      | 0.009      | 0.012      | 0.01       |
| Cadmium                | mg/L     | 0.005     | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.000020 | < 0.000014 | < 0.000014 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | < 0.0002  | < 0.0002  | < 0.0002  | 0.0008    | < 0.001    | < 0.002    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Chromium (VI)          | mg/L     | -         |           |           |           |           |            |            |            |            |            |            |            |            |            |            |
| Cobalt                 | mg/L     | -         | < 0.005   | < 0.005   | < 0.005   | < 0.005   | 0.005      | < 0.005    | < 0.005    | < 0.005    | < 0.0001   | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0005    | 0.0003    | 0.0003    | 0.0003    | 0.0009     | 0.0008     | 0.0005     | 0.0007     | 0.0004     | 0.0005     | 0.0005     | 0.0001     | 0.0019     | 0.0019     |
| Lead                   | mg/L     | 0.01      | 0.00005   | 0.00005   | 0.0001    | 0.00012   | < 0.00002  | 0.00009    | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | 0.00005    | < 0.00002  | 0.00007    | 0.00034    |
| Mercury                | mg/L     | 0.001     | < 0.00002 | < 0.00002 | < 0.00002 | 0.00005   | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | 0.0006    | 0.0006    | 0.0006    | 0.0006    | 0.0006     | 0.0006     | 0.0006     | 0.0006     | 0.0006     | 0.0006     | 0.0006     | 0.0005     | 0.0005     | 0.0004     |
| Nickel                 | mg/L     | -         | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Silver                 | mg/L     | -         | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Strontium              | mg/L     | -         | 0.156     | 0.157     | 0.155     | 0.161     | 0.135      | 0.143      | 0.153      | 0.152      | 0.157      | 0.158      | 0.165      | 0.158      | 0.167      | 0.192      |
| Thallium               | mg/L     | -         | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | 0.0006    | 0.0005    | 0.0011    | 0.0011    | 0.0012     | 0.0013     | < 0.0001   | 0.0003     | 0.0002     | < 0.0001   | 0.0001     | < 0.0001   | 0.0002     | 0.0011     |
| Zinc                   | mg/L     | 5         | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | 0.017      | 0.014      | < 0.005    | < 0.005    | < 0.005    | < 0.005    | 0.005      | < 0.005    |

ODWQS - Ontario Drinking Water Quality  
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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW27-III   | MW27-III   | MW27-III   | MW27-III  | MW27-III  | MW28-I    | MW28-I    | MW28-I    | MW28-I    | MW28-I    | MW28-I    | MW28-I    | MW28-I    | MW28-I     |
|------------------------|----------|-----------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
|                        |          |           | 27-Oct-21  | 20-Apr-22  | 26-Oct-22  | 19-Apr-23 | 12-Oct-23 | 15-Apr-15 | 07-Oct-15 | 09-Nov-15 | 21-Jan-16 | 27-Apr-16 | 07-Jul-16 | 03-Oct-16 | 22-Feb-17 | 17-Apr-17  |
| Total Alkalinity       | mg/L     | 500       | 183        | 194        | 190        | 194       | 205       | 202       | 204       | 203       | 203       | 205       | 202       | 200       | 204       | 206        |
| Calcium                | mg/L     | -         | 82.4       | 85.8       | 80.2       | 86.7      | 79.5      | 78        | 84.4      | 70.3      | 72.2      | 83.5      | 90.7      | 93.5      | 87.5      | 97.3       |
| Chloride               | mg/L     | 250       | 20.4       | 24.5       | 25.2       | 24.1      | 26        | 6.4       | 8.4       | 9.1       | 9.3       | 13.4      | 21.9      | 26.7      | 27.1      | 34.7       |
| COD                    | mg/L     | -         | 205        | 278        | 698        | 246       | 68        | 76        | 29        | 13        | 8         | < 5       | < 5       | < 5       | < 5       | < 5        |
| Specific Conductivity  | umhos/cm | -         | 445        | 465        | 467        | 481       | 481       | 432       | 452       | 466       | 455       | 463       | 490       | 511       | 516       | 539        |
| DOC                    | mg/L     | 5         | 1.7        | 1.6        | 1.2        | 1.2       | 3.2       | 2         | 0.8       | 0.4       | 3.1       | 0.9       | 1.2       | 2.7       | 2.6       | 2          |
| Fluoride               | mg/L     | 1.5       | < 0.1      | < 0.1      | 0.5        | < 0.1     | <0.1      | < 0.1     | 0.1       | 0.1       | < 0.1     | 0.2       | 0.1       | 0.1       | < 0.1     | < 0.1      |
| Iron                   | mg/L     | 0.3       | 0.069      | 0.178      | 0.342      | 0.329     | 0.276     | 0.234     | 0.41      | 0.375     | 0.276     | 0.387     | 0.306     | 0.379     | 0.408     | 0.509      |
| Magnesium              | mg/L     | -         | 7.77       | 8          | 8.44       | 8.6       | 8.09      | 8.47      | 8.65      | 7.92      | 7.98      | 8.96      | 9.73      | 9.95      | 9.35      | 9.89       |
| Manganese              | mg/L     | 0.05      | 0.023      | 0.026      | 0.025      | 0.028     | 0.025     | 0.021     | 0.021     | 0.019     | 0.018     | 0.021     | 0.025     | 0.024     | 0.025     | 0.024      |
| Nitrate                | mg/L     | 10        | < 0.05     | < 0.05     | < 0.05     | < 0.05    | 0.05      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      |
| Nitrite                | mg/L     | 1         | < 0.05     | < 0.05     | < 0.05     | < 0.05    | <0.05     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 8.07       | 7.97       | 7.97       | 8.09      | 7.37      | 8.03      | 7.96      | 7.93      | 7.98      | 8         | 7.89      | 7.96      | 7.92      | 8.07       |
| Phenols                | mg/L     | -         | < 0.002    | < 0.001    | < 0.001    | < 0.001   | <0.001    | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.004     | < 0.001   | < 0.001   | < 0.001    |
| Phosphorus             | mg/L     | -         | < 0.1      | < 0.1      | < 0.1      | < 0.1     | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | <0.1       |
| Potassium              | mg/L     | -         | 1.7        | 1.5        | 1.8        | 1.8       | 1.8       | 1.9       | 1.9       | 1.5       | 1.5       | 1.8       | 1.9       | 1.9       | 1.7       | 1.9        |
| Sodium                 | mg/L     | 200       | 3.7        | 3.5        | 4.1        | 3.9       | 3.8       | 4.9       | 5.9       | 4.4       | 4.4       | 4.5       | 5         | 5         | 4.6       | 4.3        |
| Sulphate               | mg/L     | 500       | 24         | 21         | 23         | 20        | 23        | 20        | 19        | 19        | 17        | 18        | 19        | 19        | 18        | 19         |
| Dissolved Solids       | mg/L     | 500       | 250        | 262        | 258        | 262       | 249       | 241       | 251       | 235       | 235       | 254       | 270       | 276       | 271       | 291        |
| Tot Kjeh N             | mg/L     | -         | 3.5        | 10.5       | 4.1        | 3.7       | 1.2       | 1.2       | 0.3       | 0.2       | 0.1       | 0.2       | 0.2       | 0.2       | 0.2       | 0.1        |
| Ammonia (NH3-N)        | mg/L     | -         | 0.09       | 0.09       | 0.01       | 0.45      | 0.08      | 0.17      | 0.06      | 0.1       | 0.08      | 0.1       | 0.07      | 0.07      | 0.06      | 0.05       |
| Ammonia - Unionized    | mg/L     | -         | < 0.01     | < 0.01     | < 0.01     | < 0.01    | <0.01     |           |           |           |           |           |           |           |           |            |
| Hardness (CaCO3)       | mg/L     | 100       | 238        | 247        | 235        | 252       | 232       | 230       | 247       | 208       | 213       | 246       | 267       | 275       | 257       | 284        |
| BOD                    | mg/L     | -         | < 3        | < 3        | < 3        | < 3       | <3        | < 2       | < 3       | < 3       | < 3       | < 3       | < 3       | < 3       | < 3       | < 3        |
| Cyanide (free)         | mg/L     | -         | < 0.005    | < 0.005    | < 0.005    | < 0.005   | <0.005    | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    |
| Total Suspended Solids | mg/L     | -         | 15000      | 11100      | 30700      | 6920      | 4110      | 6300      | 630       | 250       | --        | --        | --        | --        | 455       | 100        |
| Aluminum               | mg/L     | 0.1       | 0.06       | 0.06       | 0.03       | 0.02      | 0.07      | 0.02      | 0.02      | 0.04      | 0.03      | 0.02      | 0.03      | 0.08      | 0.07      | 0.06       |
| Antimony               | mg/L     | 0.006     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | 0.0001    | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001  | 0.0002    | 0.0003    | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | 0.0001     | 0.0001     | 0.0002     | 0.0001    | 0.0002    | 0.0002    | 0.0002    | 0.0001    | < 0.0001  | 0.0001    | 0.0002    | < 0.0001  | 0.0002    | 0.0002     |
| Barium                 | mg/L     | 1         | 0.137      | 0.139      | 0.136      | 0.143     | 0.152     | 0.102     | 0.096     | 0.089     | 0.089     | 0.094     | 0.112     | 0.118     | 0.11      | 0.127      |
| Beryllium              | mg/L     | -         | < 0.002    | < 0.002    | < 0.002    | < 0.002   | <0.0001   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    |
| Boron                  | mg/L     | 5         | 0.013      | 0.007      | 0.01       | 0.009     | 0.011     | 0.02      | 0.018     | 0.015     | 0.015     | < 0.005   | 0.02      | 0.017     | < 0.005   | 0.043      |
| Cadmium                | mg/L     | 0.005     | < 0.000015 | < 0.000015 | < 0.000010 | 0.000010  | <0.00001  | 5         | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.000020 |
| Chromium (total)       | mg/L     | 0.05      | < 0.001    | < 0.001    | 0.001      | < 0.001   | <0.001    | 0.0004    | 0.0015    | < 0.0002  | < 0.0002  | < 0.0002  | < 0.0002  | < 0.0002  | 0.001     | < 0.001    |
| Chromium (VI)          | mg/L     | -         |            | < 0.001    | < 0.001    | < 0.001   | <0.01     |           |           |           |           |           |           |           |           |            |
| Cobalt                 | mg/L     | -         | < 0.005    | < 0.005    | < 0.005    | < 0.005   | 0.0002    | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0009     | 0.0004     | 0.0005     | 0.0002    | 0.0004    | 0.0006    | 0.0001    | < 0.0001  | 0.0006    | 0.0003    | 0.0003    | 0.0004    | 0.0002    | 0.0008     |
| Lead                   | mg/L     | 0.01      | 0.00004    | 0.00006    | 0.00003    | < 0.00002 | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | 0.00003   | < 0.00002 | < 0.00002 | 0.0001    | 0.00004   | < 0.00002  |
| Mercury                | mg/L     | 0.001     | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002 | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | 0.00003   | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  |
| Molybdenum             | mg/L     | -         | 0.0005     | 0.0005     | 0.0005     | 0.0005    | 0.0005    | 0.0003    | 0.0004    | 0.0003    | 0.0003    | 0.0003    | 0.0003    | 0.0003    | 0.0003    | 0.0003     |
| Nickel                 | mg/L     | -         | < 0.01     | < 0.01     | < 0.01     | < 0.01    | <0.0002   | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     |
| Selenium               | mg/L     | 0.01      | < 0.001    | < 0.001    | < 0.001    | < 0.001   | <0.001    | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.001      |
| Silver                 | mg/L     | -         | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  |
| Strontium              | mg/L     | -         | 0.18       | 0.177      | 0.189      | 0.198     | 0.187     | 0.27      | 0.274     | 0.22      | 0.22      | 0.273     | 0.33      | 0.269     | 0.272     | 0.237      |
| Thallium               | mg/L     | -         | < 0.05     | < 0.00005  | < 0.00005  | < 0.00005 | <0.00005  | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  |
| Vanadium               | mg/L     | -         | 0.0003     | 0.0002     | < 0.0001   | < 0.0001  | 0.0002    | 0.0012    | 0.0006    | 0.0001    | 0.0003    | 0.0005    | 0.0004    | 0.0006    | 0.0008    | 0.0011     |
| Zinc                   | mg/L     | 5         | < 0.005    | < 0.005    | < 0.005    | < 0.005   | <0.005    | 0.01      | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | 0.008     | < 0.005   | < 0.005    |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW28-I     | MW28-I     | MW28-I     | MW28-I     | MW28-I     | MW28-I     | MW28-I     | MW28-I     | MW28-I     | MW28-I     | MW28-I     | MW28-I     | MW28-I    | MW28-I    |
|------------------------|----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-----------|-----------|
|                        |          |           | 20-Jul-17  | 23-Oct-17  | 25-Apr-18  | 15-Oct-18  | 11-Apr-19  | 21-Oct-19  | 22-Apr-20  | 19-Oct-20  | 19-Apr-21  | 27-Oct-21  | 20-Apr-22  | 26-Oct-22  | 19-Apr-23 | 12-Oct-23 |
| Total Alkalinity       | mg/L     | 500       | 200        | 198        | 207        | 199        | 196        | 198        | 220        | 204        | 191        | 218        | 220        | 217        | 220       | 228       |
| Calcium                | mg/L     | -         | 92.5       | 108        | 112        | 106        | 105        | 106        | 98.7       | 97.5       | 96         | 94.1       | 94.6       | 88.8       | 91.5      | 83.7      |
| Chloride               | mg/L     | 250       | 40.6       | 49.7       | 74.4       | 75.2       | 63.4       | 62.2       | 48.5       | 45.9       | 37.3       | 36.1       | 35.9       | 37.6       | 32        | 37.5      |
| COD                    | mg/L     | -         | < 5        | 14         | 29         | < 5        | 7          | < 5        | < 5        | < 5        | < 5        | < 5        | < 5        | < 5        | 10        | 5         |
| Specific Conductivity  | umhos/cm | -         | 584        | 606        | 632        | 658        | 628        | 643        | 574        | 570        | 553        | 538        | 542        | 546        | 545       | 548       |
| DOC                    | mg/L     | 5         | 1          | 1.3        | 1.8        | 1.4        | 1.7        | 1.4        | 1.8        | 1.7        | 2          | 1.7        | 1.4        | 0.8        | 1.4       | 3.6       |
| Fluoride               | mg/L     | 1.5       | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1     | <0.1      |
| Iron                   | mg/L     | 0.3       | 0.41       | 0.502      | 0.427      | 0.501      | 0.492      | 0.526      | 0.478      | 0.511      | 0.491      | 0.483      | 0.464      | 0.472      | 0.488     | 0.433     |
| Magnesium              | mg/L     | -         | 10.2       | 11.4       | 12         | 11.4       | 11.2       | 12.2       | 10.8       | 10.2       | 10.1       | 9.93       | 9.78       | 10.3       | 10.2      | 9.37      |
| Manganese              | mg/L     | 0.05      | 0.023      | 0.026      | 0.028      | 0.027      | 0.025      | 0.026      | 0.023      | 0.024      | 0.022      | 0.022      | 0.022      | 0.027      | 0.023     | 0.02      |
| Nitrate                | mg/L     | 10        | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | 0.08       | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05    | <0.05     |
| Nitrite                | mg/L     | 1         | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05    | <0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 8.02       | 7.97       | 7.98       | 7.97       | 7.8        | 7.99       | 7.86       | 7.92       | 7.92       | 8.07       | 7.9        | 7.93       | 8.06      | 7.28      |
| Phenols                | mg/L     | -         | 0.003      | 0.002      | < 0.001    | < 0.002    | < 0.002    | < 0.001    | < 0.002    | < 0.001    | < 0.002    | < 0.002    | < 0.001    | < 0.001    | < 0.001   | <0.001    |
| Phosphorus             | mg/L     | -         | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1     | <0.1      |
| Potassium              | mg/L     | -         | 1.8        | 2          | 2.6        | 2.1        | 2.1        | 2.3        | 2.1        | 2.2        | 2.1        | 2.1        | 2          | 2.3        | 2.4       | 2.2       |
| Sodium                 | mg/L     | 200       | 4.6        | 5          | 6.4        | 6.1        | 7          | 8.7        | 9.4        | 9.5        | 10.4       | 11.2       | 11.3       | 11.9       | 13.1      | 13.3      |
| Sulphate               | mg/L     | 500       | 16         | 15         | 19         | 19         | 18         | 17         | 19         | 19         | 18         | 17         | 17         | 17         | 15        | 16        |
| Dissolved Solids       | mg/L     | 500       | 286        | 311        | 351        | 340        | 325        | 328        | 321        | 307        | 289        | 302        | 303        | 298        | 297       | 284       |
| Tot Kjeh N             | mg/L     | -         | 0.1        | 0.2        | 0.3        | 0.2        | 0.2        | 0.1        | 0.2        | 0.1        | 0.2        | 0.2        | 0.2        | 0.1        | 0.3       | 0.4       |
| Ammonia (NH3-N)        | mg/L     | -         | 0.05       | 0.05       | 0.09       | 0.09       | 0.07       | 0.06       | 0.05       | 0.09       | 0.06       | 0.05       | 0.07       | 0.04       | 0.15      | 0.42      |
| Ammonia - Unionized    | mg/L     | -         |            |            |            |            | <0.01      | <0.01      | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01    | <0.01     |
| Hardness (CaCO3)       | mg/L     | 100       | 273        | 317        | 329        | 312        | 309        | 315        | 291        | 286        | 282        | 276        | 277        | 264        | 271       | 248       |
| BOD                    | mg/L     | -         | < 3        | < 3        | < 3        | 3          | < 3        | < 3        | < 3        | < 3        | < 3        | < 3        | < 3        | < 3        | < 3       | <3        |
| Cyanide (free)         | mg/L     | -         | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005   | <0.005    |
| Total Suspended Solids | mg/L     | -         | 33         | 156        | 710        | 110        | 75         | 170        | 50         | 106        | 80         | 66         | 39         | 23         | 13        | 7         |
| Aluminum               | mg/L     | 0.1       | 0.04       | 0.06       | 0.06       | 0.06       | 0.06       | 0.08       | 0.05       | 0.06       | 0.06       | 0.06       | 0.05       | 0.03       | 0.02      | 0.07      |
| Antimony               | mg/L     | 0.006     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | 0.0001     | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   |
| Arsenic                | mg/L     | 0.025     | 0.0002     | 0.0003     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   |
| Barium                 | mg/L     | 1         | 0.111      | 0.138      | 0.136      | 0.138      | 0.132      | 0.136      | 0.129      | 0.129      | 0.125      | 0.123      | 0.123      | 0.125      | 0.129     | 0.118     |
| Beryllium              | mg/L     | -         | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002   | <0.0001   |
| Boron                  | mg/L     | 5         | 0.017      | 0.021      | 0.019      | 0.018      | 0.021      | 0.023      | 0.02       | 0.022      | 0.02       | 0.021      | 0.017      | 0.019      | 0.021     | 0.019     |
| Cadmium                | mg/L     | 0.005     | < 0.000014 | < 0.000014 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000010 | 0.000010  | <0.00001  |
| Chromium (total)       | mg/L     | 0.05      | < 0.002    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | 0.001      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001   | <0.001    |
| Chromium (VI)          | mg/L     | -         |            |            |            |            |            |            |            |            |            |            | < 0.001    | < 0.001    | < 0.001   | <0.01     |
| Cobalt                 | mg/L     | -         | < 0.005    | < 0.005    | < 0.005    | < 0.0001   | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005   | 0.0002    |
| Copper                 | mg/L     | 1         | < 0.0001   | < 0.0001   | 0.0003     | 0.0002     | < 0.0001   | 0.0005     | 0.0003     | 0.0011     | 0.001      | 0.0005     | 0.0003     | 0.0003     | 0.0002    | 0.0002    |
| Lead                   | mg/L     | 0.01      | 0.00003    | < 0.00002  | < 0.00002  | 0.00002    | < 0.00002  | 0.00006    | 0.00003    | 0.00006    | 0.00004    | < 0.00002  | 0.00002    | < 0.00002  | < 0.00002 | <0.00002  |
| Mercury                | mg/L     | 0.001     | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002 | <0.00002  |
| Molybdenum             | mg/L     | -         | 0.0003     | 0.0002     | 0.0001     | 0.0009     | 0.0002     | 0.0002     | 0.0002     | 0.0002     | 0.0002     | 0.0003     | 0.0003     | 0.0002     | 0.0003    | 0.0002    |
| Nickel                 | mg/L     | -         | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01    | <0.0002   |
| Selenium               | mg/L     | 0.01      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001   | <0.001    |
| Silver                 | mg/L     | -         | < 0.00002  | < 0.00002  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   |
| Strontium              | mg/L     | -         | 0.271      | 0.295      | 0.302      | 0.321      | 0.315      | 0.329      | 0.278      | 0.276      | 0.271      | 0.272      | 0.26       | 0.272      | 0.285     | 0.258     |
| Thallium               | mg/L     | -         | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.05     | < 0.00005  | < 0.00005  | < 0.00005 | <0.00005  |
| Vanadium               | mg/L     | -         | 0.001      | 0.0001     | < 0.0001   | 0.0002     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   |
| Zinc                   | mg/L     | 5         | < 0.005    | < 0.005    | 0.009      | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005   | <0.005    |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance



Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW28-II   | MW28-II   | MW28-II   | MW28-II   | MW28-II   | MW28-II   | MW28-II   | MW28-II   | MW28-II    | MW28-II    | MW28-II    | MW28-II    | MW28-II    | MW28-II    |
|------------------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|
|                        |          |           | 15-Apr-15 | 07-Oct-15 | 09-Nov-15 | 21-Jan-16 | 27-Apr-16 | 07-Jul-16 | 03-Oct-16 | 22-Feb-17 | 17-Apr-17  | 20-Jul-17  | 23-Oct-17  | 25-Apr-18  | 15-Oct-18  | 11-Apr-19  |
| Total Alkalinity       | mg/L     | 500       | 214       | 208       | 213       | 211       | 215       | 216       | 212       | 217       | 222        | 217        | 242        | 225        | 223        | 210        |
| Calcium                | mg/L     | -         | 88.1      | 91.6      | 77.9      | 79.9      | 88.5      | 95.4      | 101       | 93.4      | 99.7       | 87.2       | 98.2       | 96.6       | 94.9       | 101        |
| Chloride               | mg/L     | 250       | 14.6      | 13.6      | 14.7      | 16.6      | 16.3      | 17.3      | 18.5      | 22.5      | 21.9       | 17.2       | 18.2       | 24.6       | 27         | 30.2       |
| COD                    | mg/L     | -         | 330       | 2070      | 364       | 530       | 546       | < 5       | < 5       | 185       | 179        | 245        | 86         | 15         | 5          | 66         |
| Specific Conductivity  | umhos/cm | -         | 475       | 474       | 496       | 489       | 497       | 495       | 510       | 526       | 526        | 524        | 526        | 514        | 532        | 548        |
| DOC                    | mg/L     | 5         | 2.4       | 2.6       | 0.8       | 2.1       | 1.9       | 1.6       | 2.9       | 2.8       | 2.7        | 2.3        | 6.1        | 2.1        | 2.2        | 2.4        |
| Fluoride               | mg/L     | 1.5       | < 0.1     | 0.1       | 0.1       | < 0.1     | < 0.1     | 0.1       | 0.1       | 0.1       | < 0.1      | < 0.1      | < 0.1      | 0.3        | < 0.1      | < 0.1      |
| Iron                   | mg/L     | 0.3       | 0.227     | 0.324     | 0.316     | 0.25      | 0.323     | 0.26      | 0.636     | 0.78      | 0.41       | 0.303      | 0.368      | 0.096      | 0.331      | 0.363      |
| Magnesium              | mg/L     | -         | 7         | 7.3       | 6.58      | 6.63      | 7.28      | 7.7       | 7.96      | 7.51      | 7.54       | 7.24       | 7.7        | 7.94       | 7.45       | 7.87       |
| Manganese              | mg/L     | 0.05      | 0.033     | 0.034     | 0.032     | 0.03      | 0.034     | 0.037     | 0.047     | 0.048     | 0.038      | 0.032      | 0.037      | 0.034      | 0.037      | 0.037      |
| Nitrate                | mg/L     | 10        | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| Nitrite                | mg/L     | 1         | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | 0.1       | < 0.1      | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.99      | 8.18      | 7.92      | 8.09      | 8         | 7.93      | 8.02      | 7.95      | 8.11       | 8.01       | 8.01       | 8.06       | 8.1        | 7.84       |
| Phenols                | mg/L     | -         | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.002     | 0.017     | < 0.001   | < 0.001   | < 0.001    | 0.005      | 0.002      | < 0.001    | < 0.002    | < 0.002    |
| Phosphorus             | mg/L     | -         | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Potassium              | mg/L     | -         | 1.7       | 1.8       | 1.5       | 1.4       | 1.8       | 1.8       | 1.8       | 1.8       | 1.7        | 1.8        | 1.8        | 2.1        | 1.8        | 1.9        |
| Sodium                 | mg/L     | 200       | 4.7       | 5.5       | 4.9       | 5.2       | 5.3       | 5.9       | 6.1       | 5.9       | 5.3        | 5.5        | 6          | 6          | 6.4        | 6.2        |
| Sulphate               | mg/L     | 500       | 17        | 16        | 17        | 18        | 17        | 19        | 22        | 24        | 21         | 18         | 20         | 21         | 23         | 17         |
| Dissolved Solids       | mg/L     | 500       | 262       | 262       | 251       | 254       | 266       | 277       | 285       | 286       | 291        | 268        | 297        | 293        | 295        | 291        |
| Tot Kjeh N             | mg/L     | -         | 1.4       | 1.3       | 0.6       | 3.5       | 0.2       | 0.6       | 0.8       | 3         | 1.6        | 0.6        | 0.5        | 0.3        | 0.8        | 1          |
| Ammonia (NH3-N)        | mg/L     | -         | 0.14      | 0.1       | 0.19      | 0.06      | 0.09      | 0.07      | 0.07      | 0.07      | 0.06       | 0.05       | 0.06       | 0.05       | 0.1        | 0.07       |
| Ammonia - Unionized    | mg/L     | -         |           |           |           |           |           |           |           |           |            |            |            |            |            | <0.01      |
| Hardness (CaCO3)       | mg/L     | 100       | 249       | 259       | 222       | 227       | 251       | 270       | 284       | 264       | 280        | 248        | 277        | 274        | 268        | 285        |
| BOD                    | mg/L     | -         | < 2       | < 3       | < 3       | < 3       | < 3       | < 3       | < 3       | < 3       | < 3        | < 3        | < 3        | < 3        | 3          | < 3        |
| Cyanide (free)         | mg/L     | -         | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    |
| Total Suspended Solids | mg/L     | -         | 38600     | 292000    | 67800     | --        | --        | --        | --        | 112000    | 26         | 82000      | 89000      | 26900      | 235000     | 41600      |
| Aluminum               | mg/L     | 0.1       | 0.03      | 0.03      | 0.03      | 0.03      | 0.03      | 0.03      | 0.34      | 0.42      | 0.06       | 0.03       | 0.06       | 0.05       | 0.06       | 0.06       |
| Antimony               | mg/L     | 0.006     | < 0.0001  | < 0.0001  | < 0.0001  | 0.0003    | < 0.0001  | < 0.0001  | 0.0001    | 0.0003    | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L     | 0.025     | 0.0004    | 0.0007    | 0.0003    | 0.0001    | 0.0004    | 0.0004    | 0.0003    | 0.0018    | 0.0008     | 0.0015     | 0.0005     | 0.0002     | 0.0006     | 0.0009     |
| Barium                 | mg/L     | 1         | 0.094     | 0.101     | 0.083     | 0.089     | 0.09      | 0.1       | 0.124     | 0.125     | 0.121      | 0.118      | 0.11       | 0.115      | 0.112      | 0.114      |
| Beryllium              | mg/L     | -         | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L     | 5         | 0.016     | 0.015     | 0.013     | 0.012     | < 0.005   | 0.017     | 0.014     | < 0.005   | 0.038      | 0.014      | 0.018      | 0.015      | 0.014      | 0.016      |
| Cadmium                | mg/L     | 0.005     | 0.00005   | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.000020 | < 0.000014 | < 0.000014 | < 0.000015 | < 0.000015 | < 0.000015 |
| Chromium (total)       | mg/L     | 0.05      | 0.0003    | 0.0019    | < 0.0002  | < 0.0002  | < 0.0002  | < 0.0002  | < 0.0002  | 0.0014    | < 0.001    | < 0.002    | 0.001      | < 0.001    | < 0.001    | < 0.001    |
| Chromium (VI)          | mg/L     | -         |           |           |           |           |           |           |           |           |            |            |            |            |            |            |
| Cobalt                 | mg/L     | -         | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.0001   | < 0.005    |
| Copper                 | mg/L     | 1         | 0.0003    | 0.0003    | < 0.0001  | 0.0003    | 0.0003    | 0.0003    | 0.0004    | 0.0013    | 0.0006     | < 0.0001   | < 0.0001   | 0.0002     | 0.0003     | 0.0007     |
| Lead                   | mg/L     | 0.01      | < 0.00002 | < 0.00002 | < 0.00002 | 0.00005   | 0.00003   | 0.00004   | 0.00039   | 0.0005    | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | 0.00004    | 0.00003    |
| Mercury                | mg/L     | 0.001     | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | 0.00005   | < 0.00002 | < 0.00002 | 0.00003   | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L     | -         | < 0.0001  | 0.0003    | 0.0002    | 0.0003    | 0.0002    | 0.0002    | 0.0002    | 0.0003    | 0.0003     | 0.0004     | 0.0002     | 0.0002     | 0.0003     | 0.0003     |
| Nickel                 | mg/L     | -         | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L     | 0.01      | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.001      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Silver                 | mg/L     | -         | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002  | < 0.0001   | < 0.0001   | < 0.0001   |
| Strontium              | mg/L     | -         | 0.218     | 0.222     | 0.185     | 0.177     | 0.215     | 0.21      | 0.218     | 0.228     | 0.188      | 0.203      | 0.209      | 0.208      | 0.222      | 0.232      |
| Thallium               | mg/L     | -         | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L     | -         | 0.0013    | 0.0007    | 0.0002    | 0.0004    | 0.0005    | 0.0005    | 0.0012    | 0.0018    | 0.0012     | 0.0012     | 0.0004     | < 0.0001   | < 0.0001   | < 0.0001   |
| Zinc                   | mg/L     | 5         | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | 0.006     | < 0.005   | < 0.005    | 1.69       | < 0.005    | < 0.005    | < 0.005    | < 0.005    |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW28-II    | MW28-II    | MW28-II    | MW28-II    | MW28-II    | MW28-II    | MW28-II    | MW28-II   | MW28-II   | MW28-III  | MW28-III  | MW28-III  | MW28-III  | MW28-III  |
|------------------------|----------|-----------|------------|------------|------------|------------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                        |          |           | 21-Oct-19  | 22-Apr-20  | 19-Oct-20  | 19-Apr-21  | 27-Oct-21  | 20-Apr-22  | 26-Oct-22  | 19-Apr-23 | 12-Oct-23 | 15-Apr-15 | 07-Oct-15 | 09-Nov-15 | 21-Jan-16 | 27-Apr-16 |
| Total Alkalinity       | mg/L     | 500       | 209        | 206        | 218        | 204        | 228        | 241        | 230        | 234       | 244       | 214       | 212       | 215       | 216       | 220       |
| Calcium                | mg/L     | -         | 105        | 101        | 105        | 106        | 105        | 107        | 92.8       | 104       | 91.2      | 99.7      | 107       | 91.5      | 93.9      | 104       |
| Chloride               | mg/L     | 250       | 36.3       | 39.4       | 40.7       | 35.7       | 37.5       | 34.3       | 31.8       | 28.9      | 32        | 32        | 33.5      | 33.3      | 33.2      | 32.1      |
| COD                    | mg/L     | -         | 170        | 138        | 149        | 82         | 78         | 46         | 69         | 79        | 51        | 62        | 111       | 269       | 18        | 258       |
| Specific Conductivity  | umhos/cm | -         | 574        | 561        | 577        | 571        | 562        | 559        | 549        | 557       | 558       | 565       | 575       | 597       | 591       | 590       |
| DOC                    | mg/L     | 5         | 2.1        | 2.3        | 1.9        | 2.6        | 2.1        | 2.2        | 1.3        | 1         | 3.7       | 1.9       | 1.4       | 0.6       | 2.1       | 16.2      |
| Fluoride               | mg/L     | 1.5       | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1     | <0.1      | < 0.1     | 0.1       | 0.1       | 0.2       | < 0.1     |
| Iron                   | mg/L     | 0.3       | 0.418      | 0.385      | 0.417      | 0.423      | 0.421      | 0.469      | 0.419      | 0.485     | 0.394     | 0.255     | 0.386     | 0.354     | 0.193     | 0.31      |
| Magnesium              | mg/L     | -         | 8.84       | 8.46       | 8.43       | 8.52       | 8.36       | 8.28       | 8.15       | 8.6       | 7.77      | 7.34      | 7.96      | 7.2       | 7.21      | 8         |
| Manganese              | mg/L     | 0.05      | 0.041      | 0.039      | 0.04       | 0.041      | 0.042      | 0.046      | 0.04       | 0.049     | 0.038     | 0.044     | 0.047     | 0.043     | 0.042     | 0.051     |
| Nitrate                | mg/L     | 10        | 0.05       | 0.08       | < 0.05     | < 0.05     | < 0.05     | 0.09       | < 0.05     | < 0.05    | <0.05     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     |
| Nitrite                | mg/L     | 1         | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05    | <0.05     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 8.02       | 7.85       | 7.88       | 7.98       | 8.12       | 7.95       | 7.93       | 8.05      | 7.47      | 7.95      | 8.14      | 7.87      | 7.96      | 7.92      |
| Phenols                | mg/L     | -         | < 0.001    | < 0.002    | < 0.001    | < 0.002    | < 0.002    | < 0.001    | < 0.001    | < 0.001   | <0.001    | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   |
| Phosphorus             | mg/L     | -         | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1     | <0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     |
| Potassium              | mg/L     | -         | 2.1        | 1.9        | 2.1        | 2          | 2.1        | 1.9        | 2.2        | 2.3       | 2.2       | 2.1       | 2.3       | 1.9       | 1.9       | 2.2       |
| Sodium                 | mg/L     | 200       | 6.8        | 6.5        | 7.1        | 7.2        | 7.9        | 8.5        | 10.1       | 11.2      | 11.6      | 9.4       | 10.4      | 9         | 9.6       | 10.4      |
| Sulphate               | mg/L     | 500       | 19         | 18         | 19         | 19         | 19         | 16         | 17         | 15        | 19        | 34        | 37        | 39        | 40        | 40        |
| Dissolved Solids       | mg/L     | 500       | 304        | 299        | 314        | 301        | 317        | 321        | 300        | 311       | 289       | 313       | 326       | 311       | 316       | 329       |
| Tot Kjeh N             | mg/L     | -         | 0.8        | 0.6        | 1.1        | 0.1        | 2.3        | 0.7        | 0.5        | 0.8       | 0.4       | 0.9       | 0.4       | 0.4       | 0.3       | 0.2       |
| Ammonia (NH3-N)        | mg/L     | -         | 0.04       | 0.06       | 0.16       | 0.05       | 0.04       | 0.1        | 0.14       | 0.98      | 0.08      | 0.09      | 0.04      | 0.07      | 0.06      | 0.07      |
| Ammonia - Unionized    | mg/L     | -         | <0.01      | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01    | <0.01     |           |           |           |           |           |
| Hardness (CaCO3)       | mg/L     | 100       | 299        | 287        | 297        | 300        | 297        | 302        | 265        | 294       | 260       | 279       | 300       | 258       | 264       | 294       |
| BOD                    | mg/L     | -         | < 3        | < 3        | < 3        | < 3        | < 3        | < 3        | < 3        | < 3       | <3        | < 2       | < 3       | < 3       | < 3       | < 3       |
| Cyanide (free)         | mg/L     | -         | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005   | <0.005    | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   |
| Total Suspended Solids | mg/L     | -         | 935000     | 46000      | 61000      | 68800      | 44800      | 87600      | 18700      | 26500     | 72500     | 7300      | 11200     | 36000     | --        | --        |
| Aluminum               | mg/L     | 0.1       | 0.08       | 0.06       | 0.07       | 0.07       | 0.07       | 0.07       | 0.02       | 0.08      | 0.07      | 0.03      | 0.03      | 0.03      | 0.03      | 0.03      |
| Antimony               | mg/L     | 0.006     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | 0.0001     | < 0.0001   | < 0.0001  | <0.0001   | < 0.0001  | < 0.0001  | < 0.0001  | 0.0001    | < 0.0001  |
| Arsenic                | mg/L     | 0.025     | 0.0003     | 0.0008     | 0.0006     | 0.0006     | 0.0002     | 0.0007     | 0.0003     | 0.0003    | 0.0003    | 0.001     | 0.0004    | 0.0004    | < 0.0001  | 0.0003    |
| Barium                 | mg/L     | 1         | 0.111      | 0.119      | 0.115      | 0.12       | 0.112      | 0.128      | 0.11       | 0.126     | 0.108     | 0.118     | 0.114     | 0.102     | 0.101     | 0.106     |
| Beryllium              | mg/L     | -         | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002   | <0.0001   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   |
| Boron                  | mg/L     | 5         | 0.02       | 0.018      | 0.021      | 0.017      | 0.019      | 0.014      | 0.018      | 0.019     | 0.017     | 0.036     | 0.036     | 0.031     | 0.029     | 0.012     |
| Cadmium                | mg/L     | 0.005     | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000010 | 0.000010  | < 0.00001 | 5         | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 |
| Chromium (total)       | mg/L     | 0.05      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001   | <0.001    | < 0.0002  | 0.0002    | 0.0017    | < 0.0002  | < 0.0002  |
| Chromium (VI)          | mg/L     | -         |            |            |            |            |            | < 0.001    | < 0.001    | < 0.001   | <0.01     |           |           |           |           |           |
| Cobalt                 | mg/L     | -         | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005   | 0.0002    | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   |
| Copper                 | mg/L     | 1         | 0.0007     | 0.0002     | 0.0012     | 0.001      | 0.0006     | 0.0003     | 0.0003     | 0.0006    | 0.0005    | 0.0006    | 0.0006    | < 0.0001  | 0.0004    | 0.0004    |
| Lead                   | mg/L     | 0.01      | 0.00009    | 0.00004    | 0.00008    | 0.00006    | 0.00003    | 0.0002     | 0.00003    | 0.00011   | 0.00003   | < 0.00002 | < 0.00002 | < 0.00002 | 0.00002   | 0.00003   |
| Mercury                | mg/L     | 0.001     | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002 | <0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 |
| Molybdenum             | mg/L     | -         | 0.0002     | 0.0003     | 0.0002     | 0.0002     | 0.0002     | 0.0003     | 0.0002     | 0.0003    | 0.0002    | 0.0002    | 0.0005    | 0.0005    | 0.0005    | 0.0005    |
| Nickel                 | mg/L     | -         | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01    | <0.0002   | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    |
| Selenium               | mg/L     | 0.01      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001   | <0.001    | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   |
| Silver                 | mg/L     | -         | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 |
| Strontium              | mg/L     | -         | 0.249      | 0.231      | 0.239      | 0.246      | 0.245      | 0.239      | 0.235      | 0.262     | 0.234     | 0.21      | 0.22      | 0.187     | 0.176     | 0.215     |
| Thallium               | mg/L     | -         | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.05     | < 0.00005  | < 0.00005  | < 0.00005 | <0.00005  | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 |
| Vanadium               | mg/L     | -         | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | 0.0002     | < 0.0001   | 0.0002    | <0.0001   | 0.0015    | 0.0007    | 0.0001    | 0.0005    | 0.0005    |
| Zinc                   | mg/L     | 5         | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005   | <0.005    | 0.013     | < 0.005   | < 0.005   | < 0.005   | < 0.005   |

ODWQS - Ontario Drinking Water Quality  
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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW28-III     | MW28-III     | MW28-III   | MW28-III     | MW28-III     | MW28-III     | MW28-III     | MW28-III     | MW28-III    | MW28-III     | MW28-III     | MW28-III     | MW28-III     | MW28-III     |
|------------------------|----------|-----------|--------------|--------------|------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|
|                        |          |           | 07-Jul-16    | 03-Oct-16    | 22-Feb-17  | 17-Apr-17    | 20-Jul-17    | 23-Oct-17    | 25-Apr-18    | 15-Oct-18    | 11-Apr-19   | 21-Oct-19    | 22-Apr-20    | 19-Oct-20    | 19-Apr-21    | 27-Oct-21    |
| Total Alkalinity       | mg/L     | 500       | 218          | 216          | 222        | 226          | 222          | 222          | 261          | 233          | 218         | 220          | 222          | 246          | 216          | 242          |
| Calcium                | mg/L     | -         | 111          | 118          | 103        | 116          | 99.7         | 115          | 115          | 107          | 116         | 119          | 119          | 116          | 117          | 122          |
| Chloride               | mg/L     | 250       | 34.6         | 34.6         | 35.3       | 35.8         | 28.9         | 29.4         | 38.5         | 37.1         | 35.4        | 33.9         | 35.6         | 34.5         | 31.8         | 31.4         |
| COD                    | mg/L     | -         | < 5          | < 5          | 82         | 57           | 98           | 66           | 15           | < 5          | 17          | 50           | 39           | 48           | 14           | < 5          |
| Specific Conductivity  | umhos/cm | -         | 600          | 607          | 609        | 625          | 631          | 632          | 632          | 641          | 651         | 657          | 649          | 649          | 642          | 622          |
| DOC                    | mg/L     | 5         | 1.3          | 2.9          | 2.6        | 2.7          | 2.1          | 3.8          | 2.6          | 2.3          | 2.4         | 2.3          | 2.3          | 2.1          | 2.6          | 2.4          |
| Fluoride               | mg/L     | 1.5       | 0.1          | 0.1          | < 0.1      | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1       | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Iron                   | mg/L     | 0.3       | <b>0.328</b> | <b>0.501</b> | 0.275      | <b>0.312</b> | <b>0.34</b>  | <b>0.445</b> | 0.138        | <b>0.303</b> | 0.295       | <b>0.463</b> | <b>0.357</b> | <b>0.479</b> | <b>0.358</b> | <b>0.661</b> |
| Magnesium              | mg/L     | -         | 8.38         | 8.72         | 7.76       | 8.19         | 7.95         | 8.59         | 8.92         | 8.23         | 8.58        | 9.42         | 9.76         | 8.74         | 8.91         | 9.16         |
| Manganese              | mg/L     | 0.05      | <b>0.052</b> | <b>0.067</b> | 0.05       | <b>0.061</b> | <b>0.053</b> | <b>0.057</b> | <b>0.082</b> | <b>0.051</b> | <b>0.06</b> | <b>0.058</b> | <b>0.06</b>  | <b>0.057</b> | <b>0.069</b> | <b>0.069</b> |
| Nitrate                | mg/L     | 10        | < 0.1        | 0.2          | < 0.1      | < 0.1        | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05      | 0.07         | 0.09         | < 0.05       | < 0.05       | < 0.05       |
| Nitrite                | mg/L     | 1         | < 0.1        | < 0.1        | < 0.1      | < 0.1        | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05      | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.88         | 7.94         | 7.86       | 7.98         | 7.98         | 8.02         | 7.99         | 7.93         | 7.82        | 8.01         | 7.88         | 7.86         | 7.88         | 8.07         |
| Phenols                | mg/L     | -         | 0.004        | < 0.001      | < 0.001    | < 0.001      | < 0.001      | 0.003        | < 0.001      | < 0.002      | < 0.002     | < 0.001      | < 0.002      | < 0.001      | < 0.002      | < 0.002      |
| Phosphorus             | mg/L     | -         | < 0.1        | < 0.1        | < 0.1      | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1       | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Potassium              | mg/L     | -         | 2.3          | 2.3          | 2          | 2.2          | 2.1          | 2.4          | 2.8          | 2.4          | 2.2         | 2.6          | 2.4          | 2.6          | 2.4          | 2.5          |
| Sodium                 | mg/L     | 200       | 11.4         | 11.6         | 10.9       | 10.4         | 10.9         | 11.9         | 13.6         | 12.1         | 12.5        | 13.1         | 13.3         | 13.4         | 13.7         | 13.8         |
| Sulphate               | mg/L     | 500       | 43           | 46           | 45         | 44           | 41           | 39           | 53           | 54           | 55          | 56           | 59           | 58           | 52           | 51           |
| Dissolved Solids       | mg/L     | 500       | 342          | 352          | 337        | 352          | 324          | 341          | 388          | 361          | 361         | 366          | 372          | 381          | 356          | 376          |
| Tot Kjeh N             | mg/L     | -         | 1.1          | 0.5          | 1          | 0.5          | 0.4          | 0.3          | 0.5          | 0.4          | 0.3         | 0.3          | 0.2          | 0.2          | 0.3          | 0.4          |
| Ammonia (NH3-N)        | mg/L     | -         | 0.03         | 0.05         | 0.04       | 0.04         | 0.05         | 0.04         | 0.1          | 0.05         | 0.05        | 0.03         | 0.02         | 0.1          | 0.04         | 0.04         |
| Ammonia - Unionized    | mg/L     | -         |              |              |            |              |              |              |              |              | <0.01       | <0.01        | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Hardness (CaCO3)       | mg/L     | 100       | <b>313</b>   | <b>331</b>   | <b>290</b> | <b>324</b>   | <b>282</b>   | <b>323</b>   | <b>324</b>   | <b>301</b>   | <b>325</b>  | <b>336</b>   | <b>338</b>   | <b>326</b>   | <b>329</b>   | <b>343</b>   |
| BOD                    | mg/L     | -         | < 3          | 5            | < 3        | < 3          | < 3          | < 3          | < 3          | 3            | < 3         | < 3          | < 3          | < 3          | < 3          | < 3          |
| Cyanide (free)         | mg/L     | -         | < 0.005      | < 0.005      | < 0.005    | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005     | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      |
| Total Suspended Solids | mg/L     | -         | --           | --           | 55000      | 3000         | 15400        | 17100        | 17100        | 6800         | 11200       | 32000        | 6800         | 3780         | 4100         | 5700         |
| Aluminum               | mg/L     | 0.1       | 0.03         | <b>0.16</b>  | 0.03       | 0.07         | 0.04         | 0.06         | 0.08         | 0.07         | 0.07        | 0.08         | 0.07         | 0.07         | 0.08         | <b>0.14</b>  |
| Antimony               | mg/L     | 0.006     | < 0.0001     | 0.0002       | < 0.0001   | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     |
| Arsenic                | mg/L     | 0.025     | 0.0004       | 0.0002       | 0.0004     | 0.0005       | 0.0004       | 0.0005       | 0.0002       | 0.0005       | 0.0001      | 0.0002       | 0.0002       | 0.0002       | 0.0001       | 0.0002       |
| Barium                 | mg/L     | 1         | 0.119        | 0.13         | 0.115      | 0.141        | 0.112        | 0.137        | 0.13         | 0.136        | 0.129       | 0.135        | 0.135        | 0.135        | 0.132        | 0.136        |
| Beryllium              | mg/L     | -         | < 0.002      | < 0.002      | < 0.002    | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002     | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002      |
| Boron                  | mg/L     | 5         | 0.036        | 0.035        | 0.016      | 0.056        | 0.032        | 0.038        | 0.035        | 0.032        | 0.036       | 0.039        | 0.038        | 0.039        | 0.039        | 0.04         |
| Cadmium                | mg/L     | 0.005     | < 0.00002    | < 0.00002    | < 0.00002  | 0.000042     | < 0.000014   | < 0.000014   | < 0.000015   | < 0.000015   | < 0.000015  | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000015   |
| Chromium (total)       | mg/L     | 0.05      | < 0.0002     | < 0.0002     | 0.001      | < 0.001      | < 0.002      | < 0.001      | < 0.001      | < 0.001      | < 0.001     | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Chromium (VI)          | mg/L     | -         |              |              |            |              |              |              |              |              |             |              |              |              |              |              |
| Cobalt                 | mg/L     | -         | < 0.005      | < 0.005      | < 0.005    | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.0001     | < 0.005     | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      |
| Copper                 | mg/L     | 1         | 0.0001       | 0.001        | 0.0007     | 0.0009       | < 0.0001     | 0.0001       | 0.0005       | 0.0004       | 0.0005      | 0.0005       | 0.0002       | 0.0011       | 0.0011       | 0.0011       |
| Lead                   | mg/L     | 0.01      | 0.00002      | 0.00026      | 0.00004    | < 0.00002    | < 0.00002    | < 0.00002    | 0.00002      | 0.00002      | < 0.00002   | 0.0001       | 0.00003      | 0.00005      | 0.00006      | 0.00025      |
| Mercury                | mg/L     | 0.001     | < 0.00002    | < 0.00002    | 0.00003    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    |
| Molybdenum             | mg/L     | -         | 0.0004       | 0.0004       | 0.0005     | 0.0005       | 0.0004       | 0.0004       | 0.0005       | 0.0004       | 0.0005      | 0.0004       | 0.0004       | 0.0003       | 0.0003       | 0.0004       |
| Nickel                 | mg/L     | -         | < 0.01       | < 0.01       | < 0.01     | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01      | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Selenium               | mg/L     | 0.01      | < 0.001      | < 0.001      | < 0.001    | 0.001        | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001     | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Silver                 | mg/L     | -         | < 0.00002    | < 0.00002    | < 0.00002  | < 0.00002    | < 0.00002    | < 0.00002    | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     |
| Strontium              | mg/L     | -         | 0.202        | 0.219        | 0.205      | 0.178        | 0.19         | 0.203        | 0.211        | 0.211        | 0.218       | 0.228        | 0.221        | 0.217        | 0.217        | 0.23         |
| Thallium               | mg/L     | -         | < 0.00005    | < 0.00005    | < 0.00005  | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005   | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.05       |
| Vanadium               | mg/L     | -         | 0.0005       | 0.001        | 0.0008     | 0.0012       | 0.0012       | 0.0005       | 0.0001       | 0.0002       | < 0.0001    | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | 0.0005       |
| Zinc                   | mg/L     | 5         | < 0.005      | 0.006        | 0.018      | < 0.005      | < 0.005      | < 0.005      | 0.006        | < 0.005      | < 0.005     | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | ODWQS     | MW28-III   | MW28-III   | MW28-III  | MW28-III  |
|------------------------|----------|-----------|------------|------------|-----------|-----------|
|                        |          |           | 20-Apr-22  | 26-Oct-22  | 19-Apr-23 | 12-Oct-23 |
| Total Alkalinity       | mg/L     | 500       | 248        | 244        | 250       | 257       |
| Calcium                | mg/L     | -         | 115        | 107        | 114       | 104       |
| Chloride               | mg/L     | 250       | 31         | 30.8       | 29.5      | 34.1      |
| COD                    | mg/L     | -         | 18         | 33         | 36        | 9         |
| Specific Conductivity  | umhos/cm | -         | 624        | 621        | 635       | 634       |
| DOC                    | mg/L     | 5         | 2.2        | 1.5        | 1         | 4.3       |
| Fluoride               | mg/L     | 1.5       | < 0.1      | < 0.1      | < 0.1     | <0.1      |
| Iron                   | mg/L     | 0.3       | 0.388      | 0.444      | 0.33      | 0.436     |
| Magnesium              | mg/L     | -         | 8.69       | 8.95       | 9.18      | 8.58      |
| Manganese              | mg/L     | 0.05      | 0.061      | 0.053      | 0.074     | 0.051     |
| Nitrate                | mg/L     | 10        | < 0.05     | < 0.05     | < 0.05    | <0.05     |
| Nitrite                | mg/L     | 1         | < 0.05     | < 0.05     | < 0.05    | <0.05     |
| pH Lab                 | pH unit  | 6.5 - 8.5 | 7.89       | 7.94       | 8.02      | 7.3       |
| Phenols                | mg/L     | -         | < 0.001    | < 0.001    | < 0.001   | <0.001    |
| Phosphorus             | mg/L     | -         | < 0.1      | < 0.1      | < 0.1     | <0.1      |
| Potassium              | mg/L     | -         | 2.2        | 2.5        | 2.6       | 2.4       |
| Sodium                 | mg/L     | 200       | 13.3       | 13.4       | 14        | 13.6      |
| Sulphate               | mg/L     | 500       | 47         | 46         | 41        | 41        |
| Dissolved Solids       | mg/L     | 500       | 366        | 356        | 361       | 329       |
| Tot Kjel N             | mg/L     | -         | 0.2        | 0.2        | 0.3       | 0.1       |
| Ammonia (NH3-N)        | mg/L     | -         | 0.04       | 0.03       | 0.06      | <0.05     |
| Ammonia - Unionized    | mg/L     | -         | < 0.01     | < 0.01     | < 0.01    | <0.01     |
| Hardness (CaCO3)       | mg/L     | 100       | 323        | 305        | 324       | 295       |
| BOD                    | mg/L     | -         | < 3        | < 3        | < 3       | <3        |
| Cyanide (free)         | mg/L     | -         | < 0.005    | < 0.005    | < 0.005   | <0.005    |
| Total Suspended Solids | mg/L     | -         | 10100      | 2790       | 4170      | 1560      |
| Aluminum               | mg/L     | 0.1       | 0.06       | 0.03       | 0.03      | 0.07      |
| Antimony               | mg/L     | 0.006     | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   |
| Arsenic                | mg/L     | 0.025     | 0.0001     | 0.0003     | 0.0002    | 0.0001    |
| Barium                 | mg/L     | 1         | 0.128      | 0.134      | 0.136     | 0.127     |
| Beryllium              | mg/L     | -         | < 0.002    | < 0.002    | < 0.002   | <0.0001   |
| Boron                  | mg/L     | 5         | 0.036      | 0.039      | 0.042     | 0.042     |
|                        |          |           |            | <          | <         | <0.00001  |
| Cadmium                | mg/L     | 0.005     | < 0.000015 | < 0.000010 | 0.000010  | 5         |
| Chromium (total)       | mg/L     | 0.05      | < 0.001    | < 0.001    | < 0.001   | <0.001    |
| Chromium (VI)          | mg/L     | -         | < 0.001    | < 0.001    | < 0.001   | <0.01     |
| Cobalt                 | mg/L     | -         | < 0.005    | < 0.005    | < 0.005   | 0.0002    |
| Copper                 | mg/L     | 1         | 0.0003     | 0.0004     | < 0.0001  | 0.0005    |
|                        |          |           |            |            |           |           |
| Lead                   | mg/L     | 0.01      | 0.00003    | < 0.00002  | < 0.00002 | 0.00002   |
|                        |          |           |            |            |           |           |
| Mercury                | mg/L     | 0.001     | < 0.00002  | < 0.00002  | < 0.00002 | <0.00002  |
| Molybdenum             | mg/L     | -         | 0.0004     | 0.0004     | 0.0004    | 0.0003    |
| Nickel                 | mg/L     | -         | < 0.01     | < 0.01     | < 0.01    | <0.0002   |
| Selenium               | mg/L     | 0.01      | < 0.001    | < 0.001    | < 0.001   | <0.001    |
| Silver                 | mg/L     | -         | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   |
| Strontium              | mg/L     | -         | 0.207      | 0.211      | 0.226     | 0.209     |
|                        |          |           |            |            |           |           |
| Thallium               | mg/L     | -         | < 0.00005  | < 0.00005  | < 0.00005 | <0.00005  |
| Vanadium               | mg/L     | -         | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   |
| Zinc                   | mg/L     | 5         | < 0.005    | < 0.005    | < 0.005   | <0.005    |

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Ground Water Quality - General  
Parameters

| Parameters             | Units    | PWQO    | CWQG | WP1        | WP1         | WP1           | WP1          | WP1           | WP1         | WP1           | WP1          | WP1         | WP1         | WP1          | WP1          |
|------------------------|----------|---------|------|------------|-------------|---------------|--------------|---------------|-------------|---------------|--------------|-------------|-------------|--------------|--------------|
|                        |          |         |      | 24-May-12  | 22-May-13   | 01-Oct-13     | 24-Apr-14    | 15-Oct-14     | 16-Apr-15   | 08-Oct-15     | 28-Apr-16    | 04-Oct-16   | 18-Apr-17   | 23-Oct-17    | 25-Apr-18    |
| Total Alkalinity       | mg/L     | -       | -    | 240        | 210         | 217           | 216          | 207           | 205         | 202           | 203          | 200         | 202         | 194          | 250          |
| Calcium                | mg/L     | -       | -    | 76         | 74.4        | 78.6          | 76.8         | 77            | 76.6        | 80.4          | 75.3         | 74.5        | 78.7        | 75.4         | 82.2         |
| Chloride               | mg/L     | -       | 120  | 23         | 17.6        | 15.2          | 12.2         | 14.3          | 17.5        | 17.3          | 18.5         | 17.4        | 24.9        | 18.2         | 30.6         |
| COD                    | mg/L     | -       | -    | 180        | 114         | 83            | 67           | 57            | 60          | 62            | 61           | 53          | 52          | 75           | 77           |
| Specific Conductivity  | umhos/cm | -       | -    | 500        | 464         | 476           | 446          | 453           | 466         | 468           | 460          | 449         | 468         | 454          | 521          |
| DOC                    | mg/L     | -       | -    | 16         | 21.8        | 19.1          | 19.9         | 21            | 18.7        | 17.5          | 16.2         | 14.7        | 15.3        | 17.8         | 14           |
| Fluoride               | mg/L     | -       | -    | < 0.10     | 0.2         | 0.1           | <0.1         | <0.1          | < 0.1       | < 0.1         | < 0.1        | < 0.1       | < 0.1       | < 0.1        | < 0.1        |
| Iron                   | mg/L     | 0.3     | -    | 0.14       | 0.284       | <b>0.332</b>  | <b>0.569</b> | <b>0.413</b>  | <b>0.66</b> | <b>1.08</b>   | <b>1.22</b>  | <b>1.83</b> | <b>2.72</b> | <b>1.95</b>  | 0.016        |
| Magnesium              | mg/L     | -       | -    | 4.9        | 4.52        | 4.56          | 4.54         | 4.66          | 4.7         | 4.78          | 4.76         | 4.66        | 4.63        | 4.59         | 4.89         |
| Manganese              | mg/L     | -       | -    | 0.13       | 0.142       | 0.132         | 0.137        | 0.125         | 0.127       | 0.134         | 0.126        | 0.123       | 0.125       | 0.106        | 0.114        |
| Nitrate                | mg/L     | -       | 2.9  | < 0.10     | < 0.1       | 0.1           | <0.1         | <0.1          | < 0.1       | < 0.1         | < 0.1        | < 0.1       | < 0.1       | < 0.05       | < 0.05       |
| Nitrite                | mg/L     | -       | 0.06 | < 0.010    | < 0.1       | < 0.1         | <0.1         | <0.1          | < 0.1       | < 0.1         | < 0.1        | < 0.1       | < 0.1       | < 0.05       | < 0.05       |
| pH Lab                 | pH unit  | 6.5-8.5 | -    | 7.22       | 7.31        | 7.27          | 7.53         | 7.3           | 7.52        | 7.5           | 7.37         | 7.57        | 7.51        | 7.49         | 7.48         |
| Phenols                | mg/L     | 0.001   | -    | < 0.0010   | < 0.001     | < 0.001       | --           | --            | < 0.001     | < 0.001       | <b>0.003</b> | < 0.001     | < 0.001     | <b>0.005</b> | <b>0.004</b> |
| Phosphorus             | mg/L     | 0.03    | -    | < 0.10     | < 0.1       | < 0.1         | <0.1         | <0.1          | < 0.1       | < 0.1         | < 0.1        | < 0.1       | <0.1        | < 0.1        | < 0.1        |
| Potassium              | mg/L     | -       | -    | 2.5        | 2.2         | 2.5           | 2.3          | 2.5           | 2.2         | 2.4           | 2.2          | 2.3         | 2.1         | 2.3          | 2.2          |
| Sodium                 | mg/L     | -       | -    | 5.7        | 6           | 6.2           | 5.9          | 6.7           | 6.2         | 6.7           | 6.4          | 7.3         | 6.1         | 8.4          | 7.6          |
| Sulphate               | mg/L     | -       | -    | < 1        | < 1         | < 1           | 9            | 14            | 13          | 14            | 6            | 2           | 1           | 4            | < 1          |
| Dissolved Solids       | mg/L     | -       | -    | 264        | 233         | 240           | 242          | 245           | 244         | 250           | 237          | 232         | 243         | 232          | 279          |
| Tot Kjeh N             | mg/L     | -       | -    | 2.2        | 1.9         | 1.77          | 1.1          | 1.6           | 1.4         | 0.8           | 1.5          | 1.5         | 1.4         | 1.6          | 2.7          |
| Ammonia (NH3-N)        | mg/L     | -       | -    | 0.67       | 0.749       | 0.76          | 0.76         | 0.81          | 0.63        | 0.76          | 0.77         | 0.81        | 0.82        | 0.78         | 0.9          |
| Ammonia - Unionized    | mg/L     | 0.02    | -    | -          | -           | -             | -            | -             | -           | -             | -            | -           | -           | -            | -            |
| Hardness (CaCO3)       | mg/L     | -       | -    | 210        | 205         | 215           | 211          | 212           | 211         | 221           | 208          | 205         | 216         | 207          | 226          |
| BOD                    | mg/L     | -       | -    | < 2.0      | < 3         | < 3           | <3           | <3            | < 2         | < 3           | < 3          | < 3         | < 3         | < 3          | < 3          |
| Cyanide (free)         | mg/L     | -       | -    | < 0.0020   | < 0.005     | < 0.005       | <0.005       | <0.005        | < 0.005     | < 0.005       | < 0.005      | < 0.005     | < 0.005     | < 0.005      | < 0.005      |
| Total Suspended Solids | mg/L     | -       | -    | 170        | 366         | 92            | 100          | 76            | 81          | 90            | --           | --          | 82          | 110          | 1100         |
| Aluminum               | mg/L     | 0.075   | -    | 0.05       | 0.06        | <b>0.08</b>   | 0.06         | 0.06          | 0.06        | 0.07          | 0.07         | 0.07        | <b>0.08</b> | 0.06         | 0.05         |
| Antimony               | mg/L     | 0.02    | -    | < 0.00050  | < 0.0001    | < 0.0001      | <0.0001      | <0.0001       | < 0.0001    | 0.0002        | < 0.0001     | 0.0003      | < 0.0001    | < 0.0001     | < 0.0001     |
| Arsenic                | mg/L     | 0.005   | -    | < 0.0010   | 0.0006      | 0.0007        | 0.0006       | 0.0006        | 0.0004      | 0.0006        | 0.0005       | 0.0001      | 0.0004      | 0.0004       | 0.0003       |
| Barium                 | mg/L     | -       | -    | 0.04       | 0.041       | 0.044         | 0.036        | 0.038         | 0.033       | 0.038         | 0.032        | 0.037       | 0.048       | 0.035        | 0.034        |
| Beryllium              | mg/L     | 1.1     | -    | < 0.00050  | < 0.002     | < 0.002       | <0.002       | <0.002        | < 0.002     | < 0.002       | < 0.002      | < 0.002     | < 0.002     | < 0.002      | < 0.002      |
| Boron                  | mg/L     | -       | 1.5  | 0.012      | < 0.005     | < 0.005       | <0.005       | <0.005        | < 0.005     | < 0.005       | < 0.005      | < 0.005     | 0.021       | < 0.005      | < 0.005      |
| Cadmium                | mg/L     | 0.0005  | -    | < 0.00010  | 0.00003     | < 0.00002     | <0.00002     | <0.00002      | < 0.00002   | < 0.00002     | < 0.00002    | < 0.00002   | < 0.000020  | < 0.000014   | 0.000016     |
| Chromium (total)       | mg/L     | 0.001   | -    | < 0.0050   | < 0.0002    | <b>0.0246</b> | <0.0002      | <b>0.0059</b> | 0.0004      | <b>0.0029</b> | < 0.0002     | < 0.0002    | 0.001       | < 0.001      | < 0.001      |
| Chromium (VI)          | mg/L     | 0.001   | -    | -          | -           | -             | -            | -             | -           | -             | -            | -           | -           | -            | -            |
| Cobalt                 | mg/L     | 0.0009  | -    | < 0.00050  | < 0.005     | < 0.005       | <0.005       | <0.005        | < 0.005     | < 0.005       | < 0.005      | < 0.005     | < 0.005     | < 0.005      | < 0.005      |
| Copper                 | mg/L     | 0.005   | -    | < 0.0010   | 0.0007      | 0.0007        | 0.0003       | 0.0005        | 0.0008      | 0.0009        | 0.0005       | 0.0003      | < 0.0001    | 0.0002       | 0.0014       |
| Lead                   | mg/L     | 0.005   | -    | < 0.00050  | 0.00038     | 0.00067       | 0.0001       | 0.00015       | 0.00019     | 0.00015       | 0.00067      | 0.00023     | 0.00017     | 0.00015      | 0.0004       |
| Mercury                | mg/L     | 0.0002  | -    | < 0.00001  | < 0.00002   | < 0.00002     | <0.00002     | < 0.00002     | < 0.00002   | < 0.00002     | 0.00003      | < 0.00002   | < 0.00002   | < 0.00002    | < 0.00002    |
| Molybdenum             | mg/L     | 0.04    | -    | < 0.00050  | < 0.0001    | 0.0001        | <0.0001      | <0.0001       | < 0.0001    | < 0.0001      | < 0.0001     | < 0.0001    | < 0.0001    | < 0.0001     | < 0.0001     |
| Nickel                 | mg/L     | 0.025   | -    | < 0.0010   | < 0.01      | < 0.01        | <0.01        | <0.01         | < 0.01      | 0.01          | < 0.01       | < 0.01      | < 0.01      | < 0.01       | < 0.01       |
| Selenium               | mg/L     | 0.1     | -    | < 0.0020   | < 0.001     | 0.001         | 0.002        | 0.003         | 0.001       | 0.002         | < 0.001      | < 0.001     | < 0.001     | < 0.001      | < 0.001      |
| Silver                 | mg/L     | 0.0001  | -    | < 0.00010  | < 0.00002   | < 0.00002     | <0.00002     | <0.00002      | < 0.00002   | < 0.00002     | < 0.00002    | < 0.00002   | < 0.00002   | < 0.00002    | < 0.0001     |
| Strontium              | mg/L     | -       | -    | 0.16       | --          | --            | --           | 0.171         | 0.168       | 0.173         | 0.161        | 0.155       | 0.134       | 0.153        | 0.152        |
| Thallium               | mg/L     | 0.0003  | -    | < 0.000050 | < 0.00005   | < 0.00005     | <0.00005     | < 0.00005     | < 0.00005   | < 0.00005     | < 0.00005    | < 0.00005   | < 0.00005   | < 0.00005    | < 0.00005    |
| Vanadium               | mg/L     | 0.006   | -    | 0.00067    | 0.0026      | <b>0.0074</b> | 0.0016       | <b>0.0067</b> | 0.0022      | 0.0016        | 0.0013       | 0.0014      | 0.0023      | 0.0011       | 0.0006       |
| Zinc                   | mg/L     | 0.02    | -    | <b>3.2</b> | <b>22.3</b> | <b>18.5</b>   | <b>23</b>    | <b>20.6</b>   | <b>23.1</b> | <b>26.3</b>   | <b>21.8</b>  | <b>20.9</b> | <b>23.3</b> | <b>24.3</b>  | <b>32.5</b>  |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             |          |         |            |            |            |            |            |            |            |            |            |           |           |           | DUP       |
|------------------------|----------|---------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-----------|-----------|-----------|-----------|
| Parameters             | Units    | PWQO    | WP1        | WP1        | WP1        | WP1        | WP1        | WP1        | WP1        | WP1        | WP1        | WP1       | WP1       | WP1       | WP2       |
|                        |          |         | 16-Oct-18  | 11-Apr-19  | 22-Oct-19  | 23-Apr-20  | 20-Oct-20  | 20-Apr-21  | 27-Oct-21  | 20-Apr-22  | 24-Oct-22  | 19-Apr-23 | 12-Oct-23 | 12-Oct-23 | 08-Jun-11 |
| Total Alkalinity       | mg/L     | -       | 223        | 202        | 205        | 183        | 200        | 175        | 258        | 233        | 297        | 204       | 287       | 294       | 240       |
| Calcium                | mg/L     | -       | 87.3       | 88.5       | 96.1       | 82.3       | 94.7       | 77.6       | 107        | 92.8       | 119        | 72.6      | 101       | 105       | 65.7      |
| Chloride               | mg/L     | -       | 16.5       | 40.1       | 31.7       | 22.9       | 17.6       | 13.8       | 16         | 14.6       | 27.7       | 17.5      | 18        | 18        | 29        |
| COD                    | mg/L     | -       | 10100      | 693        | 548        | 80         | 418        | 564        | 387        | 138        | 374        | 683       | 553       | 555       | 490       |
| Specific Conductivity  | umhos/cm | -       | 501        | 535        | 561        | 451        | 513        | 411        | 521        | 472        | 640        | 474       | 588       | 590       | 540       |
| DOC                    | mg/L     | -       | 18.7       | 14.5       | 16.5       | 15.5       | 17         | 15.6       | 20.5       | 16.4       | 21.1       | 9.1       | 26.5      | 24.8      | 17        |
| Fluoride               | mg/L     | -       | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1     | <0.1      | <0.1      | < 0.10    |
| Iron                   | mg/L     | 0.3     | 2.69       | 1.05       | 0.88       | 0.598      | 0.552      | 0.449      | 0.516      | 0.616      | 0.648      | 0.527     | 0.583     | 0.612     | <0.020    |
| Magnesium              | mg/L     | -       | 5.02       | 5.17       | 6.16       | 5.19       | 5.36       | 4.57       | 6.07       | 5.4        | 6.87       | 4.41      | 6.11      | 6.25      | 5.09      |
| Manganese              | mg/L     | -       | 0.493      | 0.515      | 0.484      | 0.477      | 0.514      | 0.476      | 0.575      | 0.597      | 0.689      | 0.437     | 0.522     | 0.543     | <0.010    |
| Nitrate                | mg/L     | -       | < 0.05     | < 0.05     | 0.05       | 0.09       | < 0.05     | 0.09       | < 0.05     | < 0.05     | < 0.05     | 0.14      | <0.05     | <0.05     | < 0.10    |
| Nitrite                | mg/L     | -       | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05     | < 0.05    | <0.05     | <0.05     | < 0.010   |
| pH Lab                 | pH unit  | 6.5-8.5 | 7.08       | 7.21       | 7.48       | 7.35       | 7.27       | 7.39       | 7.74       | 7.49       | 7.23       | 7.27      | 7.06      | 6.93      | 7.91      |
| Phenols                | mg/L     | 0.001   | 0.013      | < 0.002    | < 0.001    | < 0.002    | < 0.001    | 0.028      | 0.002      | < 0.001    | < 0.001    | < 0.001   | <0.005    | 0.011     | 0.0059    |
| Phosphorus             | mg/L     | 0.03    | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | < 0.1      | 0.1        | 0.2        | 0.1       | 0.2       | 0.2       | 16        |
| Potassium              | mg/L     | -       | 1.3        | 1.5        | 1.9        | 1.4        | 1.6        | 1.5        | 1.8        | 1.5        | 1.9        | 1.5       | 2.2       | 2.2       | 3.94      |
| Sodium                 | mg/L     | -       | 8.2        | 18.5       | 14.6       | 10.9       | 10.8       | 8.7        | 9.5        | 7.9        | 8.3        | 6.9       | 8.4       | 8.5       | 18.8      |
| Sulphate               | mg/L     | -       | 21         | < 1        | 19         | 7          | 33         | < 1        | 3          | 1          | < 1        | 3         | 4         | 3         | < 1       |
| Dissolved Solids       | mg/L     | -       | 278        | 278        | 295        | 242        | 285        | 213        | 300        | 266        | 344        | 229       | 305       | 306       | 276       |
| Tot Kjel N             | mg/L     | -       | 154        | 11.2       | 8.6        | 1.6        | 6          | 7.2        | 6.9        | 2.2        | 6.1        | 10.8      | 9.2       | 9.5       | 12        |
| Ammonia (NH3-N)        | mg/L     | -       | 1.44       | 0.61       | 0.72       | 0.39       | 0.55       | 0.44       | 0.54       | 0.69       | 0.75       | 2.09      | 0.82      | 0.87      | 1.2       |
| Ammonia - Unionized    | mg/L     | 0.02    |            | <0.01      | <0.01      | < 0.01     | < 0.01     | < 0.01     | < 0.01     | 0.01       | < 0.01     | < 0.01    | <0.01     | <0.01     |           |
| Hardness (CaCO3)       | mg/L     | -       | 239        | 242        | 266        | 227        | 259        | 213        | 292        | 254        | 326        | 200       | 278       | 288       | 180       |
| BOD                    | mg/L     | -       | 16         | < 3        | < 3        | 3          | < 3        | 4          | < 3        | < 3        | < 3        | < 3       | <3        | <3        | --        |
| Cyanide (free)         | mg/L     | -       | < 0.05     | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005   | <0.008    | <0.017    | --        |
| Total Suspended Solids | mg/L     | -       | 39000      | 1360       | 900        | 1100       | 1360       | 1620       | 1060       | 310        | 320        | 1480      | 750       | 1110      | --        |
| Aluminum               | mg/L     | 0.075   | 0.06       | 0.06       | 0.08       | 0.06       | 0.07       | 0.06       | 0.14       | 0.07       | 0.09       | 0.05      | 0.08      | 0.07      | 0.023     |
| Antimony               | mg/L     | 0.02    | 0.0002     | 0.0001     | < 0.0001   | < 0.0001   | 0.0001     | < 0.0001   | 0.0004     | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | 0.0002    | <0.2      |
| Arsenic                | mg/L     | 0.005   | 0.0014     | 0.0006     | 0.0003     | 0.0002     | 0.0003     | 0.0003     | 0.0004     | 0.0003     | 0.0003     | 0.0002    | 0.0003    | 0.0003    | <0.2      |
| Barium                 | mg/L     | -       | 0.041      | 0.034      | 0.043      | 0.028      | 0.036      | 0.026      | 0.041      | 0.03       | 0.045      | 0.026     | 0.04      | 0.041     | 0.09      |
| Beryllium              | mg/L     | 1.1     | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002   | <0.0001   | <0.0001   | <0.005    |
| Boron                  | mg/L     | -       | 0.005      | < 0.005    | 0.007      | < 0.005    | 0.011      | < 0.005    | 0.006      | < 0.005    | 0.005      | < 0.005   | <0.005    | <0.005    | <0.020    |
|                        |          |         |            |            |            |            |            |            |            |            |            | <         |           |           |           |
| Cadmium                | mg/L     | 0.0005  | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 | 0.000010  | 0.000010  | <0.000015 | <0.000015 |
| Chromium (total)       | mg/L     | 0.001   | < 0.001    | < 0.001    | < 0.001    | 0.001      | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001   | <0.001    | <0.001    | <0.010    |
| Chromium (VI)          | mg/L     | 0.001   |            |            |            |            |            |            |            | < 0.001    | < 0.001    | < 0.001   | <0.01     | <0.01     |           |
| Cobalt                 | mg/L     | 0.0009  | 0.0004     | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005   | 0.0003    | 0.0003    | <0.020    |
| Copper                 | mg/L     | 0.005   | 0.0001     | 0.0008     | 0.0007     | 0.0002     | 0.0013     | 0.0012     | 0.0009     | 0.0015     | 0.0006     | 0.0006    | 0.0005    | 0.0005    | <0.020    |
| Lead                   | mg/L     | 0.005   | 0.00006    | 0.00023    | 0.00011    | 0.00004    | 0.00012    | 0.00012    | 0.00042    | 0.00008    | 0.00004    | 0.00005   | 0.00006   | 0.00005   | <0.050    |
| Mercury                | mg/L     | 0.0002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002 | <0.00002  | <0.00002  | < 0.00001 |
| Molybdenum             | mg/L     | 0.04    | 0.0003     | 0.0001     | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | 0.0002     | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | <0.0001   | <0.020    |
| Nickel                 | mg/L     | 0.025   | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01    | 0.0003    | 0.0003    | <0.050    |
| Selenium               | mg/L     | 0.1     | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001    | < 0.001   | <0.001    | <0.001    | <0.2      |
| Silver                 | mg/L     | 0.0001  | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | <0.0001   | <0.010    |
| Strontium              | mg/L     | -       | 0.193      | 0.182      | 0.216      | 0.165      | 0.202      | 0.157      | 0.232      | 0.181      | 0.25       | 0.157     | 0.233     | 0.237     | 0.361     |
| Thallium               | mg/L     | 0.0003  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  | < 0.05     | < 0.00005  | < 0.00005  | < 0.00005 | <0.00005  | <0.00005  | --        |
| Vanadium               | mg/L     | 0.006   | 0.0004     | 0.0004     | 0.0004     | 0.0007     | 0.0002     | 0.0005     | 0.0009     | 0.0007     | 0.0002     | 0.0007    | 0.0004    | 0.0004    | 0.015     |
| Zinc                   | mg/L     | 0.02    | 9.6        | 4.33       | 2.32       | 0.967      | 0.884      | 0.406      | 0.84       | 0.444      | 0.149      | 0.354     | 0.201     | 0.2       | 0.025     |

ODWQS - Ontario Drinking Water Quality  
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Ground Water Quality - General  
Parameters

| Parameters             | Units    | PWQO    | WP2<br>11-Nov-11 | WP2<br>24-May-12 | WP2<br>22-May-13 | WP2<br>01-Oct-13 | WP2<br>24-Apr-14 | WP2<br>15-Oct-14 | WP2<br>17-Apr-15 | WP2<br>08-Oct-15 | WP2<br>28-Apr-16 | WP2<br>18-Apr-17 | WP2<br>24-Oct-17 | WP2<br>24-Apr-18 | WP2<br>16-Oct-18 |
|------------------------|----------|---------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Total Alkalinity       | mg/L     | -       | 240              | 280              | 268              | 293              | 833              | 906              | 977              | 919              | 1300             | 1110             | 393              | 902              | 571              |
| Calcium                | mg/L     | -       | 74               | 77               | 87.9             | 127              | 214              | 227              | 265              | 244              | 357              | 273              | 131              | 264              | 189              |
| Chloride               | mg/L     | -       | 37               | 59               | 106              | 133              | 176              | 184              | 203              | 199              | 219              | 223              | 34.5             | 205              | 75.5             |
| COD                    | mg/L     | -       | 73               | 100              | 109              | 1180             | 490              | 247              | 239              | 212              | 286              | 170              | 211              | 131              | 11000            |
| Specific Conductivity  | umhos/cm | -       | 560              | 680              | 827              | 964              | 1610             | 1890             | 2200             | 2130             | 2800             | 2540             | 849              | 2050             | 1360             |
| DOC                    | mg/L     | -       | 23               | 20               | 11               | 9.6              | 24.7             | 44.3             | 24               | 20.1             | 25               | 57.9             | 21.8             | 18.8             | 23               |
| Fluoride               | mg/L     | -       | < 0.10           | < 0.10           | < 0.1            | 0.1              | <0.1             | <0.1             | < 0.1            | < 0.1            | 0.5              | < 0.1            | < 0.1            | 0.2              | < 0.1            |
| Iron                   | mg/L     | 0.3     | <0.10            | <b>0.38</b>      | <b>1.12</b>      | <b>3.19</b>      | <b>6.86</b>      | <b>9.2</b>       | <b>6.31</b>      | < 0.005          | <b>20.1</b>      | <b>8.92</b>      | <b>3.07</b>      | <b>5.73</b>      | <b>12.2</b>      |
| Magnesium              | mg/L     | -       | 4.7              | 19               | 19.9             | 22.3             | 35.9             | 71.7             | 72.4             | 77.5             | 89.1             | 79               | 7.36             | 72.2             | 15.2             |
| Manganese              | mg/L     | -       | 0.0036           | 0.047            | 0.088            | 0.163            | 0.221            | 0.162            | 0.093            | 0.021            | 0.269            | 0.13             | 0.19             | 0.062            | 0.27             |
| Nitrate                | mg/L     | -       | < 0.10           | < 0.10           | < 0.1            | < 0.1            | <0.1             | <0.1             | < 0.1            | 0.1              | < 0.5            | < 0.1            | < 0.05           | < 0.05           | < 0.05           |
| Nitrite                | mg/L     | -       | < 0.010          | < 0.010          | < 0.1            | < 0.1            | <0.1             | <0.1             | < 0.1            | < 0.1            | < 0.5            | 0.1              | < 0.05           | < 0.05           | < 0.05           |
| pH Lab                 | pH unit  | 6.5-8.5 | 8.45             | 7.79             | 7.9              | 7.81             | 7.97             | 7.44             | 7.66             | 7.79             | 7.22             | 7.4              | 7.69             | 7.83             | 7.29             |
| Phenols                | mg/L     | 0.001   | <b>0.004</b>     | < 0.0010         | < 0.001          | < 0.001          | --               | --               | < 0.001          | < 0.001          | <b>0.021</b>     | <b>0.004</b>     | <b>0.007</b>     | < 0.001          | <b>0.03</b>      |
| Phosphorus             | mg/L     | 0.03    | <b>140</b>       | < 0.10           | < 0.1            | < 0.1            | <0.1             | <0.1             | < 0.1            | < 0.1            | < 0.1            | <0.1             | < 0.1            | < 0.1            | < 0.1            |
| Potassium              | mg/L     | -       | 2.9              | 3.3              | 2.6              | 2.6              | 3                | 4.8              | 3.9              | 3.7              | 4.7              | 4.2              | 0.6              | 4.5              | 25.5             |
| Sodium                 | mg/L     | -       | 20               | 19               | 19.4             | 30.5             | 43.2             | 95.9             | 100              | 112              | 135              | 123              | 23.4             | 147              | 70.7             |
| Sulphate               | mg/L     | -       | < 1              | < 1              | < 1              | < 1              | 5                | 19               | 21               | 4                | 48               | 23               | 1                | < 1              | 1                |
| Dissolved Solids       | mg/L     | -       | 294              | 360              | 400              | 496              | 985              | 1160             | 1260             | 1190             | 1650             | 1400             | 439              | 1241             | 759              |
| Tot Kjel N             | mg/L     | -       | 9.9              | 1.2              | 1.2              | 1.43             | 1.5              | 2.7              | 3.2              | 2.3              | 4.2              | 3.3              | 2.9              | 2.9              | 201              |
| Ammonia (NH3-N)        | mg/L     | -       | 0.7              | 0.77             | 0.687            | 0.42             | 0.72             | 0.9              | 0.71             | 0.66             | 0.87             | 0.75             | 1.36             | 0.48             | 20.7             |
| Ammonia - Unionized    | mg/L     | 0.02    |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Hardness (CaCO3)       | mg/L     | -       | 210              | 270              | 302              | 410              | 683              | 863              | 960              | 929              | 1260             | 1010             | 358              | 957              | 535              |
| BOD                    | mg/L     | -       | --               | 6                | < 3              | 6                | 6                | 9                | 3                | 27               | < 3              | 7                | < 3              | 5                | 16               |
| Cyanide (free)         | mg/L     | -       | --               | < 0.0020         | < 0.005          | < 0.005          | <0.005           | <0.005           | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.05           |
| Total Suspended Solids | mg/L     | -       | --               | 50000            | 30700            | 29600            | 35800            | 47800            | 29900            | 2320             | --               | 3150             | 540              | 640              | 18000            |
| Aluminum               | mg/L     | 0.075   | 0.058            | 0.0065           | 0.03             | 0.04             | 0.04             | 0.05             | 0.05             | 0.06             | 0.07             | <b>0.12</b>      | 0.07             | <b>0.11</b>      | <b>0.09</b>      |
| Antimony               | mg/L     | 0.02    | < 0.00050        | < 0.00050        | < 0.0001         | < 0.0001         | <0.0001          | 0.0002           | 0.0002           | 0.0004           | 0.0002           | 0.0001           | < 0.0001         | 0.0002           | 0.0002           |
| Arsenic                | mg/L     | 0.005   | < 0.0010         | < 0.0010         | 0.0012           | 0.0022           | 0.0011           | 0.0024           | 0.0006           | 0.0018           | 0.0009           | 0.0018           | 0.0006           | 0.0009           | 0.0007           |
| Barium                 | mg/L     | -       | 0.045            | 0.084            | 0.177            | 0.231            | 0.356            | 0.525            | 0.407            | 0.294            | 0.76             | 0.586            | 0.092            | 0.417            | 0.117            |
| Beryllium              | mg/L     | 1.1     | < 0.00050        | < 0.00050        | < 0.002          | < 0.002          | <0.002           | <0.002           | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          |
| Boron                  | mg/L     | -       | 0.011            | 0.013            | < 0.005          | < 0.005          | 0.035            | 0.059            | 0.049            | 0.048            | 0.024            | 0.059            | 0.008            | 0.04             | 0.145            |
| Cadmium                | mg/L     | 0.0005  | < 0.00010        | < 0.00010        | 0.00007          | < 0.00002        | <0.00002         | <0.00002         | < 0.00002        | < 0.00002        | < 0.00002        | < 0.000020       | 0.000015         | < 0.000015       | < 0.000015       |
| Chromium (total)       | mg/L     | 0.001   | < 0.0050         | < 0.0050         | < 0.0002         | <b>0.0216</b>    | <0.0002          | <b>0.0067</b>    | < 0.0002         | <b>0.0226</b>    | < 0.0002         | 0.001            | 0.001            | < 0.001          | < 0.001          |
| Chromium (VI)          | mg/L     | 0.001   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Cobalt                 | mg/L     | 0.0009  | < 0.00050        | < 0.00050        | < 0.005          | < 0.005          | <0.005           | <0.005           | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | <b>0.0011</b>    |
| Copper                 | mg/L     | 0.005   | 0.0015           | < 0.0010         | 0.001            | 0.0008           | 0.0005           | 0.0016           | 0.0014           | 0.0015           | 0.0015           | 0.0021           | 0.0004           | 0.0003           | 0.0005           |
| Lead                   | mg/L     | 0.005   | < 0.00050        | < 0.00050        | 0.00007          | 0.00013          | 0.00005          | 0.0001           | 0.00003          | < 0.00002        | 0.00006          | < 0.00002        | <b>0.0154</b>    | 0.00008          | 0.00003          |
| Mercury                | mg/L     | 0.0002  | < 0.00001        | < 0.00001        | < 0.00002        | < 0.00002        | <0.00002         | <0.00002         | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        |
| Molybdenum             | mg/L     | 0.04    | < 0.00050        | < 0.00050        | 0.0004           | 0.0003           | 0.0004           | 0.0003           | < 0.0001         | 0.0003           | 0.0002           | 0.0004           | 0.0001           | 0.0005           | 0.0004           |
| Nickel                 | mg/L     | 0.025   | < 0.0010         | < 0.0010         | < 0.01           | < 0.01           | <0.01            | <0.01            | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | 0.01             | < 0.01           |
| Selenium               | mg/L     | 0.1     | < 0.0020         | < 0.0020         | < 0.001          | < 0.001          | <0.001           | 0.007            | 0.003            | 0.004            | 0.001            | 0.001            | 0.002            | 0.003            | 0.001            |
| Silver                 | mg/L     | 0.0001  | < 0.00010        | < 0.00010        | < 0.00002        | < 0.00002        | <0.00002         | <0.00002         | < 0.00002        | < 0.00002        | 0.00002          | < 0.00002        | < 0.00002        | < 0.0001         | < 0.0001         |
| Strontium              | mg/L     | -       | 0.44             | 0.61             | --               | --               | --               | 1.67             | 1.81             | 1.77             | 2.49             | 1.76             | 0.308            | 1.8              | 0.526            |
| Thallium               | mg/L     | 0.0003  | < 0.000050       | < 0.000050       | < 0.00005        | < 0.00005        | <0.00005         | <0.00005         | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        |
| Vanadium               | mg/L     | 0.006   | 0.0043           | 0.0022           | 0.0028           | <b>0.0071</b>    | 0.0032           | <b>0.0232</b>    | <b>0.0061</b>    | <b>0.0087</b>    | <b>0.0074</b>    | <b>0.0067</b>    | 0.0027           | 0.0009           | 0.0004           |
| Zinc                   | mg/L     | 0.02    | <b>0.045</b>     | <b>0.048</b>     | <b>0.667</b>     | <b>2.93</b>      | <b>27</b>        | <b>6.29</b>      | <b>18</b>        | <b>1.58</b>      | <b>13</b>        | <b>14.7</b>      | <b>55.6</b>      | <b>18.8</b>      | <b>9.72</b>      |

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Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | PWQO    | WP2<br>12-Apr-19              | WP2<br>22-Oct-19 | WP2<br>23-Apr-20 | WP2<br>20-Oct-20 | WP2<br>20-Apr-21 | WP2<br>27-Oct-21 | WP2<br>21-Apr-22 | WP2<br>24-Oct-22 | WP2<br>19-Apr-23 | WP2<br>12-Oct-23 |
|------------------------|----------|---------|-------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Total Alkalinity       | mg/L     | -       | Well<br>Plugged,<br>No Sample | 277              | 470              | 446              | 421              | 534              | 483              | 520              | 514              | 492              |
| Calcium                | mg/L     | -       |                               | 178              | 177              | 171              | 147              | 173              | 156              | 171              | 164              | 144              |
| Chloride               | mg/L     | -       |                               | 35.3             | 40.8             | 29.5             | 30.2             | 21.6             | 27.9             | 29.9             | 30.9             | 19.6             |
| COD                    | mg/L     | -       |                               | 5100             | 682              | 1480             | 2040             | 2440             | 4520             | 620              | 1970             | 1930             |
| Specific Conductivity  | umhos/cm | -       |                               | 1120             | 1070             | 1070             | 933              | 1010             | 937              | 1060             | 1070             | 947              |
| DOC                    | mg/L     | -       |                               | 17.7             | 18.7             | 15.5             | 22.2             | 26.7             | 17.1             | 16.6             | 9.6              | 24.7             |
| Fluoride               | mg/L     | -       |                               | < 0.1            | < 0.1            | < 0.1            | < 0.1            | 0.1              | < 0.1            | < 0.1            | < 0.1            | <0.1             |
| Iron                   | mg/L     | 0.3     |                               | <b>1.01</b>      | <b>6.76</b>      | <b>8.08</b>      | 0.037            | <b>11.4</b>      | <b>13.9</b>      | <b>21</b>        | <b>18.3</b>      | <b>21.7</b>      |
| Magnesium              | mg/L     | -       |                               | 13.7             | 13.7             | 12.2             | 11.7             | 12.5             | 12               | 13.2             | 13.1             | 10.5             |
| Manganese              | mg/L     | -       |                               | 0.449            | 0.501            | 0.697            | 0.198            | 0.55             | 0.476            | 0.64             | 0.601            | 0.588            |
| Nitrate                | mg/L     | -       |                               | 1.57             | 0.48             | 0.64             | 0.17             | 0.83             | 0.09             | 0.85             | 0.09             | 0.29             |
| Nitrite                | mg/L     | -       |                               | < 0.05           | 0.06             | 0.05             | 0.08             | 0.05             | < 0.05           | < 0.05           | < 0.05           | <0.05            |
| pH Lab                 | pH unit  | 6.5-8.5 |                               | 7.66             | 7.62             | 7.43             | 7.5              | 7.8              | 7.56             | 7.33             | 7.55             | 7.21             |
| Phenols                | mg/L     | 0.001   |                               | < 0.001          | < 0.002          | < 0.001          | < 0.002          | < 0.002          | < 0.001          | < 0.001          | < 0.001          | <0.010           |
| Phosphorus             | mg/L     | 0.03    |                               | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | <b>0.1</b>       | < 0.1            | <b>0.2</b>       | <0.1             |
| Potassium              | mg/L     | -       |                               | 16.9             | 13.1             | 12.8             | 11.9             | 15.5             | 12.1             | 15.2             | 13.6             | 14.2             |
| Sodium                 | mg/L     | -       |                               | 61.5             | 51.9             | 67.6             | 42.2             | 51               | 41.1             | 46.7             | 43.3             | 45.5             |
| Sulphate               | mg/L     | -       |                               | 242              | 29               | 79               | 4                | 2                | 2                | < 1              | 1                | <1               |
| Dissolved Solids       | mg/L     | -       |                               | 718              | 622              | 649              | 504              | 616              | 564              | 618              | 594              | 504              |
| Tot Kjeh N             | mg/L     | -       |                               | 120              | 19.4             | 28.2             | 36.2             | 51.6             | 92.1             | 97.1             | 41.9             | 45               |
| Ammonia (NH3-N)        | mg/L     | -       |                               | 2.43             | 5.67             | 2.9              | 3.65             | 5.96             | 6.37             | 6.78             | 8.76             | 6.69             |
| Ammonia - Unionized    | mg/L     | 0.02    |                               | <0.01            | < 0.01           | < 0.01           | < 0.01           | <b>0.03</b>      | <b>0.13</b>      | 0.01             | <b>0.04</b>      | <0.01            |
| Hardness (CaCO3)       | mg/L     | -       |                               | 501              | 499              | 478              | 416              | 484              | 439              | 482              | 465              | 403              |
| BOD                    | mg/L     | -       |                               | 9                | 19               | 11               | 16               | 16               | 17               | 19               | 20               | <3               |
| Cyanide (free)         | mg/L     | -       |                               | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.05           | < 0.005          | < 0.05           | <0.085           |
| Total Suspended Solids | mg/L     | -       |                               | 7500             | 2200             | 4600             | 3350             | 3900             | 11100            | 7400             | 4280             | 3060             |
| Aluminum               | mg/L     | 0.075   |                               | <b>0.1</b>       | <b>0.09</b>      | <b>0.08</b>      | 0.07             | <b>0.09</b>      | <b>0.09</b>      | <b>0.08</b>      | 0.06             | <b>0.1</b>       |
| Antimony               | mg/L     | 0.02    |                               | 0.0005           | 0.0001           | 0.0002           | 0.0001           | 0.0002           | 0.0001           | 0.0001           | 0.0001           | 0.0002           |
| Arsenic                | mg/L     | 0.005   |                               | 0.0007           | 0.0012           | 0.0009           | 0.0011           | 0.0023           | 0.0017           | 0.0015           | 0.0013           | 0.0012           |
| Barium                 | mg/L     | -       |                               | 0.125            | 0.08             | 0.08             | 0.062            | 0.089            | 0.076            | 0.095            | 0.081            | 0.078            |
| Beryllium              | mg/L     | 1.1     |                               | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | <0.0001          |
| Boron                  | mg/L     | -       |                               | 0.363            | 0.16             | 0.247            | 0.118            | 0.132            | 0.076            | 0.11             | 0.089            | 0.135            |
| Cadmium                | mg/L     | 0.0005  |                               | 0.000016         | < 0.000015       | < 0.000015       | < 0.000015       | < 0.000015       | < 0.000015       | < 0.000012       | < 0.000010       | <0.000015        |
| Chromium (total)       | mg/L     | 0.001   |                               | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | <0.001           |
| Chromium (VI)          | mg/L     | 0.001   |                               |                  |                  |                  |                  |                  | < 0.001          | < 0.001          | < 0.001          | <0.01            |
| Cobalt                 | mg/L     | 0.0009  |                               | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | <b>0.0019</b>    |
| Copper                 | mg/L     | 0.005   |                               | 0.0009           | 0.0007           | 0.0017           | 0.0021           | 0.001            | 0.0007           | 0.0005           | 0.0003           | 0.0008           |
| Lead                   | mg/L     | 0.005   |                               | 0.0001           | 0.0001           | 0.0001           | 0.00012          | 0.00007          | 0.0001           | 0.00007          | 0.00006          | 0.00012          |
| Mercury                | mg/L     | 0.0002  |                               | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | <0.00002         |
| Molybdenum             | mg/L     | 0.04    |                               | 0.0026           | 0.0009           | 0.0007           | 0.0004           | 0.0006           | 0.0004           | 0.0008           | 0.0003           | 0.0004           |
| Nickel                 | mg/L     | 0.025   |                               | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | 0.0019           |
| Selenium               | mg/L     | 0.1     |                               | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | 0.001            | < 0.001          | <0.001           |
| Silver                 | mg/L     | 0.0001  |                               | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | <0.0001          |
| Strontium              | mg/L     | -       |                               | 0.6              | 0.456            | 0.448            | 0.394            | 0.459            | 0.389            | 0.447            | 0.438            | 0.402            |
| Thallium               | mg/L     | 0.0003  |                               | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.05           | < 0.00005        | < 0.00005        | < 0.00005        | <0.00005         |
| Vanadium               | mg/L     | 0.006   |                               | 0.0004           | 0.0002           | 0.0001           | 0.0002           | 0.0003           | 0.0002           | 0.0002           | 0.0003           | 0.0002           |
| Zinc                   | mg/L     | 0.02    |                               | <b>1.21</b>      | <b>1.55</b>      | <b>1.01</b>      | <b>0.204</b>     | <b>0.623</b>     | <b>0.627</b>     | <b>0.532</b>     | <b>0.479</b>     | <b>0.31</b>      |

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## Ground Water Quality - General Parameters

| Parameters             | Units    | PWQO    | CWQG | WP3        | WP3         | WP3           | WP3           | WP3            | WP3            | WP3           | WP3           | WP3            | WP3            | WP3            | WP3            |
|------------------------|----------|---------|------|------------|-------------|---------------|---------------|----------------|----------------|---------------|---------------|----------------|----------------|----------------|----------------|
|                        |          |         |      | 24-May-12  | 22-May-13   | 01-Oct-13     | 24-Apr-14     | 15-Oct-14      | 17-Apr-15      | 08-Oct-15     | 28-Apr-16     | 04-Oct-16      | 18-Apr-17      | 23-Oct-17      | 24-Apr-18      |
| Total Alkalinity       | mg/L     | -       | -    | 280        | 332         | 324           | 337           | 359            | 345            | 341           | 345           | 353            | 381            | 362            | 398            |
| Calcium                | mg/L     | -       | -    | 85         | 124         | 103           | 121           | 120            | 105            | 108           | 116           | 117            | 114            | 115            | 125            |
| Chloride               | mg/L     | -       | 120  | 30         | 36.4        | 35.3          | 35.8          | 35.8           | 34.7           | 31.9          | 34.9          | <b>216</b>     | 40.4           | 31.8           | 45.6           |
| COD                    | mg/L     | -       | -    | 190        | 167         | 67            | 60            | 76             | 73             | 68            | 65            | 52             | 97             | 37             | 110            |
| Specific Conductivity  | umhos/cm | -       | -    | 600        | 744         | 727           | 737           | 720            | 731            | 724           | 737           | 772            | 808            | 767            | 828            |
| DOC                    | mg/L     | -       | -    | 23         | 22.3        | 22.7          | 21.5          | 21             | 24.3           | 17.3          | 17.7          | 17             | 18.1           | 19.8           | 45             |
| Fluoride               | mg/L     | -       | -    | < 0.10     | < 0.1       | 0.1           | <0.1          | <0.1           | < 0.1          | < 0.1         | < 0.1         | < 0.1          | < 0.1          | < 0.1          | 0.7            |
| Iron                   | mg/L     | 0.3     | -    | <b>1.1</b> | <b>3.54</b> | <b>1.92</b>   | <b>3.36</b>   | <b>2.63</b>    | <b>3.92</b>    | <b>3.46</b>   | <b>3.88</b>   | <b>3.66</b>    | <b>3.49</b>    | <b>0.438</b>   | 0.01           |
| Magnesium              | mg/L     | -       | -    | 13         | 7.79        | 6.06          | 6.84          | 7.04           | 5.76           | 6.15          | 6.7           | 6.83           | 5.96           | 6.7            | 7.09           |
| Manganese              | mg/L     | -       | -    | 0.09       | 0.179       | 0.153         | 0.175         | 0.182          | 0.166          | 0.157         | 0.174         | 0.167          | 0.171          | 0.156          | 0.231          |
| Nitrate                | mg/L     | -       | 2.9  | < 0.10     | < 0.1       | 0.2           | <0.1          | <0.1           | < 0.1          | < 0.1         | < 0.1         | < 0.1          | < 0.1          | < 0.05         | < 0.05         |
| Nitrite                | mg/L     | -       | 0.06 | < 0.010    | < 0.1       | < 0.1         | <0.1          | <0.1           | < 0.1          | < 0.1         | < 0.1         | < 0.1          | < 0.1          | < 0.05         | < 0.05         |
| pH Lab                 | pH unit  | 6.5-8.5 | -    | 7.73       | 7.73        | 7.56          | 7.8           | 7.71           | 7.75           | 7.62          | 7.68          | 7.63           | 7.74           | 7.67           | 7.46           |
| Phenols                | mg/L     | 0.001   | -    | < 0.0010   | < 0.001     | < 0.001       | --            | --             | < 0.001        | < 0.001       | <b>0.022</b>  | < 0.001        | <b>0.004</b>   | <b>0.007</b>   | <b>0.004</b>   |
| Phosphorus             | mg/L     | 0.03    | -    | < 0.10     | < 0.1       | < 0.1         | <0.1          | <0.1           | < 0.1          | < 0.1         | < 0.1         | < 0.1          | < 0.1          | < 0.1          | < 0.1          |
| Potassium              | mg/L     | -       | -    | 1.2        | 0.6         | 0.7           | 0.5           | 0.6            | 0.5            | 0.6           | 0.9           | 0.6            | 0.4            | 0.8            | 1.1            |
| Sodium                 | mg/L     | -       | -    | 16         | 15.4        | 13.7          | 16.2          | 18.4           | 16.4           | 18.3          | 19.3          | 21.5           | 17.3           | 21.1           | 24.5           |
| Sulphate               | mg/L     | -       | -    | < 1        | < 1         | < 1           | <1            | <1             | < 1            | < 1           | < 1           | 47             | < 1            | 1              | < 1            |
| Dissolved Solids       | mg/L     | -       | -    | 324        | 390         | 358           | 388           | 402            | 376            | 375           | 390           | 627            | 412            | 396            | 445            |
| Tot Kjel N             | mg/L     | -       | -    | 3.5        | 1.6         | 1.98          | 1.5           | 1.9            | 2.1            | 2             | 2             | 2.1            | 2.4            | 2.2            | 4              |
| Ammonia (NH3-N)        | mg/L     | -       | -    | 1.5        | 1.3         | 1.15          | 1.24          | 1.2            | 1.14           | 1.26          | 1.33          | 1.45           | 1.45           | 1.35           | 1.53           |
| Ammonia - Unionized    | mg/L     | 0.02    | -    |            |             |               |               |                |                |               |               |                |                |                |                |
| Hardness (CaCO3)       | mg/L     | -       | -    | 260        | 343         | 283           | 329           | 329            | 287            | 295           | 317           | 321            | 309            | 315            | 342            |
| BOD                    | mg/L     | -       | -    | 7          | < 3         | < 3           | 3             | <3             | < 2            | < 3           | < 3           | < 3            | 7              | < 3            | 4              |
| Cyanide (free)         | mg/L     | -       | -    | < 0.0020   | < 0.005     | < 0.005       | <0.005        | <0.005         | < 0.005        | < 0.005       | < 0.005       | < 0.005        | < 0.005        | < 0.005        | < 0.005        |
| Total Suspended Solids | mg/L     | -       | -    | 2700       | 21200       | 696           | 102           | 262            | 1640           | 130           | --            | --             | 4500           | 2900           | 1350           |
| Aluminum               | mg/L     | 0.075   | -    | 0.017      | 0.07        | 0.04          | 0.04          | 0.03           | 0.03           | 0.04          | 0.05          | 0.05           | 0.07           | <b>0.2</b>     | 0.07           |
| Antimony               | mg/L     | 0.02    | -    | < 0.00050  | < 0.0001    | 0.0001        | <0.0001       | <0.0001        | 0.0002         | 0.0002        | < 0.0001      | 0.0003         | < 0.0001       | < 0.0001       | 0.0001         |
| Arsenic                | mg/L     | 0.005   | -    | < 0.0010   | 0.0006      | 0.0009        | 0.0008        | 0.0012         | 0.0008         | 0.0011        | 0.0007        | 0.0003         | 0.0004         | 0.0004         | < 0.0001       |
| Barium                 | mg/L     | -       | -    | 0.027      | 0.061       | 0.061         | 0.053         | 0.056          | 0.054          | 0.053         | 0.05          | 0.057          | 0.076          | 0.093          | 0.128          |
| Beryllium              | mg/L     | 1.1     | -    | < 0.00050  | < 0.002     | < 0.002       | <0.002        | <0.002         | < 0.002        | < 0.002       | < 0.002       | < 0.002        | < 0.002        | < 0.002        | < 0.002        |
| Boron                  | mg/L     | -       | 1.5  | 0.016      | < 0.005     | < 0.005       | 0.006         | 0.008          | 0.006          | 0.009         | < 0.005       | < 0.005        | 0.029          | 0.009          | 0.005          |
| Cadmium                | mg/L     | 0.0005  | -    | < 0.00010  | 0.00009     | < 0.00002     | <0.00002      | <0.00002       | 0.00004        | < 0.00002     | < 0.00002     | < 0.00002      | < 0.000020     | < 0.000014     | < 0.000015     |
| Chromium (total)       | mg/L     | 0.001   | -    | < 0.0050   | < 0.0002    | <b>0.023</b>  | <0.0002       | <b>0.0082</b>  | 0.0009         | <b>0.004</b>  | < 0.0002      | < 0.0002       | <b>0.002</b>   | < 0.001        | < 0.001        |
| Chromium (VI)          | mg/L     | 0.001   | -    |            |             |               |               |                |                |               |               |                |                |                |                |
| Cobalt                 | mg/L     | 0.0009  | -    | < 0.00050  | < 0.005     | < 0.005       | <0.005        | <0.005         | < 0.005        | < 0.005       | < 0.005       | < 0.005        | < 0.005        | < 0.005        | <b>0.006</b>   |
| Copper                 | mg/L     | 0.005   | -    | < 0.0010   | 0.0009      | 0.0018        | 0.0006        | 0.0009         | 0.0014         | 0.0009        | 0.0009        | 0.0004         | 0.0004         | 0.0004         | 0.0005         |
| Lead                   | mg/L     | 0.005   | -    | 0.0032     | 0.00466     | <b>0.0225</b> | <b>0.0112</b> | <b>0.00548</b> | <b>0.00596</b> | <b>0.0179</b> | <b>0.0391</b> | <b>0.00761</b> | <b>0.00759</b> | <b>0.00878</b> | <b>0.00759</b> |
| Mercury                | mg/L     | 0.0002  | -    | < 0.00001  | < 0.00002   | < 0.00002     | <0.00002      | < 0.00002      | < 0.00002      | < 0.00002     | < 0.00002     | < 0.00002      | < 0.00002      | < 0.00002      | < 0.00002      |
| Molybdenum             | mg/L     | 0.04    | -    | < 0.00050  | 0.0001      | 0.0001        | 0.0001        | 0.0002         | < 0.0001       | 0.0001        | 0.0001        | 0.0001         | < 0.0001       | < 0.0001       | 0.0002         |
| Nickel                 | mg/L     | 0.025   | -    | < 0.0010   | < 0.01      | < 0.01        | <0.01         | <0.01          | < 0.01         | < 0.01        | < 0.01        | < 0.01         | < 0.01         | < 0.01         | < 0.01         |
| Selenium               | mg/L     | 0.1     | -    | < 0.0020   | < 0.001     | 0.002         | 0.002         | 0.005          | 0.003          | 0.004         | 0.002         | 0.002          | 0.001          | 0.001          | < 0.001        |
| Silver                 | mg/L     | 0.0001  | -    | < 0.00010  | < 0.00002   | 0.00002       | <0.00002      | 0.00003        | < 0.00002      | 0.00003       | < 0.00002     | 0.00002        | 0.00004        | < 0.00002      | < 0.0001       |
| Strontium              | mg/L     | -       | -    | 0.33       | --          | --            | --            | 0.309          | 0.271          | 0.273         | 0.291         | 0.285          | 0.229          | 0.276          | 0.311          |
| Thallium               | mg/L     | 0.0003  | -    | 0.00009    | < 0.00005   | < 0.00005     | <0.00005      | <0.00005       | < 0.00005      | < 0.00005     | < 0.00005     | < 0.00005      | < 0.00005      | < 0.00005      | < 0.00005      |
| Vanadium               | mg/L     | 0.006   | -    | 0.0022     | 0.0048      | <b>0.0069</b> | 0.003         | <b>0.01</b>    | 0.0038         | 0.0027        | 0.0031        | 0.0029         | 0.0035         | 0.0013         | 0.0018         |
| Zinc                   | mg/L     | 0.02    | -    | <b>1.2</b> | <b>6.1</b>  | <b>25.2</b>   | <b>29.6</b>   | <b>64</b>      | <b>56.5</b>    | <b>72.3</b>   | <b>37.9</b>   | <b>61.3</b>    | <b>76.4</b>    | <b>37.3</b>    | <b>112</b>     |

ODWQS - Ontario Drinking Water Quality Standards  
 Bold and highlighted indicates exceedance



Ground Water Quality - General  
Parameters

| Parameters             | Units    | PWQO    | CWQG | WP3          | WP3          | WP3          | WP3          | WP3         | WP3          | WP3          | WP3         | WP3          | WP3         | WP3           | WP4           |
|------------------------|----------|---------|------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|-------------|--------------|-------------|---------------|---------------|
|                        |          |         |      | 16-Oct-18    | 12-Apr-19    | 22-Oct-19    | 23-Apr-20    | 20-Oct-20   | 20-Apr-21    | 27-Oct-21    | 21-Apr-22   | 24-Oct-22    | 19-Apr-23   | 12-Oct-23     | 24-May-12     |
| Total Alkalinity       | mg/L     | -       | -    | 307          | 321          | 334          | 336          | 313         | 339          | 387          | 415         | 377          | 356         | 2950          | 1600          |
| Calcium                | mg/L     | -       | -    | 108          | 114          | 130          | 132          | 121         | 127          | 135          | 127         | 128          | 133         | 392           | 260           |
| Chloride               | mg/L     | -       | 120  | 29.6         | 30           | 28.8         | 36.4         | 32.4        | 35.8         | 31.8         | 31.5        | 36.4         | 26          | 93.4          | <b>170</b>    |
| COD                    | mg/L     | -       | -    | 3820         | 354          | 460          | 74           | 694         | 393          | 521          | 148         | 624          | 223         | 697           | 480           |
| Specific Conductivity  | umhos/cm | -       | -    | 632          | 725          | 799          | 804          | 762         | 816          | 788          | 829         | 805          | 761         | 8450          | 3500          |
| DOC                    | mg/L     | -       | -    | 22.8         | 19.5         | 21.5         | 18.5         | 17.5        | 19.7         | 25           | 16.7        | 19.9         | 18.5        | 107           | 110           |
| Fluoride               | mg/L     | -       | -    | < 0.1        | < 0.1        | < 0.1        | < 0.1        | < 0.1       | < 0.1        | < 0.1        | < 0.1       | < 0.1        | < 0.1       | < 0.1         | < 0.10        |
| Iron                   | mg/L     | 0.3     | -    | <b>1.97</b>  | <b>0.933</b> | <b>0.729</b> | <b>0.674</b> | <b>2.01</b> | <b>1.28</b>  | <b>0.684</b> | <b>2.27</b> | <b>1.29</b>  | <b>1.4</b>  | <b>1.98</b>   | <b>4</b>      |
| Magnesium              | mg/L     | -       | -    | 7.96         | 8.67         | 10           | 11.1         | 9.52        | 10.4         | 9.76         | 10.5        | 9.79         | 10.8        | 74.7          | 38            |
| Manganese              | mg/L     | -       | -    | 0.162        | 0.165        | 0.187        | 0.174        | 0.198       | 0.215        | 0.202        | 0.22        | 0.221        | 0.235       | 1.39          | 0.21          |
| Nitrate                | mg/L     | -       | 2.9  | < 0.05       | < 0.05       | 0.08         | 0.07         | < 0.05      | 0.05         | < 0.05       | < 0.05      | 0.14         | 0.13        | <0.05         | < 0.10        |
| Nitrite                | mg/L     | -       | 0.06 | < 0.05       | < 0.05       | < 0.05       | < 0.05       | < 0.05      | < 0.05       | < 0.05       | < 0.05      | < 0.05       | < 0.05      | <0.05         | < 0.010       |
| pH Lab                 | pH unit  | 6.5-8.5 | -    | 7.54         | 7.5          | 7.98         | 7.72         | 7.63        | 7.65         | 7.91         | 7.75        | 7.53         | 7.74        | 7.34          | 7.5           |
| Phenols                | mg/L     | 0.001   | -    | <b>0.038</b> | < 0.002      | < 0.001      | < 0.002      | < 0.001     | <b>0.006</b> | < 0.002      | 0.001       | < 0.001      | < 0.001     | <0.020        | <b>0.013</b>  |
| Phosphorus             | mg/L     | 0.03    | -    | <b>0.2</b>   | <b>0.2</b>   | <b>0.1</b>   | <b>0.1</b>   | <b>0.1</b>  | < 0.1        | < 0.1        | <b>0.1</b>  | <b>0.2</b>   | <b>0.2</b>  | <b>0.1</b>    | < 0.10        |
| Potassium              | mg/L     | -       | -    | 10.1         | 9.5          | 12.3         | 11.2         | 12          | 12.3         | 12.8         | 11.3        | 11.3         | 11.5        | 294           | 170           |
| Sodium                 | mg/L     | -       | -    | 27.8         | 29.8         | 32.9         | 34.9         | 32.6        | 43.6         | 34.4         | 36.7        | 27.1         | 29.6        | 780           | 220           |
| Sulphate               | mg/L     | -       | -    | < 1          | < 1          | 26           | 43           | 33          | 15           | 2            | 1           | < 1          | < 1         | <1            | < 1           |
| Dissolved Solids       | mg/L     | -       | -    | 375          | 390          | 446          | 475          | 431         | 452          | 462          | 473         | 444          | 426         | 4840          | 1960          |
| Tot Kjel N             | mg/L     | -       | -    | 65.4         | 9.8          | 11.9         | 3.8          | 13.5        | 5.7          | 13.4         | 11.7        | 13.1         | 5.6         | 525           | 98            |
| Ammonia (NH3-N)        | mg/L     | -       | -    | 3.96         | 3.1          | 3.36         | 2.66         | 2.44        | 2.09         | 2.16         | 2.71        | 2.45         | 2.64        | 437           | 99            |
| Ammonia - Unionized    | mg/L     | 0.02    | -    |              | <b>0.05</b>  | 0.02         | < 0.01       | < 0.01      | < 0.01       | 0.02         | <b>0.08</b> | < 0.01       | 0.01        | <0.01         |               |
| Hardness (CaCO3)       | mg/L     | -       | -    | 303          | 321          | 366          | 376          | 342         | 360          | 378          | 361         | 360          | 376         | 1290          | 810           |
| BOD                    | mg/L     | -       | -    | 6            | < 3          | < 3          | < 3          | < 3         | < 3          | < 3          | 5           | 4            | 5           | 22            | 16            |
| Cyanide (free)         | mg/L     | -       | -    | < 0.05       | < 0.005      | < 0.005      | < 0.005      | < 0.005     | < 0.005      | < 0.005      | < 0.005     | < 0.005      | < 0.005     | <0.017        | < 0.0020      |
| Total Suspended Solids | mg/L     | -       | -    | 5000         | 160          | 920          | 68           | 3200        | 1640         | 1340         | 3550        | 1420         | 465         | 2640          | 460           |
| Aluminum               | mg/L     | 0.075   | -    | 0.07         | 0.06         | <b>0.08</b>  | <b>0.09</b>  | 0.07        | <b>0.11</b>  | <b>0.1</b>   | <b>0.09</b> | 0.05         | <b>0.08</b> | <b>0.19</b>   | 0.05          |
| Antimony               | mg/L     | 0.02    | -    | < 0.0001     | 0.0001       | 0.0001       | < 0.0001     | 0.0001      | 0.0002       | 0.0004       | 0.0001      | < 0.0001     | < 0.0001    | 0.0014        | < 0.00050     |
| Arsenic                | mg/L     | 0.005   | -    | 0.0003       | 0.0003       | 0.0004       | 0.0002       | 0.0004      | 0.0002       | 0.0003       | 0.0004      | 0.0004       | 0.0004      | 0.0035        | < 0.0010      |
| Barium                 | mg/L     | -       | -    | 0.044        | 0.042        | 0.05         | 0.044        | 0.047       | 0.044        | 0.05         | 0.045       | 0.05         | 0.047       | 0.322         | 1.2           |
| Beryllium              | mg/L     | 1.1     | -    | < 0.002      | < 0.002      | < 0.002      | < 0.002      | < 0.002     | < 0.002      | < 0.002      | < 0.002     | < 0.002      | < 0.002     | <0.0001       | < 0.00050     |
| Boron                  | mg/L     | -       | 1.5  | 0.03         | 0.026        | 0.071        | 0.048        | 0.108       | 0.07         | 0.092        | 0.05        | 0.083        | 0.051       | <b>3.26</b>   | 0.5           |
|                        |          |         |      |              |              |              |              |             |              |              |             |              | <           |               |               |
| Cadmium                | mg/L     | 0.0005  | -    | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000015   | < 0.000015  | < 0.000015   | < 0.000015   | < 0.000015  | < 0.000010   | 0.000010    | <0.000030     | < 0.00010     |
| Chromium (total)       | mg/L     | 0.001   | -    | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001     | < 0.001      | < 0.001      | < 0.001     | < 0.001      | < 0.001     | <b>0.007</b>  | < 0.0050      |
| Chromium (VI)          | mg/L     | 0.001   | -    |              |              |              |              |             |              |              | < 0.001     | < 0.001      | < 0.001     | <0.01         |               |
| Cobalt                 | mg/L     | 0.0009  | -    | 0.0004       | < 0.005      | < 0.005      | < 0.005      | < 0.005     | < 0.005      | < 0.005      | < 0.005     | < 0.005      | < 0.005     | <b>0.0163</b> | <b>0.0079</b> |
| Copper                 | mg/L     | 0.005   | -    | 0.0005       | 0.0009       | 0.0015       | 0.0005       | 0.0018      | 0.0006       | 0.0009       | 0.0015      | 0.0007       | 0.0003      | 0.0008        | 0.0011        |
| Lead                   | mg/L     | 0.005   | -    | 0.00077      | 0.00036      | 0.00037      | 0.00008      | 0.00021     | 0.00019      | 0.00028      | 0.00036     | 0.00011      | 0.00011     | 0.00012       | 0.00064       |
| Mercury                | mg/L     | 0.0002  | -    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002    | < 0.00002    | 0.00003     | < 0.00002    | < 0.00002   | <0.00002      | < 0.00001     |
| Molybdenum             | mg/L     | 0.04    | -    | 0.0001       | 0.0001       | 0.0002       | < 0.0001     | 0.0001      | 0.0002       | 0.0002       | 0.0003      | 0.0001       | < 0.0001    | 0.0008        | < 0.00050     |
| Nickel                 | mg/L     | 0.025   | -    | < 0.01       | < 0.01       | < 0.01       | < 0.01       | < 0.01      | < 0.01       | < 0.01       | < 0.01      | < 0.01       | < 0.01      | <b>0.0434</b> | 0.009         |
| Selenium               | mg/L     | 0.1     | -    | < 0.001      | < 0.001      | < 0.001      | < 0.001      | < 0.001     | < 0.001      | < 0.001      | < 0.001     | 0.001        | < 0.001     | 0.008         | < 0.0020      |
| Silver                 | mg/L     | 0.0001  | -    | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001     | < 0.0001    | <0.0001       | < 0.00010     |
| Strontium              | mg/L     | -       | -    | 0.279        | 0.274        | 0.336        | 0.311        | 0.315       | 0.332        | 0.342        | 0.333       | 0.333        | 0.345       | 1.82          | 0.67          |
| Thallium               | mg/L     | 0.0003  | -    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005   | < 0.00005    | < 0.05       | < 0.00005   | < 0.00005    | < 0.00005   | <0.00005      | < 0.000050    |
| Vanadium               | mg/L     | 0.006   | -    | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001     | < 0.0001     | 0.0001      | < 0.0001     | < 0.0001    | 0.0022        | <b>0.0074</b> |
| Zinc                   | mg/L     | 0.02    | -    | <b>7.26</b>  | <b>4.75</b>  | <b>3.11</b>  | <b>2.44</b>  | <b>1.54</b> | <b>1.34</b>  | <b>1.42</b>  | <b>1.02</b> | <b>0.565</b> | <b>1.02</b> | <b>0.049</b>  | <b>38</b>     |

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Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | PWQO    | CWQG | WP4<br>22-May-13 | WP4<br>01-Oct-13 | WP4<br>24-Apr-14 | WP4<br>16-Oct-14 | WP4<br>17-Apr-15 | WP4<br>08-Oct-15 | WP4<br>28-Apr-16 | WP4<br>04-Oct-16 | WP4<br>18-Apr-17 | WP4<br>24-Apr-18 | WP4<br>16-Oct-18 | WP4<br>12-Apr-19 |
|------------------------|----------|---------|------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Total Alkalinity       | mg/L     | -       | -    | 1800             | 1640             | 1700             | 1680             | 1700             | 1670             | 1530             | 1510             | 1550             | 478              | 515              | 600              |
| Calcium                | mg/L     | -       | -    | 262              | 274              | 264              | 308              | 308              | 303              | 291              | 289              | 311              | 140              | 121              | 170              |
| Chloride               | mg/L     | -       | 120  | <b>184</b>       | <b>166</b>       | <b>154</b>       | <b>162</b>       | <b>162</b>       | <b>142</b>       | <b>178</b>       | <b>175</b>       | <b>265</b>       | 20.4             | 54.1             | 75.8             |
| COD                    | mg/L     | -       | -    | 362              | 432              | 266              | 274              | 282              | 265              | 234              | 251              | 248              | 89               | 2200             | 1180             |
| Specific Conductivity  | umhos/cm | -       | -    | 3820             | 3430             | 3290             | 3230             | 4350             | 3390             | 3260             | 3410             | 3470             | 912              | 1230             | 1480             |
| DOC                    | mg/L     | -       | -    | 19.8             | 106              | 95               | 92.8             | 96.9             | 91.4             | 72               | 31.8             | 79.1             | 26.1             | 57.4             | 29.8             |
| Fluoride               | mg/L     | -       | -    | 0.2              | 0.1              | <0.1             | 0.5              | 0.2              | < 0.1            | < 0.1            | 0.2              | 0.1              | < 0.1            | < 0.1            | < 0.1            |
| Iron                   | mg/L     | 0.3     | -    | <b>2.15</b>      | <b>5.73</b>      | <b>5.55</b>      | <b>15.2</b>      | <b>12.9</b>      | <b>2.9</b>       | <b>6.17</b>      | <b>2.08</b>      | <b>4.6</b>       | 0.04             | <b>22.2</b>      |                  |
| Magnesium              | mg/L     | -       | -    | 36.8             | 33.3             | 40.5             | 37.5             | 45.2             | 44.7             | 56.6             | 52.4             | 44.3             | 20.7             | 16               | 22.2             |
| Manganese              | mg/L     | -       | -    | 0.151            | 0.139            | 0.201            | 0.202            | 0.177            | 0.132            | 0.189            | 0.135            | 0.191            | 0.001            | 0.308            | 0.291            |
| Nitrate                | mg/L     | -       | 2.9  | < 0.1            | < 0.1            | <0.1             | <0.1             | < 0.1            | < 0.1            | 0.1              | < 0.1            | < 0.1            | 0.17             | < 0.05           | < 0.05           |
| Nitrite                | mg/L     | -       | 0.06 | < 0.1            | < 0.1            | <0.1             | <0.1             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.05           | < 0.05           | < 0.05           |
| pH Lab                 | pH unit  | 6.5-8.5 | -    | 7.47             | 7.36             | 7.55             | 7.5              | 7.67             | 7.53             | 7.57             | 7.52             | 7.57             | 7.84             | 7.47             | 7.32             |
| Phenols                | mg/L     | 0.001   | -    | <b>0.005</b>     | <b>0.006</b>     | --               | --               | < 0.001          | < 0.001          | <b>0.024</b>     | <b>0.02</b>      | <b>0.007</b>     | 0.001            | < 0.01           | <b>0.03</b>      |
| Phosphorus             | mg/L     | 0.03    | -    | <b>0.04</b>      | < 0.1            | <0.1             | <0.1             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | <0.1             | < 0.1            | < 0.1            | < 0.1            |
| Potassium              | mg/L     | -       | -    | 185              | 174              | 186              | 185              | 179              | 188              | 165              | 174              | 177              | 26.6             | 53.5             | 74.9             |
| Sodium                 | mg/L     | -       | -    | 201              | 194              | 159              | 191              | 180              | 170              | 118              | 144              | 148              | 25.8             | 55.5             | 74.9             |
| Sulphate               | mg/L     | -       | -    | 65               | 33               | 103              | 52               | 69               | 49               | 69               | 11               | 37               | 4                | 19               | 21               |
| Dissolved Solids       | mg/L     | -       | -    | 2270             | 2000             | 2130             | 2110             | 2120             | 2040             | 1940             | 1890             | 2060             | 530              | 689              | 839              |
| Tot Kjel N             | mg/L     | -       | -    | 219              | 121              | 154              | 114              | 111              | 136              | 139              | 108              | 102              | 13.2             | 383              | 50.9             |
| Ammonia (NH3-N)        | mg/L     | -       | -    | 198              | 104              | 149              | 114              | 110              | 110              | 104              | 108              | 105              | 4.51             | 29.7             | 30.8             |
| Ammonia - Unionized    | mg/L     | 0.02    | -    |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | <b>0.36</b>      |
| Hardness (CaCO3)       | mg/L     | -       | -    | 806              | 821              | 826              | 923              | 957              | 942              | 960              | 939              | 960              | 435              | 368              | 516              |
| BOD                    | mg/L     | -       | -    | < 3              | < 3              | <3               | 6                | < 2              | 13               | 4                | < 3              | 5                | 4                | 14               | < 3              |
| Cyanide (free)         | mg/L     | -       | -    | < 0.005          | < 0.005          | <0.005           | <0.005           | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.05           | < 0.005          |
| Total Suspended Solids | mg/L     | -       | -    | 2650             | 570              | 320              | 170              | 184              | 65               | --               | --               | 105              | 760              | 29000            | 10500            |
| Aluminum               | mg/L     | 0.075   | -    | <b>0.12</b>      | <b>0.09</b>      | <b>0.11</b>      | 0.07             | <b>0.09</b>      | <b>0.08</b>      | <b>0.11</b>      | <b>0.09</b>      | <b>0.08</b>      | 0.07             | <b>0.08</b>      | <b>0.1</b>       |
| Antimony               | mg/L     | 0.02    | -    | 0.0006           | 0.0004           | 0.0003           | 0.0004           | 0.0005           | 0.0006           | 0.0007           | 0.0006           | 0.0003           | 0.0002           | 0.0005           | 0.0003           |
| Arsenic                | mg/L     | 0.005   | -    | 0.0039           | <b>0.0051</b>    | <0.0001          | <b>0.0063</b>    | 0.0036           | 0.0044           | 0.0017           | 0.0024           | 0.0026           | 0.002            | 0.0016           | 0.0012           |
| Barium                 | mg/L     | -       | -    | 1.36             | 1.17             | 1.27             | 1.35             | 1.28             | 1.27             | 1.14             | 1.11             | 1.31             | 0.048            | 0.131            | 0.225            |
| Beryllium              | mg/L     | 1.1     | -    | < 0.002          | < 0.002          | <0.002           | <0.002           | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          |
| Boron                  | mg/L     | -       | 1.5  | 0.663            | 0.453            | 0.57             | 0.451            | 0.474            | 0.545            | 0.567            | 0.635            | 0.594            | 0.309            | 0.369            | 0.323            |
| Cadmium                | mg/L     | 0.0005  | -    | 0.00009          | 0.00008          | <0.00002         | 0.00005          | 0.00005          | 0.00009          | 0.00025          | 0.00005          | 0.000061         | 0.000198         | < 0.000015       | < 0.000015       |
| Chromium (total)       | mg/L     | 0.001   | -    | < 0.0002         | <b>0.159</b>     | <0.0002          | <b>0.0245</b>    | < 0.0002         | <b>0.028</b>     | < 0.0002         | < 0.0002         | <b>0.003</b>     | < 0.001          | < 0.001          | < 0.001          |
| Chromium (VI)          | mg/L     | 0.001   | -    |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Cobalt                 | mg/L     | 0.0009  | -    | <b>0.01</b>      | <b>0.008</b>     | <b>0.006</b>     | <0.005           | <b>0.009</b>     | <b>0.007</b>     | < 0.005          | < 0.005          | <b>0.008</b>     | < 0.005          | <b>0.0012</b>    | < 0.005          |
| Copper                 | mg/L     | 0.005   | -    | 0.0018           | 0.0037           | 0.0017           | 0.0021           | 0.0021           | 0.0018           | 0.0018           | 0.0013           | 0.0027           | <b>0.0062</b>    | 0.0014           | 0.0008           |
| Lead                   | mg/L     | 0.005   | -    | 0.00096          | 0.00091          | 0.00037          | 0.00061          | 0.00037          | 0.00056          | 0.00184          | 0.00048          | 0.00077          | <b>0.0116</b>    | 0.00009          | 0.00008          |
| Mercury                | mg/L     | 0.0002  | -    | < 0.00002        | < 0.00002        | <0.00002         | <0.00002         | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | 0.00008          | <b>0.00112</b>   | < 0.00002        |
| Molybdenum             | mg/L     | 0.04    | -    | 0.0003           | 0.0002           | 0.0002           | 0.0004           | < 0.0001         | 0.0002           | 0.0002           | 0.0001           | 0.0001           | < 0.0001         | 0.001            | 0.0005           |
| Nickel                 | mg/L     | 0.025   | -    | 0.01             | < 0.01           | <0.01            | <0.01            | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           |
| Selenium               | mg/L     | 0.1     | -    | 0.002            | 0.005            | <0.001           | 0.015            | 0.005            | 0.01             | 0.001            | 0.006            | < 0.001          | < 0.001          | < 0.001          | 0.002            |
| Silver                 | mg/L     | 0.0001  | -    | < 0.00002        | 0.00004          | <0.00002         | 0.00007          | < 0.00002        | 0.00004          | < 0.00002        | 0.00004          | 0.00005          | < 0.0001         | < 0.0001         | < 0.0001         |
| Strontium              | mg/L     | -       | -    | --               | --               | --               | 0.811            | 0.776            | 0.776            | 0.764            | 0.75             | 0.662            | 0.426            | 0.347            | 0.455            |
| Thallium               | mg/L     | 0.0003  | -    | < 0.00005        | < 0.00005        | <0.00005         | <0.00005         | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        |
| Vanadium               | mg/L     | 0.006   | -    | <b>0.0189</b>    | <b>0.0479</b>    | <b>0.0153</b>    | <b>0.0616</b>    | <b>0.0178</b>    | <b>0.0134</b>    | <b>0.0126</b>    | <b>0.0096</b>    | <b>0.0122</b>    | 0.0045           | 0.0001           | 0.0013           |
| Zinc                   | mg/L     | 0.02    | -    | <b>28.8</b>      | <b>68.8</b>      | <b>20.4</b>      | <b>193</b>       | <b>52.5</b>      | <b>135</b>       | <b>13.2</b>      | <b>108</b>       | <b>116</b>       | 0.008            | <b>6.86</b>      | <b>4.94</b>      |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | PWQO    | CWQG | WP4        | WP4        | WP4        | WP4        | WP4        | WP4        | WP4        | WP4       | WP4       | WP5       | WP5       | WP5       |
|------------------------|----------|---------|------|------------|------------|------------|------------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|
|                        |          |         |      | 22-Oct-19  | 23-Apr-20  | 20-Oct-20  | 20-Apr-21  | 27-Oct-21  | 21-Apr-22  | 24-Oct-22  | 19-Apr-23 | 12-Oct-23 | 22-May-13 | 16-Apr-15 | 27-Apr-16 |
| Total Alkalinity       | mg/L     | -       | -    | 1090       | 1100       | 925        | 778        | 548        | 990        | 557        | 911       | 663       | 232       | 291       | 245       |
| Calcium                | mg/L     | -       | -    | 235        | 258        | 192        | 184        | 155        | 183        | 152        | 206       | 143       | 82.6      | 84.7      | 87.5      |
| Chloride               | mg/L     | -       | 120  | 163        | 174        | 134        | 94.6       | 26.5       | 104        | 33.6       | 131       | 51.8      | 22.1      | 29.9      | 27.5      |
| COD                    | mg/L     | -       | -    | 650        | 253        | 2810       | 1100       | 308        | 656        | 391        | 487       | 226       | 1860      | 314       | 181       |
| Specific Conductivity  | umhos/cm | -       | -    | 2630       | 2610       | 2200       | 1870       | 1090       | 2060       | 1120       | 2120      | 1360      | 579       | 651       | 613       |
| DOC                    | mg/L     | -       | -    | 37.4       | 31.2       | 23.4       | 48.9       | 42.6       | 18.5       | 25.4       | 22.3      | 57.8      | 67.6      | 17.8      | 2.4       |
| Fluoride               | mg/L     | -       | -    | < 0.1      | < 1        | < 0.1      | < 0.1      | < 0.1      | < 0.5      | < 0.1      | < 0.1     | <0.1      | 0.2       | 0.1       | < 0.1     |
| Iron                   | mg/L     | 0.3     | -    | 1.92       | 1.85       | 1.11       | 2.24       | 1.18       | 1.75       | 1.22       | 0.22      | 0.932     | 23.4      | 21.9      | 1.71      |
| Magnesium              | mg/L     | -       | -    | 38.9       | 44.3       | 30.2       | 26.3       | 20.4       | 29.5       | 20.5       | 34.6      | 21        | 7.24      | 7.69      | 8.69      |
| Manganese              | mg/L     | -       | -    | 0.241      | 0.241      | 0.205      | 0.252      | 0.237      | 0.194      | 0.232      | 0.242     | 0.202     | 0.744     | 0.604     | 0.637     |
| Nitrate                | mg/L     | -       | 2.9  | 0.16       | < 0.5      | 0.24       | 0.05       | 0.23       | < 0.3      | 0.28       | < 0.05    | <0.40     | 0.2       | 0.1       | 0.2       |
| Nitrite                | mg/L     | -       | 0.06 | < 0.05     | < 0.5      | < 0.05     | 0.07       | < 0.05     | < 0.3      | < 0.05     | < 0.05    | <0.05     | < 0.1     | < 0.1     | < 0.1     |
| pH Lab                 | pH unit  | 6.5-8.5 | -    | 7.83       | 7.58       | 7.46       | 7.47       | 7.78       | 7.63       | 7.36       | 7.68      | 7.51      | 8.03      | 8.01      | 7.73      |
| Phenols                | mg/L     | 0.001   | -    | < 0.001    | < 0.002    | 0.033      | 0.039      | 0.003      | 0.007      | < 0.001    | 0.004     | 0.006     | < 0.001   | < 0.001   | 0.002     |
| Phosphorus             | mg/L     | 0.03    | -    | < 0.1      | 0.1        | < 0.1      | < 0.1      | < 0.1      | 0.1        | < 0.1      | < 0.1     | <0.1      | < 0.1     | < 0.1     | < 0.1     |
| Potassium              | mg/L     | -       | -    | 120        | 125        | 87         | 60.1       | 39.1       | 76.9       | 33.1       | 83.8      | 45.2      | 16.9      | 14.9      | 16.2      |
| Sodium                 | mg/L     | -       | -    | 163        | 167        | 101        | 84.5       | 41         | 106        | 33.2       | 106       | 47.2      | 24.8      | 22.2      | 26.6      |
| Sulphate               | mg/L     | -       | -    | 11         | < 10       | 22         | 19         | 23         | < 5        | 5          | < 1       | 2         | 24        | 5         | 31        |
| Dissolved Solids       | mg/L     | -       | -    | 1487       | 1518       | 1122       | 976        | 649        | 1154       | 623        | 1108      | 739       | 320       | 363       | 348       |
| Tot Kjel N             | mg/L     | -       | -    | 92.9       | 76.3       | 96.8       | 40         | 13.1       | 53.1       | 15.3       | 47.2      | 19.7      | 2.9       | 1.4       | 3.3       |
| Ammonia (NH3-N)        | mg/L     | -       | -    | 76.6       | 67.2       | 53.8       | 30         | 10.4       | 45         | 7.91       | 48.5      | 20        | 0.579     | 0.35      | 0.28      |
| Ammonia - Unionized    | mg/L     | 0.02    | -    | 0.25       | 0.18       | 0.11       | 0.03       | 0.02       | 1.06       | 0.02       | 0.11      | <0.01     |           |           |           |
| Hardness (CaCO3)       | mg/L     | -       | -    | 747        | 827        | 604        | 568        | 471        | 579        | 464        | 522       | 444       | 236       | 243       | 254       |
| BOD                    | mg/L     | -       | -    | 5          | 10         | 10         | 7          | < 3        | 8          | 9          | 7         | <3        | 11        | < 2       | < 3       |
| Cyanide (free)         | mg/L     | -       | -    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.05     | < 0.005    | < 0.005   | <0.017    | < 0.005   | < 0.005   | < 0.005   |
| Total Suspended Solids | mg/L     | -       | -    | 22000      | 3900       | 36200      | 14600      | 1400       | 53400      | 2730       | 715       | 660       | 320       | 468       | --        |
| Aluminum               | mg/L     | 0.075   | -    | 0.13       | 0.14       | 0.1        | 0.1        | 0.14       | 0.1        | 0.09       | 0.09      | 0.1       | 0.04      | 0.03      | 0.06      |
| Antimony               | mg/L     | 0.02    | -    | 0.0003     | 0.0003     | 0.0003     | 0.0004     | 0.0005     | 0.0003     | 0.0001     | 0.0001    | 0.0002    | 0.0001    | 0.0001    | 0.0002    |
| Arsenic                | mg/L     | 0.005   | -    | 0.0007     | 0.0006     | 0.0006     | 0.0004     | 0.0003     | 0.0005     | 0.0003     | 0.0003    | 0.0004    | 0.0013    | 0.0006    | 0.0006    |
| Barium                 | mg/L     | -       | -    | 0.84       | 1.02       | 0.621      | 0.483      | 0.26       | 0.479      | 0.214      | 0.561     | 0.284     | 0.031     | 0.024     | 0.026     |
| Beryllium              | mg/L     | 1.1     | -    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002    | < 0.002   | <0.0001   | < 0.002   | < 0.002   | < 0.002   |
| Boron                  | mg/L     | -       | 1.5  | 0.81       | 0.736      | 0.708      | 0.403      | 0.451      | 0.442      | 0.383      | 0.655     | 0.489     | 0.199     | 0.087     | 0.146     |
|                        |          |         |      |            |            |            |            |            |            |            | <         |           |           |           |           |
| Cadmium                | mg/L     | 0.0005  | -    | < 0.000029 | < 0.000029 | < 0.000029 | < 0.000029 | < 0.000015 | < 0.000029 | < 0.000012 | 0.000012  | <0.000015 | 0.00007   | 0.00003   | 0.00008   |
| Chromium (total)       | mg/L     | 0.001   | -    | 0.003      | 0.003      | 0.001      | 0.001      | < 0.001    | 0.001      | < 0.001    | 0.002     | <0.001    | < 0.0002  | 0.0009    | < 0.0002  |
| Chromium (VI)          | mg/L     | 0.001   | -    |            |            |            |            |            | < 0.001    | < 0.001    | < 0.001   | <0.01     |           |           |           |
| Cobalt                 | mg/L     | 0.0009  | -    | 0.005      | 0.005      | < 0.005    | < 0.005    | < 0.005    | < 0.005    | < 0.005    | 0.006     | 0.0016    | < 0.005   | < 0.005   | < 0.005   |
| Copper                 | mg/L     | 0.005   | -    | 0.0017     | 0.002      | 0.0012     | 0.0013     | 0.0011     | 0.0004     | 0.0004     | 0.0003    | 0.001     | 0.0012    | 0.0014    | 0.0019    |
| Lead                   | mg/L     | 0.005   | -    | 0.00014    | 0.00011    | 0.0001     | 0.00011    | 0.00018    | < 0.00009  | 0.00008    | < 0.00004 | 0.00006   | 0.00543   | 0.00249   | 0.0125    |
| Mercury                | mg/L     | 0.0002  | -    | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002 | <0.00002  | < 0.00002 | < 0.00002 | 0.00015   |
| Molybdenum             | mg/L     | 0.04    | -    | 0.0003     | 0.0003     | 0.0005     | 0.0004     | 0.0002     | < 0.0002   | 0.0001     | < 0.0001  | <0.0001   | 0.001     | 0.0003    | 0.0008    |
| Nickel                 | mg/L     | 0.025   | -    | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01     | < 0.01    | 0.0022    | < 0.01    | < 0.01    | < 0.01    |
| Selenium               | mg/L     | 0.1     | -    | 0.002      | 0.002      | 0.001      | < 0.001    | < 0.001    | 0.003      | 0.002      | < 0.001   | <0.001    | < 0.001   | < 0.001   | < 0.001   |
| Silver                 | mg/L     | 0.0001  | -    | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001  | <0.0001   | < 0.00002 | < 0.00002 | 0.00005   |
| Strontium              | mg/L     | -       | -    | 0.642      | 0.656      | 0.501      | 0.477      | 0.42       | 0.455      | 0.405      | 0.53      | 0.402     | --        | 0.236     | 0.254     |
| Thallium               | mg/L     | 0.0003  | -    | < 0.00005  | < 0.00005  | < 0.00005  | 0.00005    | < 0.05     | < 0.00005  | < 0.00005  | < 0.00005 | <0.00005  | < 0.00005 | < 0.00005 | < 0.00005 |
| Vanadium               | mg/L     | 0.006   | -    | 0.0023     | 0.0042     | 0.0013     | 0.001      | 0.0005     | 0.0017     | 0.0003     | 0.0023    | 0.0005    | 0.002     | 0.0023    | 0.0025    |
| Zinc                   | mg/L     | 0.02    | -    | 0.557      | 0.206      | 0.591      | 1.12       | 1.61       | 0.151      | 0.835      | 0.177     | 0.428     | 7.7       | 8.15      | 2.62      |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | PWQO    | CWQG | WP5          | WP5          | WP5            | WP5         | WP5          | WP5            | WP5       | WP5           | WP5           | WP5            | WP5         | WP5         |
|------------------------|----------|---------|------|--------------|--------------|----------------|-------------|--------------|----------------|-----------|---------------|---------------|----------------|-------------|-------------|
|                        |          |         |      | 04-Oct-16    | 18-Apr-17    | 24-Oct-17      | 23-Apr-18   | 15-Oct-18    | 12-Apr-19      | 22-Oct-19 | 22-Apr-20     | 19-Oct-20     | 20-Apr-21      | 27-Oct-21   | 21-Apr-22   |
| Total Alkalinity       | mg/L     | -       | -    | --           | --           | --             | 246         | --           |                | Dry       | 150           |               |                | 254         | 320         |
| Calcium                | mg/L     | -       | -    | 59.7         | 91.3         | 105            | 78.8        | 76.3         | 417            |           | 65            | 231           | 85.3           | 72          | 70.2        |
| Chloride               | mg/L     | -       | 120  | --           | --           | --             | 15.7        | --           |                |           | 15.6          |               |                | 12.7        | 11.6        |
| COD                    | mg/L     | -       | -    | --           | 172          | --             | 52          | --           | 7000           |           | 2790          |               | 250            | 70          | 140         |
| Specific Conductivity  | umhos/cm | -       | -    | --           | --           | --             | 805         | --           |                |           | 489           |               |                | 568         | 660         |
| DOC                    | mg/L     | -       | -    | --           |              | 22.2           | 16.3        | --           | 17.9           |           | 32.4          |               | 32.3           | 15.9        | 15.8        |
| Fluoride               | mg/L     | -       | -    | --           | --           | --             | < 0.1       | --           |                |           | < 0.1         |               |                | < 0.1       | < 0.1       |
| Iron                   | mg/L     | 0.3     | -    | <b>6.15</b>  | <b>9.22</b>  | <b>151</b>     | <b>16.8</b> | <b>0.454</b> | <b>391</b>     |           | 0.047         | <b>95.7</b>   | <b>31.6</b>    | <b>1.57</b> | <b>12.8</b> |
| Magnesium              | mg/L     | -       | -    | 4.51         | 7.97         | 8.74           | 7.34        | 6.77         | 19.6           |           | 6.28          | 22.7          | 8.1            | 6.97        | 7.12        |
| Manganese              | mg/L     | -       | -    | 2.68         | 0.977        | 1.31           | 0.554       | 0.007        | 3.89           |           | 0.411         | 1.4           | 1.01           | 1.03        | 1.3         |
| Nitrate                | mg/L     | -       | 2.9  | --           | --           | --             | 0.05        | --           |                |           | 0.3           |               |                | 0.68        | 0.25        |
| Nitrite                | mg/L     | -       | 0.06 | --           | --           | --             | < 0.05      | --           |                |           | < 0.05        |               |                | < 0.05      | < 0.05      |
| pH Lab                 | pH unit  | 6.5-8.5 | -    | --           | --           | --             | 7.97        | --           |                |           | 7.25          |               |                | 8.04        | 7.57        |
| Phenols                | mg/L     | 0.001   | -    | --           | < 0.001      | --             | < 0.001     | --           | < 0.02         |           | < 0.002       | 0.001         | < 0.002        | < 0.002     | < 0.001     |
| Phosphorus             | mg/L     | 0.03    | -    | < 0.1        | < 0.1        | <b>0.6</b>     | < 0.1       | < 0.1        | <b>1.21</b>    |           | < 0.1         | <b>2.4</b>    | <b>0.8</b>     | < 0.1       | < 0.1       |
| Potassium              | mg/L     | -       | -    | 8.3          | 16.5         | 16.4           | 14.1        | 17.3         | 16.2           |           | 12.7          | 18.7          | 14.6           | 15.5        | 13.6        |
| Sodium                 | mg/L     | -       | -    | 16.4         | 24           | 23.1           | 19.4        | 26.7         | 40.8           |           | 27.1          | 55.5          | 40.5           | 39.1        | 41.1        |
| Sulphate               | mg/L     | -       | -    | --           | --           | --             | 7           | --           |                |           | 66            |               |                | 31          | 22          |
| Dissolved Solids       | mg/L     | -       | -    | --           | --           | --             | 308         | --           |                |           | 284           |               |                | 333         | 373         |
| Tot Kjel N             | mg/L     | -       | -    | --           | 2.3          | 7.5            | 1.5         | --           | 22.4           |           | 34.8          | 9.6           | 2.3            | 2.8         | 2.6         |
| Ammonia (NH3-N)        | mg/L     | -       | -    | --           | 0.62         | 0.35           | 0.37        | --           | 1.1            |           | 0.76          | 1.52          | 0.55           | 0.44        | 0.81        |
| Ammonia - Unionized    | mg/L     | 0.02    | -    |              |              |                |             |              | < 0.01         |           | < 0.01        | < 0.01        | < 0.01         | < 0.01      | 0.02        |
| Hardness (CaCO3)       | mg/L     | -       | -    | 168          | 261          | 298            | 227         | 219          |                |           | 188           | 671           | 247            | 209         | 205         |
| BOD                    | mg/L     | -       | -    | --           | --           | --             | < 3         | --           |                |           | 11            |               |                | 3           | < 3         |
| Cyanide (free)         | mg/L     | -       | -    | --           | < 0.005      | --             | < 0.005     | --           | 1120           |           | < 0.005       |               | < 0.005        | < 0.005     | < 0.005     |
| Total Suspended Solids | mg/L     | -       | -    | --           | --           | --             | 160         | --           | < 0.01         |           | 20000         |               |                | 500         | 600         |
| Aluminum               | mg/L     | 0.075   | -    | 0.03         | 0.07         | <b>1.86</b>    | 0.06        | 0.07         | <b>40.6</b>    |           | 0.04          | <b>23.9</b>   | <b>3.51</b>    | 0.05        | 0.04        |
| Antimony               | mg/L     | 0.02    | -    | < 0.0001     | < 0.0001     | 0.0002         | 0.0001      | 0.0002       | < 0.01         |           | 0.0006        | 0.0002        | 0.0026         | 0.0001      | 0.0002      |
| Arsenic                | mg/L     | 0.005   | -    | 0.0002       | 0.0005       | 0.001          | 0.0005      | 0.0002       | <b>0.0235</b>  |           | 0.0002        | 0.0033        | <b>0.0085</b>  | 0.0002      | 0.0003      |
| Barium                 | mg/L     | -       | -    | 0.041        | 0.032        | 0.087          | 0.023       | 0.026        | 0.79           |           | 0.024         | 0.529         | 0.08           | 0.04        | 0.038       |
| Beryllium              | mg/L     | 1.1     | -    | < 0.002      | < 0.002      | < 0.002        | < 0.002     | < 0.002      | < 0.02         |           | < 0.002       | 0.014         | < 0.02         | < 0.002     | < 0.002     |
| Boron                  | mg/L     | -       | 1.5  | 0.369        | 0.194        | 0.312          | 0.112       | 0.246        | 0.76           |           | 0.269         | 0.496         | 0.18           | 0.239       | 0.093       |
|                        |          |         |      |              |              |                |             |              |                |           |               |               |                |             |             |
| Cadmium                | mg/L     | 0.0005  | -    | 0.00042      | 0.000027     | <b>0.00321</b> | 0.000024    | < 0.000015   | <b>0.0177</b>  |           | < 0.000015    | 0.000086      | 0.000439       | < 0.000015  | < 0.000015  |
| Chromium (total)       | mg/L     | 0.001   | -    | < 0.0002     | <b>0.002</b> | <b>0.016</b>   | < 0.001     | < 0.001      | <b>0.08</b>    |           | < 0.001       | <b>0.01</b>   | < 0.01         | < 0.001     | < 0.001     |
| Chromium (VI)          | mg/L     | 0.001   | -    |              |              |                |             |              |                |           |               |               |                |             | < 0.001     |
| Cobalt                 | mg/L     | 0.0009  | -    | <b>0.006</b> | < 0.005      | <b>0.008</b>   | < 0.005     | 0.0001       | <b>0.0193</b>  |           | < 0.005       | <b>0.008</b>  | < 0.05         | < 0.005     | < 0.005     |
| Copper                 | mg/L     | 0.005   | -    | 0.0005       | 0.0008       | <b>0.0162</b>  | 0.0016      | 0.0006       | <b>0.202</b>   |           | 0.0007        | 0.0018        | <b>0.0079</b>  | 0.0012      | 0.0004      |
| Lead                   | mg/L     | 0.005   | -    | 0.00153      | 0.00343      | <b>0.712</b>   | 0.00112     | 0.00039      | <b>0.441</b>   |           | < 0.00002     | <b>0.0144</b> | <b>0.0427</b>  | 0.0001      | 0.00003     |
| Mercury                | mg/L     | 0.0002  | -    | --           | < 0.00002    | 0.0001         | < 0.00002   | 0            | <b>0.00183</b> |           | <b>0.0003</b> |               | 0.00008        | < 0.00002   | < 0.00002   |
| Molybdenum             | mg/L     | 0.04    | -    | < 0.0001     | 0.0002       | < 0.0001       | 0.0003      | 0.0007       | < 0.01         |           | 0.0008        | 0.0006        | 0.0034         | 0.0003      | 0.0009      |
| Nickel                 | mg/L     | 0.025   | -    | 0.01         | < 0.01       | 0.01           | < 0.01      | < 0.01       | < 0.1          |           | < 0.01        | 0.02          | < 0.1          | < 0.01      | < 0.01      |
| Selenium               | mg/L     | 0.1     | -    | 0.002        | 0.001        | 0.001          | < 0.001     | < 0.001      | < 0.1          |           | < 0.001       | < 0.001       | < 0.004        | < 0.001     | < 0.001     |
| Silver                 | mg/L     | 0.0001  | -    | 0.00002      | 0.00005      | < 0.00002      | < 0.0001    | < 0.0001     | < 0.002        |           | < 0.0001      | < 0.0001      | <b>0.001</b>   | < 0.0001    | < 0.0001    |
| Strontium              | mg/L     | -       | -    | 0.168        | 0.204        | 0.303          | 0.197       | 0.224        | 1.3            |           | 0.181         | 1.5           | 0.26           | 0.221       | 0.192       |
| Thallium               | mg/L     | 0.0003  | -    | < 0.00005    | < 0.00005    | < 0.00005      | < 0.00005   | < 0.00005    | < 0.005        |           | < 0.00005     | 0.00006       | <b>0.00036</b> | < 0.05      | < 0.00005   |
| Vanadium               | mg/L     | 0.006   | -    | 0.0006       | 0.0033       | 0.0035         | 0.0001      | 0.0002       | <b>0.0886</b>  |           | 0.0001        | 0.0006        | 0.0036         | < 0.0001    | < 0.0001    |
| Zinc                   | mg/L     | 0.02    | -    | <b>45.3</b>  | <b>9.89</b>  | <b>31.5</b>    | <b>4.91</b> | <b>0.614</b> | <b>113</b>     |           | <b>1.19</b>   | <b>13.7</b>   | <b>5.15</b>    | <b>1.53</b> | <b>1.73</b> |

ODWQS - Ontario Drinking Water Quality  
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Ground Water Quality - General  
Parameters

| Parameters             | Units    | PWQO    | CWQG | WP5         | WP5          | WP5         | WP6           | WP6          | WP6           | WP6           | WP6         | WP6           | WP6           | WP6            | WP6         |
|------------------------|----------|---------|------|-------------|--------------|-------------|---------------|--------------|---------------|---------------|-------------|---------------|---------------|----------------|-------------|
|                        |          |         |      | 26-Oct-22   | 19-Apr-23    | 12-Oct-23   | 02-Oct-13     | 24-Apr-14    | 15-Oct-14     | 16-Apr-15     | 16-Apr-15   | 08-Oct-15     | 08-Oct-15     | 09-Nov-15      | 09-Nov-15   |
| Total Alkalinity       | mg/L     | -       | -    | 313         | 272          | 320         | 276           | 277          | 277           | 290           | --          | 288           | --            | 290            | 296         |
| Calcium                | mg/L     | -       | -    | 72.6        | 56.8         | 81.6        | 112           | 109          | 110           | 94.2          | 114         | 102           | 120           | 459            | 103         |
| Chloride               | mg/L     | -       | 120  | 9.4         | 9.8          | 9.4         | 19.2          | 18.2         | 19.4          | 20.3          | --          | 21.1          | --            | 21.8           | 21.8        |
| COD                    | mg/L     | -       | -    | 113         | 97           | 123         | 96            | 200          | 224           | 82            | --          | 331           | --            | 73             | 18          |
| Specific Conductivity  | umhos/cm | -       | -    | 609         | 570          | 610         | 596           | 585          | 592           | 600           | --          | 607           | --            | 627            | 640         |
| DOC                    | mg/L     | -       | -    | 15.2        | 12.8         | 21.7        | 11            | 7.6          | 9.8           | 9.4           | --          | 7.9           | --            | 5.7            | 6.1         |
| Fluoride               | mg/L     | -       | -    | < 0.1       | < 0.1        | <0.1        | 0.2           | <0.1         | <0.1          | < 0.1         | --          | 0.1           | --            | 0.1            | 0.1         |
| Iron                   | mg/L     | 0.3     | -    | <b>1.73</b> | <b>14.9</b>  | 0.207       | <b>0.61</b>   | <b>0.717</b> | <b>0.616</b>  | 0.203         | <b>0.73</b> | 0.255         | <b>1.49</b>   | <b>9.84</b>    | <b>1.25</b> |
| Magnesium              | mg/L     | -       | -    | 9.27        | 7.11         | 7.78        | 9             | 9.04         | 9.43          | 8.73          | 9.57        | 8.79          | 9.77          | 19.9           | 9.03        |
| Manganese              | mg/L     | -       | -    | 0.731       | 0.963        | 0.624       | 0.08          | 0.067        | 0.053         | 0.028         | 0.08        | 0.008         | 0.066         | 0.509          | 0.06        |
| Nitrate                | mg/L     | -       | 2.9  | 0.16        | 0.23         | 0.14        | 0.2           | 0.1          | 0.1           | < 0.1         | --          | < 0.1         | --            | < 0.1          | < 0.1       |
| Nitrite                | mg/L     | -       | 0.06 | < 0.05      | < 0.05       | <0.05       | < 0.1         | <0.1         | <0.1          | < 0.1         | --          | < 0.1         | --            | < 0.1          | < 0.1       |
| pH Lab                 | pH unit  | 6.5-8.5 | -    | 7.81        | 7.61         | 7.09        | 7.87          | 8.12         | 8.04          | 8.08          | --          | 7.94          | --            | 7.8            | 8.08        |
| Phenols                | mg/L     | 0.001   | -    | < 0.001     | <b>0.004</b> | <0.001      | < 0.001       | --           | --            | < 0.001       | --          | < 0.001       | --            | < 0.001        | < 0.001     |
| Phosphorus             | mg/L     | 0.03    | -    | < 0.1       | < 0.1        | <0.1        | < 0.1         | <0.1         | <0.1          | < 0.1         | < 0.1       | < 0.1         | < 0.1         | <b>2.1</b>     | < 0.1       |
| Potassium              | mg/L     | -       | -    | 16.7        | 15.4         | 16.2        | 2.2           | 1.6          | 1.9           | 1.6           | 1.8         | 2             | 2             | 1.8            | 1.7         |
| Sodium                 | mg/L     | -       | -    | 44.1        | 37.4         | 33.9        | 4.7           | 4.2          | 4.9           | 4.7           | 5           | 4.8           | 5.2           | 4.7            | 4.8         |
| Sulphate               | mg/L     | -       | -    | 7           | 6            | 4           | 5             | 3            | 3             | 3             | --          | 3             | --            | 3              | 3           |
| Dissolved Solids       | mg/L     | -       | -    | 350         | 311          | 317         | 319           | 313          | 316           | 306           | --          | 315           | --            | 695            | 322         |
| Tot Kjel N             | mg/L     | -       | -    | 2.3         | 2.4          | 2.8         | 1.03          | 0.7          | 1.5           | 1.8           | --          | 0.9           | 1.2           | 0.8            | 0.4         |
| Ammonia (NH3-N)        | mg/L     | -       | -    | 0.26        | 1.2          | 0.28        | 0.09          | 0.4          | 0.18          | 0.15          | --          | 0.2           | 0.14          | 0.19           | 0.17        |
| Ammonia - Unionized    | mg/L     | 0.02    | -    | < 0.01      | < 0.01       | <0.01       |               |              |               |               |             |               |               |                |             |
| Hardness (CaCO3)       | mg/L     | -       | -    | 220         | 171          | 236         | 316           | 309          | 313           | 271           | 324         | 292           | 340           | 1230           | 295         |
| BOD                    | mg/L     | -       | -    | 5           | 5            | 4           | < 3           | <3           | <3            | 4             | --          | 5             | --            | < 3            | < 3         |
| Cyanide (free)         | mg/L     | -       | -    | < 0.005     | < 0.005      | <0.005      | < 0.005       | <0.005       | <0.005        | < 0.005       | --          | < 0.005       | --            | < 0.005        | < 0.005     |
| Total Suspended Solids | mg/L     | -       | -    | 1600        | 810          | 385         | 23000         | 15200        | 42000         | 19600         | --          | 44900         | -             | 39600          | 10          |
| Aluminum               | mg/L     | 0.075   | -    | 0.03        | 0.02         | 0.06        | 0.03          | 0.03         | 0.03          | <b>0.19</b>   | 0.03        | <b>0.26</b>   | 0.04          | <b>1.7</b>     | 0.03        |
| Antimony               | mg/L     | 0.02    | -    | < 0.0001    | < 0.0001     | 0.0004      | < 0.0001      | <0.0001      | <0.0001       | 0.0001        | < 0.0001    | < 0.0001      | 0.0001        | < 0.0001       | 0.0001      |
| Arsenic                | mg/L     | 0.005   | -    | 0.0002      | 0.0003       | 0.0013      | 0.0004        | 0.0001       | 0.0003        | 0.0003        | 0.0002      | 0.0006        | 0.0002        | 0.0006         | 0.0002      |
| Barium                 | mg/L     | -       | -    | 0.035       | 0.035        | 0.041       | 0.255         | 0.168        | 0.195         | 0.1           | 0.171       | 0.193         | 0.212         | 0.26           | 0.197       |
| Beryllium              | mg/L     | 1.1     | -    | < 0.002     | < 0.002      | <0.0001     | < 0.002       | <0.002       | <0.002        | < 0.002       | < 0.002     | < 0.002       | < 0.002       | < 0.002        | < 0.002     |
| Boron                  | mg/L     | -       | 1.5  | 0.201       | 0.087        | 0.174       | < 0.005       | 0.018        | 0.02          | 0.018         | 0.017       | 0.017         | 0.02          | 0.021          | 0.017       |
|                        |          |         |      |             | <            |             |               |              |               |               |             |               |               |                |             |
| Cadmium                | mg/L     | 0.0005  | -    | < 0.000010  | 0.000010     | 0.000112    | < 0.00002     | 0.0001       | <0.00002      | 0.00004       | 0.00005     | 0.00014       | < 0.00002     | 0.00011        | < 0.00002   |
| Chromium (total)       | mg/L     | 0.001   | -    | < 0.001     | < 0.001      | 0.001       | <b>0.0147</b> | <0.0002      | <b>0.0063</b> | <b>0.0022</b> | 0.0006      | <b>0.0113</b> | <b>0.0027</b> | <b>0.005</b>   | < 0.0002    |
| Chromium (VI)          | mg/L     | 0.001   | -    | < 0.001     | < 0.001      | <0.1        |               |              |               |               |             |               |               |                |             |
| Cobalt                 | mg/L     | 0.0009  | -    | < 0.005     | < 0.005      | 0.0009      | < 0.005       | <0.005       | <0.005        | < 0.005       | < 0.005     | < 0.005       | < 0.005       | <b>0.005</b>   | < 0.005     |
| Copper                 | mg/L     | 0.005   | -    | 0.0008      | 0.0004       | 0.0021      | 0.0002        | 0.0005       | 0.001         | <b>0.0088</b> | 0.0011      | 0.0007        | 0.0005        | <b>0.0115</b>  | < 0.0001    |
| Lead                   | mg/L     | 0.005   | -    | 0.00009     | < 0.00002    | 0.00336     | 0.00003       | 0.00003      | 0.00006       | 0.00289       | 0.00002     | 0.00028       | < 0.00002     | <b>0.00519</b> | < 0.00002   |
| Mercury                | mg/L     | 0.0002  | -    | < 0.00002   | < 0.00002    | <0.00002    | < 0.00002     | <0.00002     | <0.00002      | < 0.00002     | < 0.00002   | < 0.00002     | < 0.00002     | 0.00003        | < 0.00002   |
| Molybdenum             | mg/L     | 0.04    | -    | 0.0003      | 0.0007       | 0.0006      | < 0.0001      | <0.0001      | <0.0001       | < 0.0001      | < 0.0001    | < 0.0001      | < 0.0001      | < 0.0001       | < 0.0001    |
| Nickel                 | mg/L     | 0.025   | -    | < 0.01      | < 0.01       | 0.002       | < 0.01        | <0.1         | <0.1          | < 0.01        | < 0.01      | < 0.01        | < 0.01        | < 0.01         | < 0.01      |
| Selenium               | mg/L     | 0.1     | -    | < 0.001     | < 0.001      | <0.001      | < 0.001       | <0.001       | 0.002         | < 0.001       | < 0.001     | < 0.001       | < 0.001       | < 0.001        | < 0.001     |
| Silver                 | mg/L     | 0.0001  | -    | < 0.0001    | < 0.0001     | <0.0001     | < 0.00002     | <0.00002     | <0.00002      | < 0.00002     | < 0.00002   | < 0.00002     | < 0.00002     | < 0.00002      | < 0.00002   |
| Strontium              | mg/L     | -       | -    | 0.226       | 0.174        | 0.246       | --            | --           | 0.426         | 0.356         | 0.427       | 0.367         | 0.452         | 0.943          | 0.391       |
| Thallium               | mg/L     | 0.0003  | -    | < 0.00005   | < 0.00005    | <0.00005    | < 0.00005     | <0.00005     | <0.00005      | < 0.00005     | < 0.00005   | < 0.00005     | < 0.00005     | < 0.00005      | < 0.00005   |
| Vanadium               | mg/L     | 0.006   | -    | < 0.0001    | < 0.0001     | 0.0008      | 0.0046        | 0.0014       | <b>0.0073</b> | <b>0.0075</b> | 0.0024      | <b>0.0071</b> | 0.0015        | <b>0.0109</b>  | 0.0006      |
| Zinc                   | mg/L     | 0.02    | -    | <b>1.12</b> | <b>1.23</b>  | <b>1.38</b> | < 0.005       | 0.006        | 0.006         | < 0.005       | < 0.005     | < 0.005       | < 0.005       | 0.017          | < 0.005     |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance



Ground Water Quality - General  
Parameters

Filtered

| Parameters             | Units    | PWQO    | CWQG | WP6           | WP6          | WP6           | WP6         | WP6         | WP6          | WP6         | WP6           | WP6         | WP6            | WP6          | WP6           |
|------------------------|----------|---------|------|---------------|--------------|---------------|-------------|-------------|--------------|-------------|---------------|-------------|----------------|--------------|---------------|
|                        |          |         |      | 28-Apr-16     | 28-Apr-16    | 04-Oct-16     | 04-Oct-16   | 18-Apr-17   | 24-Oct-17    | 24-Apr-18   | 16-Oct-18     | 16-Oct-18   | 12-Apr-19      | 12-Apr-19    | 22-Oct-19     |
| Total Alkalinity       | mg/L     | -       | -    |               | 297          | 296           | --          | 298         | 297          | 298         | 291           |             | 296            | 286          | 286           |
| Calcium                | mg/L     | -       | -    | 974           | 119          | 865           | 122         | 130         | 121          | 123         | 111           | 117         | 797            | 124          | 960           |
| Chloride               | mg/L     | -       | 120  |               | 21.1         | 21.3          | --          | 22.3        | 17.8         | 23.6        | 23.3          |             | 22.3           | 22.1         | 22.7          |
| COD                    | mg/L     | -       | -    |               | 365          | 11            | --          | 140         | 127          | 22          | 193           |             | 103            | 20           | 260           |
| Specific Conductivity  | umhos/cm | -       | -    |               | 620          | 629           | --          | 625         | 621          | 613         | 631           |             | 645            | 641          | 637           |
| DOC                    | mg/L     | -       | -    |               | 6.9          | 8.3           | --          | 8.3         | 10.7         | 7.9         | 8.1           |             | 6.8            | 8.4          | 10.1          |
| Fluoride               | mg/L     | -       | -    |               | < 0.1        | 0.1           | --          | < 0.1       | < 0.1        | < 0.1       | < 0.1         |             | < 0.1          | < 0.1        | < 0.1         |
| Iron                   | mg/L     | 0.3     | -    | <b>1.4</b>    | <b>1.88</b>  | <b>4.67</b>   | <b>1.41</b> | <b>2.14</b> | <b>0.975</b> | <b>1.13</b> | 0.109         | <b>1.58</b> | <b>49.3</b>    | <b>1.9</b>   | <b>55.3</b>   |
| Magnesium              | mg/L     | -       | -    | 18.8          | 10.2         | 17.1          | 10.1        | 10          | 10           | 10.3        | 9.76          | 9.51        | 35.7           | 9.92         | 37.8          |
| Manganese              | mg/L     | -       | -    | 1.16          | 0.079        | 0.744         | 0.068       | 0.075       | 0.054        | 0.069       | 0.003         | 0.062       | 1.01           | 0.069        | 1.15          |
| Nitrate                | mg/L     | -       | 2.9  |               | 0.1          | < 0.1         | --          | < 0.1       | 0.12         | 0.07        | < 0.05        |             | < 0.05         | < 0.05       | 0.14          |
| Nitrite                | mg/L     | -       | 0.06 |               | < 0.1        | < 0.1         | --          | < 0.1       | <b>0.07</b>  | < 0.05      | < 0.05        |             | < 0.05         | < 0.05       | < 0.05        |
| pH Lab                 | pH unit  | 6.5-8.5 | -    |               | 7.95         | 8.09          | --          | 8.02        | 7.98         | 8.04        | 8.01          |             | 7.99           | 8.08         | 8.12          |
| Phenols                | mg/L     | 0.001   | -    |               | <b>0.028</b> | <b>0.025</b>  | --          | < 0.001     | <b>0.006</b> | < 0.001     | <b>0.01</b>   |             | < 0.02         | < 0.002      | < 0.001       |
| Phosphorus             | mg/L     | 0.03    | -    | < 0.1         | < 0.1        | < 0.1         | < 0.1       | <0.1        | <0.1         | < 0.1       | < 0.1         | < 0.1       | <b>4.1</b>     | <0.1         | 3             |
| Potassium              | mg/L     | -       | -    | 3.2           | 1.9          | 2.2           | 1.9         | 1.6         | 2.2          | 1.7         | 2.4           | 2           | 6.6            | 1.7          | 8.1           |
| Sodium                 | mg/L     | -       | -    | 5.3           | 5.1          | 6             | 5.8         | 4.9         | 5.7          | 5.6         | 6.5           | 6.1         | 7.3            | 5.8          | 8.7           |
| Sulphate               | mg/L     | -       | -    | --            | 3            | 3             | --          | 3           | 4            | 3           | 5             |             | 4              | 4            | 4             |
| Dissolved Solids       | mg/L     | -       | -    | --            | 341          | 1100          | --          | 354         | 340          | 348         | 333           |             | 1102           | 341          | 1270          |
| Tot Kjeh N             | mg/L     | -       | -    | 1.2           | 0.5          | 4.4           | --          | 4.9         | 1.5          | 1.5         | 2.7           |             | 1.9            | 0.4          | 3.9           |
| Ammonia (NH3-N)        | mg/L     | -       | -    | 0.37          | 0.29         | 0.71          | --          | 0.27        | 0.23         | 0.27        | 0.24          |             | 0.26           | 0.22         | 0.24          |
| Ammonia - Unionized    | mg/L     | 0.02    | -    |               |              |               |             |             |              |             |               |             | <0.01          | <0.01        | <0.01         |
| Hardness (CaCO3)       | mg/L     | -       | -    | 2510          | 339          | 2550          | 346         | 366         | 344          | 350         | 318           | 332         | 2140           | 351          | 2560          |
| BOD                    | mg/L     | -       | -    | --            | < 3          | < 3           | --          | < 3         | 4            | < 3         | 5             |             | <3             | <3           | < 3           |
| Cyanide (free)         | mg/L     | -       | -    | --            | < 0.005      | < 0.005       | < 0.005     | < 0.005     | < 0.005      | < 0.005     | < 0.005       |             | <0.005         | < 0.005      | < 0.005       |
| Total Suspended Solids | mg/L     | -       | -    | --            | --           | --            | --          | 35400       | 16800        | 2440        | 77000         |             | 14800          | 3            | 11700         |
| Aluminum               | mg/L     | 0.075   | -    | <b>0.12</b>   | 0.04         | <b>0.26</b>   | <b>0.08</b> | 0.07        | 0.06         | <b>0.08</b> | <b>0.11</b>   | 0.07        | <b>20.2</b>    | <b>0.08</b>  | <b>25.2</b>   |
| Antimony               | mg/L     | 0.02    | -    | < 0.0001      | < 0.0001     | < 0.0001      | 0.0002      | < 0.0001    | < 0.0001     | < 0.0001    | < 0.0001      | < 0.0001    | < 0.0001       | < 0.0001     | < 0.001       |
| Arsenic                | mg/L     | 0.005   | -    | 0.0007        | 0.0003       | 0.0003        | < 0.0001    | 0.0002      | 0.0002       | 0.0001      | 0.0002        | < 0.0001    | 0.0039         | < 0.0001     | 0.0045        |
| Barium                 | mg/L     | -       | -    | 1.22          | 0.224        | 0.474         | 0.223       | 0.249       | 0.243        | 0.187       | 0.191         | 0.239       | 0.622          | 0.227        | 0.687         |
| Beryllium              | mg/L     | 1.1     | -    | < 0.002       | < 0.002      | < 0.002       | < 0.002     | < 0.002     | < 0.002      | < 0.002     | < 0.002       | < 0.002     | < 0.002        | < 0.002      | 0.002         |
| Boron                  | mg/L     | -       | 1.5  | < 0.005       | < 0.005      | 0.025         | 0.018       | 0.036       | 0.022        | 0.016       | 0.021         | 0.018       | 0.074          | 0.019        | 0.082         |
| Cadmium                | mg/L     | 0.0005  | -    | 0.00012       | < 0.00002    | 0.00012       | < 0.00002   | < 0.000020  | < 0.000014   | < 0.000015  | 0.000084      | < 0.000015  | 0.000309       | < 0.000015   | 0.000354      |
| Chromium (total)       | mg/L     | 0.001   | -    | < 0.0002      | < 0.0002     | < 0.0002      | < 0.0002    | < 0.001     | < 0.001      | < 0.001     | < 0.001       | < 0.001     | <b>0.044</b>   | < 0.001      | <b>0.053</b>  |
| Chromium (VI)          | mg/L     | 0.001   | -    |               |              |               |             |             |              |             |               |             |                |              |               |
| Cobalt                 | mg/L     | 0.0009  | -    | < 0.005       | < 0.005      | < 0.005       | < 0.005     | < 0.005     | < 0.005      | < 0.005     | <b>0.0019</b> | < 0.0001    | <b>0.014</b>   | 0.0004       | <b>0.0224</b> |
| Copper                 | mg/L     | 0.005   | -    | 0.0008        | 0.0005       | 0.0008        | 0.0002      | 0.0007      | 0.0002       | 0.0002      | 0.0003        | 0.0004      | <b>0.069</b>   | 0.0005       | <b>0.103</b>  |
| Lead                   | mg/L     | 0.005   | -    | 0.00007       | 0.00005      | 0.0001        | 0.00008     | < 0.00002   | < 0.00002    | 0.00002     | < 0.00002     | 0.00002     | <b>0.0216</b>  | 0.00006      | <b>0.028</b>  |
| Mercury                | mg/L     | 0.0002  | -    | < 0.00002     | < 0.00002    | < 0.00002     | --          | < 0.00002   | < 0.00002    | < 0.00002   | < 0.00002     | --          | < 0.00002      | < 0.00002    | 0.00004       |
| Molybdenum             | mg/L     | 0.04    | -    | 0.0002        | < 0.0001     | 0.0004        | < 0.0001    | < 0.0001    | < 0.0001     | < 0.0001    | 0.0002        | < 0.0001    | 0.0002         | < 0.0001     | < 0.001       |
| Nickel                 | mg/L     | 0.025   | -    | < 0.01        | < 0.01       | < 0.01        | < 0.01      | < 0.01      | < 0.01       | < 0.01      | < 0.01        | < 0.01      | <b>0.04</b>    | < 0.01       | <b>0.05</b>   |
| Selenium               | mg/L     | 0.1     | -    | < 0.001       | < 0.001      | < 0.001       | < 0.001     | 0.001       | < 0.001      | < 0.001     | < 0.001       | < 0.001     | 0.003          | < 0.001      | < 0.01        |
| Silver                 | mg/L     | 0.0001  | -    | < 0.00002     | < 0.00002    | < 0.00002     | < 0.00002   | < 0.00002   | < 0.00002    | < 0.0001    | < 0.0001      | < 0.0001    | <b>0.0002</b>  | < 0.0001     | <b>0.0007</b> |
| Strontium              | mg/L     | -       | -    | 1.77          | 0.441        | 1.58          | 0.433       | 0.377       | 0.422        | 0.414       | 0.408         | 0.441       | 1.5            | 0.428        | 1.86          |
| Thallium               | mg/L     | 0.0003  | -    | < 0.00005     | < 0.00005    | < 0.00005     | < 0.00005   | < 0.00005   | < 0.00005    | < 0.00005   | < 0.00005     | < 0.00005   | <b>0.00034</b> | < 0.00005    | < 0.0005      |
| Vanadium               | mg/L     | 0.006   | -    | <b>0.0061</b> | 0.0013       | <b>0.0064</b> | 0.0016      | 0.002       | 0.0018       | 0.0004      | 0.0001        | 0.0007      | <b>0.058</b>   | 0.0006       | <b>0.0813</b> |
| Zinc                   | mg/L     | 0.02    | -    | < 0.005       | 0.007        | 0.006         | < 0.005     | < 0.005     | < 0.005      | < 0.005     | < 0.005       | < 0.005     | <b>0.114</b>   | <b>0.021</b> | <b>0.123</b>  |

ODWQS - Ontario Drinking Water Quality  
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Ground Water Quality - General  
Parameters

| Parameters             | Units    | PWQO    | CWQG | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         |
|------------------------|----------|---------|------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                        |          |         |      | WP6<br>22-Oct-19 | WP6<br>23-Apr-20 | WP6<br>23-Apr-20 | WP6<br>20-Oct-20 | WP6<br>20-Oct-20 | WP6<br>20-Apr-21 | WP6<br>20-Apr-21 | WP6<br>27-Oct-21 | WP6<br>27-Oct-21 | WP6<br>21-Apr-22 | WP6<br>21-Apr-22 | WP6<br>24-Oct-22 |
| Total Alkalinity       | mg/L     | -       | -    |                  | 288              | 292              | 300              |                  | 289              | 287              | 317              | 315              | 325              | 317              | 316              |
| Calcium                | mg/L     | -       | -    | 131              | 123              | 130              | 132              | 127              | 122              | 130              | 130              | 126              | 129              | 128              | 130              |
| Chloride               | mg/L     | -       | 120  |                  | 24.5             | 24.5             | 25.4             | 25.8             | 25.2             | 25.1             | 25.8             | 24.8             | 25.9             | 38               | 38               |
| COD                    | mg/L     | -       | -    |                  | 73               | 17               | 129              |                  | 117              | 18               | 112              | 13               | 72               | 12               | 94               |
| Specific Conductivity  | umhos/cm | -       | -    |                  | 640              | 643              | 657              |                  | 665              | 659              | 645              | 635              | 665              | 702              | 703              |
| DOC                    | mg/L     | -       | -    | 7.6              | 11.1             | 8.5              | 8.4              |                  | 8.6              | 9.5              | 11.5             | 8.1              | 8.1              | 8                | 8.7              |
| Fluoride               | mg/L     | -       | -    |                  | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Iron                   | mg/L     | 0.3     | -    | 1.2              | 0.008            | 1.81             | 0.008            | 1.79             | 0.008            | 2.01             | 0.066            | 1.16             | 1.78             | 0.512            | 0.039            |
| Magnesium              | mg/L     | -       | -    | 11.1             | 10.8             | 11.4             | 11.1             | 10.2             | 10.2             | 10.7             | 10.6             | 10.5             | 10.6             | 10.8             | 10.8             |
| Manganese              | mg/L     | -       | -    | 0.068            | 0.055            | 0.075            | 0.033            | 0.07             | 0.033            | 0.084            | 0.04             | 0.055            | 0.092            | 0.041            | 0.022            |
| Nitrate                | mg/L     | -       | 2.9  |                  | 0.09             | 0.07             | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           | 0.07             | 0.07             |
| Nitrite                | mg/L     | -       | 0.06 |                  | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           |
| pH Lab                 | pH unit  | 6.5-8.5 | -    |                  | 7.91             | 7.93             | 7.85             |                  | 7.89             | 7.94             | 8.13             | 8.13             | 7.91             | 7.82             | 7.76             |
| Phenols                | mg/L     | 0.001   | -    |                  | < 0.002          |                  | < 0.001          |                  | < 0.002          | < 0.002          | < 0.002          |                  | < 0.001          | < 0.001          | < 0.001          |
| Phosphorus             | mg/L     | 0.03    | -    | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Potassium              | mg/L     | -       | -    | 2.3              | 1.7              | 1.7              | 2.5              | 2.2              | 1.9              | 1.8              | 2.5              | 2.1              | 1.8              | 2.1              | 2.3              |
| Sodium                 | mg/L     | -       | -    | 7.5              | 6.1              | 6.4              | 7.3              | 6.8              | 6.4              | 6.5              | 7.5              | 7.2              | 6.8              | 7.6              | 7.7              |
| Sulphate               | mg/L     | -       | -    |                  | 4                | 4                | 4                | 4                | 4                | 4                | 5                | 5                | 4                | 5                | 5                |
| Dissolved Solids       | mg/L     | -       | -    |                  | 343              | 355              | 363              |                  | 343              | 353              | 373              | 365              | 378              | 382              | 384              |
| Tot Kjel N             | mg/L     | -       | -    |                  | 0.9              | 0.5              | 2.1              | 0.5              | 2.4              | 0.4              | 3.5              | 0.5              | 4.5              | 0.5              | 3.5              |
| Ammonia (NH3-N)        | mg/L     | -       | -    |                  | 0.2              | 0.16             | 0.25             | 0.15             | 0.14             | 0.14             | 0.42             | 0.14             | 1.83             | 0.21             | 0.32             |
| Ammonia - Unionized    | mg/L     | 0.02    | -    | <0.01            | < 0.01           | < 0.01           | 0.02             | 0.01             | < 0.01           | < 0.01           | < 0.01           | < 0.01           | 0.08             | < 0.01           | < 0.01           |
| Hardness (CaCO3)       | mg/L     | -       | -    | 373              | 352              | 372              | 376              | 359              | 347              | 369              | 369              | 358              | 366              | 364              | 369              |
| BOD                    | mg/L     | -       | -    |                  | < 3              | < 3              | < 3              |                  | < 3              | < 3              | < 3              | < 3              | < 3              | < 3              | < 3              |
| Cyanide (free)         | mg/L     | -       | -    |                  | < 0.005          |                  | < 0.005          |                  | < 0.005          | < 0.005          | < 0.005          |                  | < 0.005          | < 0.005          | < 0.005          |
| Total Suspended Solids | mg/L     | -       | -    |                  | 20300            | 14               | 4860             |                  | 23300            | < 3              | 22500            | < 3              | 28600            | 9                | 10800            |
| Aluminum               | mg/L     | 0.075   | -    | 0.09             | 0.07             | 0.07             | 0.07             | 0.07             | 0.06             | 0.08             | 0.11             | 0.08             | 0.09             | 0.08             | 0.07             |
| Antimony               | mg/L     | 0.02    | -    | < 0.0001         | 0.0002           | < 0.0001         | 0.0005           | < 0.0001         | 0.0008           | < 0.0001         | 0.0005           | < 0.0001         | < 0.0001         | < 0.0001         | 0.0004           |
| Arsenic                | mg/L     | 0.005   | -    | < 0.0001         | < 0.0001         | < 0.0001         | 0.0001           | < 0.0001         | 0.0022           | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | 0.0001           |
| Barium                 | mg/L     | -       | -    | 0.23             | 0.201            | 0.194            | 0.217            | 0.208            | 0.211            | 0.218            | 0.237            | 0.213            | 0.209            | 0.202            | 0.261            |
| Beryllium              | mg/L     | 1.1     | -    | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          |
| Boron                  | mg/L     | -       | 1.5  | 0.021            | 0.02             | 0.021            | 0.024            | 0.025            | 0.018            | 0.02             | 0.023            | 0.023            | 0.017            | 0.02             | 0.022            |
| Cadmium                | mg/L     | 0.0005  | -    | < 0.000015       | < 0.000015       | < 0.000015       | < 0.000015       | < 0.000015       | 0.000225         | < 0.000015       | < 0.000015       | < 0.000015       | < 0.000015       | < 0.000010       | < 0.000010       |
| Chromium (total)       | mg/L     | 0.001   | -    | < 0.001          | 0.001            | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          |
| Chromium (VI)          | mg/L     | 0.001   | -    |                  |                  |                  |                  |                  |                  |                  |                  |                  | < 0.001          | < 0.001          | < 0.001          |
| Cobalt                 | mg/L     | 0.0009  | -    | 0.0004           | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          |
| Copper                 | mg/L     | 0.005   | -    | 0.0006           | 0.0015           | 0.0005           | 0.0011           | 0.0031           | 0.0686           | 0.0002           | 0.0039           | 0.0005           | 0.0005           | 0.0005           | 0.0011           |
| Lead                   | mg/L     | 0.005   | -    | 0.0001           | 0.00003          | < 0.00002        | < 0.00002        | 0.00011          | 0.0168           | < 0.00002        | 0.00005          | < 0.00002        | 0.00003          | < 0.00002        | < 0.00002        |
| Mercury                | mg/L     | 0.0002  | -    | < 0.00002        | < 0.00002        |                  | < 0.00002        |                  | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        |
| Molybdenum             | mg/L     | 0.04    | -    | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0009         | < 0.0001         | 0.0001           | < 0.0001         | 0.0004           | < 0.0001         | < 0.0001         |
| Nickel                 | mg/L     | 0.025   | -    | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           |
| Selenium               | mg/L     | 0.1     | -    | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.004          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          |
| Silver                 | mg/L     | 0.0001  | -    | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | 0.0009           | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         |
| Strontium              | mg/L     | -       | -    | 0.506            | 0.43             | 0.449            | 0.473            | 0.453            | 0.432            | 0.461            | 0.475            | 0.465            | 0.45             | 0.46             | 0.463            |
| Thallium               | mg/L     | 0.0003  | -    | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | 0.0004           | < 0.00005        | < 0.05           | < 0.05           | < 0.00005        | < 0.00005        | < 0.00005        |
| Vanadium               | mg/L     | 0.006   | -    | 0.0008           | 0.0007           | 0.0006           | 0.0008           | 0.0007           | 0.0629           | 0.0006           | 0.0007           | 0.0006           | 0.0006           | 0.0004           | 0.0012           |
| Zinc                   | mg/L     | 0.02    | -    | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          |

ODWQS - Ontario Drinking Water Quality  
Standards

Bold and highlighted indicates exceedance

Ground Water Quality - General  
Parameters

| Parameters             | Units    | PWQO    | CWQG | Filtered     |               | Filtered    |             |
|------------------------|----------|---------|------|--------------|---------------|-------------|-------------|
|                        |          |         |      | WP6          | WP6           | WP6         | WP6         |
|                        |          |         |      | 24-Oct-22    | 19-Apr-23     | 19-Apr-23   | 12-Oct-23   |
| Total Alkalinity       | mg/L     | -       | -    | 317          | 320           | 323         | 338         |
| Calcium                | mg/L     | -       | -    | 128          | 479           | 124         | 118         |
| Chloride               | mg/L     | -       | 120  | 38           | 28.9          | 28.8        | 30          |
| COD                    | mg/L     | -       | -    | 12           | 117           | 17          | 78          |
| Specific Conductivity  | umhos/cm | -       | -    | 702          | 702           | 704         | 698         |
| DOC                    | mg/L     | -       | -    | 8            | 8.7           | 8.8         | 12.3        |
| Fluoride               | mg/L     | -       | -    | <0.1         | < 0.1         | < 0.1       | <0.1        |
| Iron                   | mg/L     | 0.3     | -    | <b>0.512</b> | <b>37.6</b>   | <b>2.04</b> | <b>1.24</b> |
| Magnesium              | mg/L     | -       | -    | 10.8         | 25.5          | 10.3        | 10.6        |
| Manganese              | mg/L     | -       | -    | 0.041        | 0.611         | 0.083       | 0.051       |
| Nitrate                | mg/L     | -       | 2.9  | 0.07         | < 0.05        | < 0.05      | 0.26        |
| Nitrite                | mg/L     | -       | 0.06 | <0.05        | < 0.05        | < 0.05      | <0.05       |
| pH Lab                 | pH unit  | 6.5-8.5 | -    | 7.82         | 7.93          | 7.95        | 7.53        |
| Phenols                | mg/L     | 0.001   | -    | < 0.001      | < 0.001       | 0.001       | <0.001      |
| Phosphorus             | mg/L     | 0.03    | -    | < 0.1        | <b>2.2</b>    | < 0.1       | <0.1        |
| Potassium              | mg/L     | -       | -    | 2.1          | 4.7           | 1.9         | 2.2         |
| Sodium                 | mg/L     | -       | -    | 7.6          | 8.3           | 7.6         | 8.5         |
| Sulphate               | mg/L     | -       | -    | 5            | 5             | 5           | 5           |
| Dissolved Solids       | mg/L     | -       | -    | 382          | 781           | 373         | 363         |
| Tot Kjel N             | mg/L     | -       | -    | 0.5          | 0.9           | 0.6         | 1.3         |
| Ammonia (NH3-N)        | mg/L     | -       | -    | 0.21         | 0.02          | 0.31        | 0.28        |
| Ammonia - Unionized    | mg/L     | 0.02    | -    | <0.01        | < 0.01        | 0.01        | <0.01       |
| Hardness (CaCO3)       | mg/L     | -       | -    | 364          | 1300          | 352         | 339         |
| BOD                    | mg/L     | -       | -    | <3           | < 3           | < 3         | <3          |
| Cyanide (free)         | mg/L     | -       | -    | <0.005       | < 0.005       | < 0.005     | <0.005      |
| Total Suspended Solids | mg/L     | -       | -    | 9            | 10000         | 222         | 7290        |
| Aluminum               | mg/L     | 0.075   | -    | <b>0.08</b>  | <b>11.7</b>   | 0.04        | 0.07        |
| Antimony               | mg/L     | 0.02    | -    | <0.0001      | 0.0003        | 0.0002      | <0.0001     |
| Arsenic                | mg/L     | 0.005   | -    | <0.0001      | 0.0022        | < 0.0001    | <0.0001     |
| Barium                 | mg/L     | -       | -    | 0.202        | 0.435         | 0.185       | 0.204       |
| Beryllium              | mg/L     | 1.1     | -    | <0.002       | < 0.002       | < 0.002     | <0.0001     |
| Boron                  | mg/L     | -       | 1.5  | 0.02         | 0.047         | 0.018       | 0.019       |
|                        |          |         |      |              |               | <           |             |
| Cadmium                | mg/L     | 0.0005  | -    | <0.00001     | 0.000154      | 0.000015    | <0.000015   |
| Chromium (total)       | mg/L     | 0.001   | -    | <0.001       | <b>0.023</b>  | < 0.001     | <0.001      |
| Chromium (VI)          | mg/L     | 0.001   | -    | <0.001       | < 0.001       | < 0.001     | <0.01       |
| Cobalt                 | mg/L     | 0.0009  | -    | <0.005       | <b>0.0122</b> | 0.0002      | 0.0004      |
| Copper                 | mg/L     | 0.005   | -    | 0.00005      | <b>0.0506</b> | 0.0002      | 0.0007      |
| Lead                   | mg/L     | 0.005   | -    | <0.00002     | <b>0.0141</b> | < 0.00002   | 0.00003     |
| Mercury                | mg/L     | 0.0002  | -    | < 0.00002    | < 0.00002     | < 0.00002   | <0.00002    |
| Molybdenum             | mg/L     | 0.04    | -    | < 0.0001     | < 0.0001      | < 0.0001    | <0.0001     |
| Nickel                 | mg/L     | 0.025   | -    | < 0.01       | 0.02          | < 0.01      | 0.0006      |
| Selenium               | mg/L     | 0.1     | -    | < 0.001      | 0.002         | < 0.001     | <0.001      |
| Silver                 | mg/L     | 0.0001  | -    | < 0.0001     | <b>0.0002</b> | < 0.0001    | <0.0001     |
| Strontium              | mg/L     | -       | -    | 0.46         | 1.02          | 0.439       | 0.456       |
| Thallium               | mg/L     | 0.0003  | -    | < 0.00005    | <b>0.973</b>  | < 0.005     | <0.00005    |
| Vanadium               | mg/L     | 0.006   | -    | 0.0004       | <b>0.0467</b> | 0.0006      | 0.0006      |
| Zinc                   | mg/L     | 0.02    | -    | < 0.005      | <b>0.057</b>  | 0.008       | <0.005      |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | Filtered   |            |            |           |              |           |              |           |           |           | Filtered  |              |              |           |
|------------------------|-------------|-----------|------------|------------|------------|-----------|--------------|-----------|--------------|-----------|-----------|-----------|-----------|--------------|--------------|-----------|
|                        |             |           | SW2        | SW2        | SW2        | SW2       | SW2          | SW2       | SW2          | SW2       | SW2       | SW2       | SW2       | SW2          | SW2          | SW2       |
|                        |             |           | 30-May-12  | 16-Aug-12  | 01-Oct-12  | 22-May-13 | 12-Aug-13    | 01-Oct-13 | 24-Apr-14    | 14-Jul-14 | 15-Oct-14 | 16-Apr-15 | 16-Apr-15 | 28-Jul-15    | 28-Jul-15    | 08-Oct-15 |
| Total Alkalinity       | mg/L        | -         | 190        | 180        | 170        | 151       | 139          | 165       | 121          | 177       | 161       | 132       | --        | 187          | 187          | 191       |
| BOD                    | mg/L        | -         | 3          | < 2.0      | < 2.0      | < 3       | < 3          | < 3       | <3           | <3        | <3        | < 2       | --        | < 3          | < 3          | < 3       |
| Calcium                | mg/L        | -         | 78         | 75         | 72         | 59.2      | 62.5         | 75.9      | 48.9         | 73.3      | 69.3      | 55.5      | 52.5      | 84.5         | 84           | 73.4      |
| Chloride               | mg/L        | -         | 13         | 16         | 13         | 8.1       | 8            | 10.3      | 4.4          | 10.5      | 11        | 8.5       | --        | 11.1         | 11.2         | 11.1      |
| COD                    | mg/L        | -         | 13         | 32         | 24         | 30        | 47           | 35        | 18           | 21        | 23        | 10        | --        | 11           | 16           | < 5       |
| Colour                 | colour unit | -         | 21         | 53         | 36         | 58        | 88           | 58        | 33           | 34        | 38        | 36        | --        | 17           | 17           | 20        |
| Specific Conductivity  | umhos/cm    | -         | 420        | 400        | 390        | 333       | 330          | 399       | 265          | 402       | 384       | 293       | --        | 427          | 429          | 431       |
| DOC                    | mg/L        | -         | 5.1        | 12         | 9.8        | 16.8      | 23.8         | 16.4      | 10.2         | 8.1       | 14.3      | 11.1      | --        | 4.5          | 5            | 2.7       |
| Fluoride               | mg/L        | -         | < 0.10     | < 0.10     | < 0.10     | 0.2       | 0.2          | 0.1       | <0.1         | 0.1       | <0.1      | < 0.1     | --        | < 0.1        | < 0.1        | 0.1       |
| Cyanide (free)         | mg/L        | 0.005     | < 0.0020   | < 0.0020   | < 0.0020   | < 0.005   | < 0.005      | < 0.005   | <0.005       | <0.005    | <0.005    | < 0.005   | --        | < 0.005      | < 0.005      | < 0.005   |
| Iron                   | mg/L        | 0.3       | < 0.10     | < 0.10     | < 0.10     | 0.062     | 0.058        | 0.028     | 0.016        | 0.02      | 0.006     | 0.023     | 0.02      | 0.191        | 0.175        | 0.018     |
| Magnesium              | mg/L        | -         | 6.3        | 5.8        | 6          | 4.53      | 4.71         | 5.66      | 3.8          | 5.31      | 5.53      | 4.29      | 4.08      | 7.07         | 7.08         | 5.62      |
| Manganese              | mg/L        | -         | 0.024      | 0.032      | 0.031      | 0.056     | 0.02         | 0.016     | 0.005        | 0.021     | 0.015     | 0.006     | 0.005     | 0.057        | 0.046        | 0.019     |
| Nitrate                | mg/L        | -         | 0.4        | < 0.10     | < 0.10     | 0.1       | < 0.1        | 0.3       | 0.1          | 0.3       | 0.4       | 0.1       | --        | 0.5          | 1            | 0.6       |
| Nitrite                | mg/L        | -         | < 0.010    | < 0.010    | < 0.010    | < 0.1     | < 0.1        | < 0.1     | <0.1         | <0.1      | <0.1      | <0.1      | --        | < 0.1        | < 0.1        | < 0.1     |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 8.16       | 7.91       | 7.46       | 7.72      | 7.83         | 7.92      | 8.05         | 8.11      | 8.2       | 8.17      | --        | 8.12         | 8.21         | 8.2       |
| Phenols                | mg/L        | 0.001     | < 0.0010   | < 0.0010   | < 0.0010   | < 0.001   | < 0.001      | < 0.001   | < 0.001      | < 0.001   | < 0.001   | < 0.001   | --        | < 0.001      | < 0.001      | < 0.001   |
| Total Phosphorus       | mg/L        | 0.03      | 0.024      | 0.005      | 0.017      | < 0.01    | < 0.01       | < 0.01    | <0.1         | <0.1      | <0.1      | < 0.1     | < 0.1     | <b>0.2</b>   | <b>0.2</b>   | < 0.1     |
| Potassium              | mg/L        | -         | 0.86       | 0.53       | 0.61       | 0.7       | 0.4          | 0.7       | 0.9          | 0.7       | 1         | 1.1       | 1.1       | 1            | 1            | 0.9       |
| Sodium                 | mg/L        | -         | 5.8        | 5.6        | 5.4        | 4.7       | 5.2          | 5.3       | 2.8          | 5.2       | 6.1       | 4.8       | 5         | 7.1          | 7.2          | 5.2       |
| Sulphate               | mg/L        | -         | 13         | < 1        | 17         | 5         | 2            | 7         | 6            | 9         | 8         | 5         | --        | 14           | 14           | 15        |
| Dissolved Solids       | mg/L        | -         | 242        | 218        | 221        | 174       | 167          | 205       | 140          | 212       | 200       | 159       | --        | 239          | 241          | 230       |
| Tot Kjel N             | mg/L        | -         | 0.15       | 0.63       | 1          | 1.2       | 0.7          | 0.46      | 0.4          | <0.1      | 0.4       | 0.7       | 1.3       | 0.5          | 0.5          | 0.2       |
| Ammonia (NH3-N)        | mg/L        | -         | < 0.01     | 0.06       | 0.07       | 0.075     | < 0.01       | 0.01      | 0.07         | 0.06      | 0.02      | < 0.01    | --        | 0.04         | 0.03         | 0.05      |
| Total Suspended Solids | mg/L        | -         | 2          | < 1        | < 1        | 12        | 3            | 3         | 5            | 3         | <3        | < 3       | --        | < 3          | < 3          | < 3       |
| Turbidity              | ntu         | -         | 1.3        | 0.4        | 1.3        | 0.8       | 0.4          | 0.6       | 0.3          | 0.7       | 0.8       | 0.4       | --        | 0.6          | 0.3          | 0.6       |
| Hardness (CaCO3)       | mg/L        | -         | 220        | 190        | 190        | 167       | 176          | 213       | 138          | 205       | 195       | 156       | 148       | 240          | 239          | 207       |
| Unionized Ammonia      | mg/L        | 0.02      | < 0.00088  | 0.0008     | 0.0025     | 0.0005    | --           | 0.00005   | 0.001        | 0.0005    | 0.00037   | <0.0001   | --        | 0.002        | 0.001        | 0.001     |
| Aluminum               | mg/L        | 0.075     | < 0.005    | < 0.005    | < 0.005    | 0.02      | 0.03         | 0.03      | 0.02         | 0.04      | 0.02      | 0.02      | 0.02      | 0.07         | 0.07         | 0.03      |
| Antimony               | mg/L        | 0.02      | < 0.00050  | < 0.00050  | < 0.00050  | < 0.0001  | < 0.0001     | < 0.0001  | 0.0002       | 0.0002    | 0.0002    | 0.0003    | 0.0002    | 0.0019       | 0.0016       | < 0.0001  |
| Arsenic                | mg/L        | 0.005     | < 0.0010   | < 0.0010   | < 0.0010   | 0.0003    | 0.0005       | 0.0002    | <0.0001      | 0.0003    | 0.0003    | 0.0002    | 0.0001    | 0.0011       | 0.0006       | < 0.0001  |
| Barium                 | mg/L        | -         | 0.044      | 0.037      | 0.031      | 0.031     | 0.028        | 0.038     | 0.016        | 0.037     | 0.038     | 0.02      | 0.019     | 0.065        | 0.066        | 0.042     |
| Beryllium              | mg/L        | 1.1       | < 0.00050  | < 0.00050  | < 0.00050  | < 0.002   | < 0.002      | < 0.002   | <0.002       | <0.002    | <0.002    | < 0.002   | < 0.002   | < 0.002      | < 0.002      | < 0.002   |
| Boron                  | mg/L        | 0.2       | < 0.010    | < 0.010    | < 0.010    | < 0.005   | 0.01         | < 0.005   | 0.007        | <0.005    | 0.008     | 0.007     | 0.007     | 0.007        | 0.007        | 0.007     |
| Cadmium                | mg/L        | 0.0005    | < 0.00010  | < 0.00010  | < 0.00010  | < 0.00002 | 0.00005      | < 0.00002 | <0.00002     | <0.00002  | 0.00007   | < 0.00002 | < 0.00002 | < 0.0001     | < 0.0001     | < 0.00002 |
| Chromium (total)       | mg/L        | 0.001     | < 0.0050   | < 0.0050   | < 0.0050   | < 0.002   | 0.0003       | < 0.0002  | <0.0002      | <0.0002   | <0.0002   | < 0.0002  | < 0.0002  | < 0.001      | < 0.001      | < 0.0002  |
| Chromium (VI)          | mg/L        | 0.001     |            |            |            |           |              |           |              |           |           |           |           |              |              |           |
| Cobalt                 | mg/L        | 0.0009    | < 0.00050  | < 0.00050  | < 0.00050  | < 0.0001  | < 0.005      | < 0.005   | <0.005       | <0.005    | <0.005    | < 0.005   | < 0.005   | < 0.005      | < 0.005      | < 0.005   |
| Copper                 | mg/L        | 0.005     | < 0.0010   | < 0.0010   | < 0.0010   | < 0.002   | 0.0004       | 0.0005    | 0.0021       | 0.0001    | 0.0011    | < 0.0001  | 0.0009    | < 0.0005     | < 0.0005     | 0.0001    |
| Lead                   | mg/L        | 0.005     | < 0.00050  | < 0.00050  | < 0.00050  | 0.00006   | 0.00009      | < 0.00002 | 0.00014      | 0.00005   | 0.00004   | < 0.00002 | < 0.00002 | 0.0002       | < 0.0001     | 0.00002   |
| Mercury                | mg/L        | 0.0002    | < 0.00001  |            | < 0.00001  | < 0.00002 | < 0.00002    | < 0.00002 | <0.00002     | <0.00002  | <0.00002  | <0.00002  | <0.00002  | <0.00002     | <0.00002     | <0.00002  |
| Molybdenum             | mg/L        | 0.04      | < 0.00050  | < 0.00050  | < 0.00050  | 0.0001    | < 0.0001     | < 0.0001  | 0.0001       | 0.0002    | 0.0002    | < 0.0001  | < 0.0001  | 0.0017       | 0.0013       | 0.0002    |
| Nickel                 | mg/L        | 0.025     | < 0.0010   | < 0.0010   | < 0.0010   | < 0.01    | < 0.01       | < 0.01    | <0.01        | <0.01     | <0.01     | < 0.01    | < 0.01    | < 0.01       | < 0.01       | < 0.01    |
| Selenium               | mg/L        | 0.1       | < 0.0020   | < 0.0020   | < 0.0020   | < 0.001   | < 0.001      | < 0.001   | <0.001       | <0.001    | 0.001     | < 0.001   | < 0.001   | < 0.005      | < 0.005      | < 0.001   |
| Silver                 | mg/L        | 0.0001    | < 0.00010  | < 0.00010  | < 0.00010  | < 0.00002 | < 0.00002    | < 0.00002 | <0.00002     | <0.00002  | <0.00002  | 0.00004   | 0.00003   | < 0.0001     | < 0.0001     | < 0.00002 |
| Strontium              | mg/L        | -         | 0.18       | 0.18       | 0.18       | --        | --           | --        | --           | 0.183     | 0.182     | 0.146     | 0.134     | 0.23         | 0.231        | 0.155     |
| Thallium               | mg/L        | 0.0003    | < 0.000050 | < 0.000050 | < 0.000050 | < 0.00005 | < 0.00005    | < 0.00005 | <0.00005     | <0.00005  | <0.00005  | < 0.00005 | < 0.00005 | < 0.0003     | < 0.0003     | < 0.00005 |
| Vanadium               | mg/L        | 0.006     | < 0.00050  | < 0.00050  | 0.00075    | < 0.005   | 0.0002       | 0.0003    | <0.0001      | 0.0001    | 0.0002    | 0.0001    | 0.0001    | 0.0014       | 0.0012       | 0.0002    |
| Zinc                   | mg/L        | 0.02      | < 0.0050   | < 0.0050   | < 0.0050   | < 0.005   | <b>0.044</b> | < 0.005   | <b>0.024</b> | 0.008     | 0.007     | < 0.005   | < 0.005   | <b>0.034</b> | <b>0.038</b> | < 0.005   |
| Field pH               | pH unit     | -         | 8.31       | 7.57       | 8.18       | 7.4       | --           | 7.37      | 8.32         | 7.42      | 7.86      | 7.81      | 7.81      | 7.87         | 7.87         | 7.73      |
| Field Temp             | deg C       | -         | 22.3       | 18         | 13.4       | 14.7      | 22           | 13.7      | 3.2          | 18.4      | 14.3      | 10.8      | 10.8      | 24.2         | 24.2         | 10.1      |
| Field Conductivity     | us/cm       | -         | 420        | 340.2      | 380        | 350       | --           | 384       | 320          | 340.1     | 390       | 340       | 340       | 422.4        | 422.4        | 320       |
| Dissolved Oxygen       | mg/L        | -         | 10.07      | 3.01       | 5.02       | 5.89      | --           | 5.13      | 3.22         | 7.84      | --        | 6.59      | 6.59      | 5.82         | 5.82         | 6.95      |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         | Filtered         |
|------------------------|-------------|-----------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                        |             |           | SW2<br>08-Oct-15 | SW2<br>29-Apr-16 | SW2<br>29-Apr-16 | SW2<br>24-Aug-16 | SW2<br>24-Aug-16 | SW2<br>04-Oct-16 | SW2<br>04-Oct-16 | SW2<br>18-Apr-17 | SW2<br>18-Apr-17 | SW2<br>20-Jul-17 | SW2<br>20-Jul-17 | SW2<br>24-Oct-17 | SW2<br>23-Apr-18 | SW2<br>18-Jul-18 |
| Total Alkalinity       | mg/L        | -         | --               | 140              | --               | 185              | 187              | 187              | --               | 133              |                  | 183              |                  | 154              | 120              | 177              |
| BOD                    | mg/L        | -         | --               | < 3              | --               | < 3              | < 3              | < 3              | --               | < 3              |                  | < 3              |                  | < 3              | < 3              | < 2              |
| Calcium                | mg/L        | -         | 77.7             | 56.6             | 55.2             | 73.8             | 75.9             | 77.4             | 80.8             | 48.6             | 49               | 64.8             | 60.9             | 62.3             | 45.7             | 63.5             |
| Chloride               | mg/L        | -         | --               | 8.8              | --               | 10.8             | 10.4             | 11.1             | --               | 8.5              |                  | 7.1              |                  | 10.8             | 7.3              | 13.8             |
| COD                    | mg/L        | -         | --               | 25               | --               | 21               | 15               | 7                | --               | 27               |                  | 48               |                  | 39               | 16               | < 5              |
| Colour                 | colour unit | -         | --               | 41               | --               | 27               | 27               | 10               | --               | 51               |                  | 110              |                  | 64               | 26               | 21               |
| Specific Conductivity  | umhos/cm    | -         | --               | 313              | --               | 425              | 427              | 438              | --               | 301              |                  | 388              |                  | 352              | 269              | 437              |
| DOC                    | mg/L        | -         | --               | 9.9              | --               | 7.1              | 6.7              | 2.2              | --               | 11.7             |                  | 19.7             |                  | 18.2             | 7.1              | 4.2              |
| Fluoride               | mg/L        | -         | --               | < 0.1            | --               | < 0.1            | 0.1              | < 0.1            | --               | < 0.1            |                  | < 0.1            |                  | < 0.1            | < 0.1            | < 0.1            |
| Cyanide (free)         | mg/L        | 0.005     | --               | < 5              | --               | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          |                  | < 0.005          |                  | < 0.005          | < 0.005          | < 0.005          |
| Iron                   | mg/L        | 0.3       | 0.005            | 0.007            | 0.007            | 0.039            | 0.011            | 0.01             | 0.007            | 0.008            | 0.007            | 0.288            | 0.117            | 0.066            | 0.029            | 0.024            |
| Magnesium              | mg/L        | -         | 5.96             | 4.71             | 4.57             | 5.83             | 5.96             | 6.06             | 6.32             | 3.88             | 3.8              | 5.06             | 4.73             | 5.62             | 3.66             | 4.88             |
| Manganese              | mg/L        | -         | 0.018            | 0.004            | 0.004            | 0.032            | 0.015            | 0.019            | 0.019            | 0.003            | 0.004            | 0.65             | 0.568            | 0.042            | 0.043            | 0.034            |
| Nitrate                | mg/L        | -         | --               | 0.2              | --               | 0.4              | 0.5              | 0.6              | --               | < 0.1            |                  | 0.09             |                  | 0.22             | 0.14             | 0.4              |
| Nitrite                | mg/L        | -         | --               | < 0.1            | --               | < 0.1            | < 0.1            | < 0.1            | --               | < 0.1            | --               | < 0.05           | --               | < 0.05           | < 0.05           | < 0.05           |
| pH Lab                 | pH unit     | 6.5 - 8.5 | --               | 8.05             | --               | 8.21             | 8.23             | 8.2              | --               | 7.97             | --               | 8.24             | --               | 8.03             | 8.04             | 8.08             |
| Phenols                | mg/L        | 0.001     | --               | 0.001            | --               | < 0.001          | < 0.001          | < 0.001          | --               | < 0.001          | --               | <b>0.004</b>     | --               | <b>0.005</b>     | < 0.001          | < 0.001          |
| Total Phosphorus       | mg/L        | 0.03      | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | <b>0.09</b>      | 0.02             |
| Potassium              | mg/L        | -         | 0.9              | 0.6              | 0.6              | 0.7              | 0.8              | 0.8              | 0.8              | 0.6              | 0.6              | 0.8              | 0.8              | 0.9              | 1                | 0.6              |
| Sodium                 | mg/L        | -         | 5.6              | 5.2              | 5                | 5.5              | 5.7              | 5.8              | 6.1              | 4.4              | 3                | 4.8              | 4.5              | 6.4              | 3.7              | 5                |
| Sulphate               | mg/L        | -         | --               | 7                | --               | 17               | 17               | 15               | --               | 10               | --               | 3                | --               | 5                | 3                | 14               |
| Dissolved Solids       | mg/L        | -         | --               | 168              | --               | 226              | 230              | 232              | --               | 156              | --               | 201              | --               | 183              | 143              | 208              |
| Tot Kjel N             | mg/L        | -         | 0.7              | 0.5              | 0.6              | 0.5              | 0.4              | 0.4              | --               | 0.4              | --               | 0.7              | --               | 0.7              | 0.3              | 0.3              |
| Ammonia (NH3-N)        | mg/L        | -         | 0.16             | 0.03             | 0.09             | 0.04             | 0.03             | 0.08             | --               | 0.02             | --               | 0.05             | --               | 0.04             | 0.03             | 0.05             |
| Total Suspended Solids | mg/L        | -         | --               | < 3              | --               | 8                | < 3              | < 3              | --               | < 3              | --               | 10               | --               | < 3              | < 3              | < 3              |
| Turbidity              | ntu         | -         | --               | 0.3              | --               | 3.7              | 0.5              | 0.7              | --               | 0.3              | --               | 2.2              | --               | 1.3              | 0.6              | 1.1              |
| Hardness (CaCO3)       | mg/L        | -         | 219              | 161              | 157              | 208              | 214              | 224              | 224              | 161              | --               | 183              | 172              | 173              | 129              | 179              |
| Unionized Ammonia      | mg/L        | 0.02      | 0.002            | 0.002            | 0.006            | 0.001            | 0.001            | 0.002            | -                | 6.37E-05         | -                | 0.002            | -                | 0.0004           | 0.001            | 0.00008          |
| Aluminum               | mg/L        | 0.075     | 0.03             | 0.02             | 0.02             | 0.03             | 0.02             | 0.04             | 0.02             | --               | 0.02             | --               | 0.04             | 0.04             | 0.03             | 0.05             |
| Antimony               | mg/L        | 0.02      | 0.0001           | < 0.0001         | < 0.0001         | < 0.0001         | 0.0002           | 0.0002           | < 0.0001         | < 0.0001         | 0.0001           | 0.0001           | < 0.0001         | < 0.0001         | < 0.0001         | 0.0003           |
| Arsenic                | mg/L        | 0.005     | < 0.0001         | 0.0002           | 0.0002           | 0.0002           | 0.0002           | 0.0001           | < 0.0001         | 0.0002           | 0.001            | 0.001            | 0.0002           | 0.0003           | 0.0004           | 0.0002           |
| Barium                 | mg/L        | -         | 0.044            | 0.016            | 0.016            | 0.043            | 0.044            | 0.046            | 0.047            | 0.018            | 0.033            | 0.032            | 0.016            | 0.043            | 0.015            | 0.035            |
| Beryllium              | mg/L        | 1.1       | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          |
| Boron                  | mg/L        | 0.2       | 0.007            | < 0.005          | < 0.005          | 0.008            | 0.008            | < 0.005          | < 0.005          | 0.008            | 0.006            | 0.007            | 0.007            | 0.009            | < 0.005          | 0.007            |
| Cadmium                | mg/L        | 0.0005    | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | 0.00002          | < 0.000014       | < 0.000014       | 0.000085         | < 0.000014       | 0.000023         | < 0.000014       | < 0.000015       |
| Chromium (total)       | mg/L        | 0.001     | < 0.0002         | < 0.0002         | < 0.0002         | < 0.0002         | < 0.0002         | < 0.0002         | 0.0004           | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          |
| Chromium (VI)          | mg/L        | 0.001     |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Cobalt                 | mg/L        | 0.0009    | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.0001         | < 0.0001         | < 0.0001         | 0.0002           | 0.0002           | < 0.0001         | < 0.0001         | < 0.0001         | 0.0003           |
| Copper                 | mg/L        | 0.005     | 0.0007           | 0.0001           | 0.0004           | 0.0002           | 0.0004           | < 0.0001         | 0.0001           | 0.0009           | < 0.0001         | <b>0.0081</b>    | < 0.0001         | 0.0032           | 0.0006           | 0.0006           |
| Lead                   | mg/L        | 0.005     | < 0.00002        | < 0.00002        | < 0.00002        | 0.00006          | < 0.00002        | < 0.00002        | 0.00006          | < 0.00002        | 0.00006          | 0.00069          | < 0.00002        | 0.00024          | 0.00004          | 0.0002           |
| Mercury                | mg/L        | 0.0002    | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | 0.00003          | < 0.00002        | --               | --               | < 0.00002        | --               | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        |
| Molybdenum             | mg/L        | 0.04      | 0.0002           | < 0.0001         | < 0.0001         | 0.0002           | 0.0002           | 0.0002           | < 0.0001         | < 0.0001         | 0.0002           | 0.0003           | < 0.0001         | 0.0001           | 0.0001           | 0.0002           |
| Nickel                 | mg/L        | 0.025     | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           |
| Selenium               | mg/L        | 0.1       | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          |
| Silver                 | mg/L        | 0.0001    | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | 0.00004          | < 0.00002        | < 0.00002        | < 0.0001         |
| Strontium              | mg/L        | -         | 0.16             | 0.145            | 0.141            | 0.177            | 0.178            | 0.183            | 0.192            | 0.113            | 0.176            | 0.166            | 0.111            | 0.17             | 0.102            | 0.137            |
| Thallium               | mg/L        | 0.0003    | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        |
| Vanadium               | mg/L        | 0.006     | 0.0001           | 0.0001           | < 0.0001         | 0.0001           | 0.0001           | 0.0001           | 0.0002           | < 0.0001         | 0.0002           | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | 0.0003           |
| Zinc                   | mg/L        | 0.02      | 0.007            | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | 0.007            | < 0.005          | < 0.005          | <b>0.056</b>     | 0.005            | 0.005            |
| Field pH               | pH unit     | -         | 7.73             | 8.66             | 8.66             | 7.6              | 7.6              | 8.08             | 8.08             | 7.34             | 7.34             | 7.87             | 7.87             | 7.64             | 8.25             | 6.57             |
| Field Temp             | deg C       | -         | 10.1             | 6.9              | 6.9              | 23.2             | 23.2             | 12.4             | 12.4             | 6.9              | 6.9              | 22.5             | 22.5             | 13.4             | 3                | 21.6             |
| Field Conductivity     | us/cm       | -         | 320              | 260              | 260              | 398.4            | 398.4            | 410              | 410              | 305              | 305              | 370              | 370              | 246              | 280              | 392              |
| Dissolved Oxygen       | mg/L        | -         | 6.95             | 8.8              | 8.8              | 7.92             | 7.92             | 6.73             | 6.73             | 9.04             | 9.04             | 4.24             | 4.24             | 6.87             | 5.28             | 3.23             |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance



Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | Filtered   | Filtered      | Filtered  | Filtered   | Filtered    | Filtered   | Filtered   | Filtered    | Filtered     | Filtered    | Filtered   | Filtered   | Filtered   | Filtered   |
|------------------------|-------------|-----------|------------|---------------|-----------|------------|-------------|------------|------------|-------------|--------------|-------------|------------|------------|------------|------------|
|                        |             |           | SW2        | SW2           | SW2       | SW2        | SW2         | SW2        | SW2        | SW2         | SW2          | SW2         | SW2        | SW2        | SW2        | SW2        |
|                        |             |           | 18-Jul-18  | 16-Oct-18     | 16-Oct-18 | 12-Apr-19  | 08-Jul-19   | 22-Oct-19  | 23-Apr-20  | 20-Jul-20   | 20-Oct-20    | 20-Apr-21   | 19-Jul-21  | 28-Oct-21  | 21-Apr-22  | 20-Jul-22  |
| Total Alkalinity       | mg/L        | -         |            | 175           |           | 129        | 182         | 164        | 140        | 176         | 162          | 138         | 179        | 152        | 129        | 185        |
| BOD                    | mg/L        | -         |            | 3             |           | < 3        | < 3         | < 3        | < 3        | < 3         | < 3          | < 3         | < 3        | < 3        | < 3        | < 3        |
| Calcium                | mg/L        | -         | 73.8       | 74.5          | 72.3      | 56.9       | 77          | 71.3       | 64.2       | 80.7        | 72.9         | 56.6        | 69.7       | 66         | 46.9       | 70.8       |
| Chloride               | mg/L        | -         |            | 12.9          |           | 8.5        | 10.5        | 11.8       | 9.1        | 10.9        | 12.3         | 11.2        | 11.6       | 13.7       | 9.2        | 9.5        |
| COD                    | mg/L        | -         |            | 22            |           | 22         | 30          | 9          | 23         | 22          | 35           | 28          | 50         | 44         | 15         | 28         |
| Colour                 | colour unit | -         |            | 24            |           | 31         | 48          | 24         | 32         | 41          | 41           | 51          | 80         | 61         | 37         | 54         |
| Specific Conductivity  | umhos/cm    | -         |            | 412           |           | 305        | 400         | 396        | 307        | 397         | 367          | 308         | 369        | 351        | 299        | 375        |
| DOC                    | mg/L        | -         |            | 7             |           | 9.7        | 10.2        | 6.4        | 8.6        | 8.2         | 10.2         | 16.1        | 21.7       | 19         | 11         | 15.6       |
| Fluoride               | mg/L        | -         |            | < 0.1         |           | < 0.1      | < 0.1       | < 0.1      | < 0.1      | 0.1         | < 0.1        | < 0.1       | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Cyanide (free)         | mg/L        | 0.005     |            | < 0.005       |           | < 0.005    | < 0.005     | < 0.005    | < 0.005    | < 0.005     | < 0.005      | < 0.005     | < 0.005    | < 0.005    | < 0.005    | < 0.005    |
| Iron                   | mg/L        | 0.3       | 0.019      | 0.092         | 0.073     | 0.052      | 0.041       | 0.034      | 0.048      | 0.072       | 0.272        | 0.027       | 0.046      | 0.03       | 0.009      | 0.049      |
| Magnesium              | mg/L        | -         | 5.45       | 7.3           | 6.89      | 4.46       | 5.78        | 5.56       | 5.89       | 6.91        | 5.34         | 4.51        | 5.3        | 5.21       | 3.97       | 5.3        |
| Manganese              | mg/L        | -         | 0.037      | 0.033         | 0.017     | 0.024      | 0.026       | 0.018      | 0.019      | 0.046       | 0.061        | 0.008       | 0.03       | 0.003      | 0.004      | 0.027      |
| Nitrate                | mg/L        | -         |            | 0.54          |           | 0.19       | 0.43        | 0.56       | 0.33       | 0.09        | 0.14         | < 0.05      | 0.12       | < 0.05     | 0.11       | 0.17       |
| Nitrite                | mg/L        | -         |            | < 0.05        |           | < 0.05     | < 0.05      | < 0.05     | < 0.05     | < 0.05      | < 0.05       | < 0.05      | < 0.05     | < 0.05     | < 0.05     | < 0.05     |
| pH Lab                 | pH unit     | 6.5 - 8.5 |            | 8.07          |           | 7.97       | 8.16        | 8.04       | 7.8        | 8.16        | 7.91         | 8.01        | 8.03       | 7.74       | 7.31       | 8.01       |
| Phenols                | mg/L        | 0.001     |            | < 0.002       |           | < 0.002    | < 0.002     | < 0.001    | < 0.002    | < 0.002     | < 0.001      | < 0.002     | < 0.002    | < 0.001    | < 0.001    | < 0.001    |
| Total Phosphorus       | mg/L        | 0.03      |            | 0.01          |           | < 0.01     | 0.02        | 0.03       | 0.01       | <b>0.04</b> | 0.01         | <b>0.05</b> | 0.02       | 0.02       | 0.01       | 0.02       |
| Potassium              | mg/L        | -         | 0.7        | 1.1           | 1         | 1.2        | 0.7         | 1.2        | 0.9        | 1.1         | 1            | 0.6         | 0.5        | 0.9        | 0.7        | 0.5        |
| Sodium                 | mg/L        | -         | 5.5        | 7.6           | 6.9       | 5.6        | 4.8         | 5.4        | 5.3        | 6.3         | 7.6          | 5.5         | 5.3        | 6          | 3.4        | 5.2        |
| Sulphate               | mg/L        | -         |            | 11            |           | 6          | 7           | 16         | 11         | 9           | 8            | 6           | 3          | 2          | 6          | 6          |
| Dissolved Solids       | mg/L        | -         |            | 219           |           | 160        | 215         | 219        | 181        | 220         | 200          | 167         | 204        | 185        | 148        | 212        |
| Tot Kjeh N             | mg/L        | -         |            | 0.4           |           | 0.4        | 0.3         | 0.3        | 0.3        | 0.6         | 0.8          | 0.4         | 0.7        | 0.6        | 0.4        | 1.1        |
| Ammonia (NH3-N)        | mg/L        | -         |            | 0.05          |           | 0.08       | 0.08        | 0.03       | 0.01       | 0.04        | 0.02         | 0.03        | 0.04       | 0.08       | 0.22       | 0.53       |
| Total Suspended Solids | mg/L        | -         |            | 3             |           | < 3        | 3           | < 3        | < 3        | 14          | 21           | < 3         | < 3        | < 3        | < 3        | < 3        |
| Turbidity              | ntu         | -         |            | 1.4           |           | 1.1        | 1.4         | 9          | 0.9        | 1.9         | 1.7          | 1           | 0.7        | 0.5        | 0.3        | 1.5        |
| Hardness (CaCO3)       | mg/L        | -         | 207        | 216           | 209       | 161        | 219         | 201        | 164        | 213         | 204          | 160         | 199        | 192        | 134        | 199        |
| Unionized Ammonia      | mg/L        | 0.02      |            | 0.001         |           | < 0.01     | < 0.01      | < 0.01     | < 0.01     | < 0.01      | < 0.01       | < 0.01      | < 0.01     | < 0.01     | < 0.01     | 0.0100     |
| Aluminum               | mg/L        | 0.075     | 0.05       | 0.06          | 0.05      | 0.04       | 0.05        | 0.06       | 0.03       | 0.05        | 0.01         | < 0.01      | 0.04       | 0.04       | < 0.01     | 0.04       |
| Antimony               | mg/L        | 0.02      | < 0.0001   | < 0.0001      | < 0.0001  | 0.0003     | 0.0004      | 0.0003     | 0.0002     | 0.0002      | < 0.0001     | 0.0002      | 0.0005     | < 0.0001   | 0.0002     | 0.0003     |
| Arsenic                | mg/L        | 0.005     | 0.0001     | 0.0001        | 0.0001    | 0.0002     | 0.0003      | 0.0001     | 0.0002     | 0.0003      | 0.0002       | 0.0002      | 0.0004     | 0.0002     | 0.0002     | 0.0002     |
| Barium                 | mg/L        | -         | 0.041      | 0.059         | 0.05      | 0.02       | 0.042       | 0.04       | 0.035      | 0.057       | 0.039        | 0.019       | 0.036      | 0.024      | 0.016      | 0.039      |
| Beryllium              | mg/L        | 1.1       | < 0.002    | < 0.002       | < 0.002   | < 0.002    | < 0.002     | < 0.002    | < 0.002    | < 0.002     | < 0.002      | < 0.002     | < 0.002    | < 0.002    | < 0.002    | < 0.002    |
| Boron                  | mg/L        | 0.2       | 0.007      | 0.012         | 0.009     | 0.007      | 0.01        | 0.01       | 0.006      | 0.012       | 0.006        | 0.005       | 0.01       | 0.008      | < 0.005    | < 0.005    |
| Cadmium                | mg/L        | 0.0005    | < 0.000015 | 0.000024      | 0.000036  | < 0.000015 | < 0.000015  | < 0.000015 | < 0.000015 | < 0.000015  | < 0.000015   | < 0.000015  | < 0.000015 | < 0.000015 | < 0.000015 | < 0.000015 |
| Chromium (total)       | mg/L        | 0.001     | < 0.001    | 0.001         | 0.001     | < 0.001    | < 0.001     | < 0.001    | < 0.001    | < 0.001     | 0.001        | < 0.001     | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Chromium (VI)          | mg/L        | 0.001     |            |               |           |            |             |            |            |             |              |             |            |            | < 0.001    | < 0.001    |
| Cobalt                 | mg/L        | 0.0009    | 0.0003     | < 0.0001      | 0.0001    | 0.0002     | 0.0002      | 0.0002     | < 0.0001   | < 0.0001    | < 0.0001     | < 0.0001    | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Copper                 | mg/L        | 0.005     | 0.0001     | <b>0.0052</b> | 0.0049    | 0.0006     | 0.0006      | 0.0003     | 0.0002     | 0.0002      | 0.0009       | 0.0002      | < 0.0001   | < 0.0001   | 0.0002     | < 0.0001   |
| Lead                   | mg/L        | 0.005     | < 0.00002  | 0.00032       | 0.00025   | 0.00009    | 0.00003     | 0.00006    | < 0.00002  | 0.00012     | 0.0004       | < 0.00002   | 0.00002    | < 0.00002  | 0.00002    | 0.00002    |
| Mercury                | mg/L        | 0.0002    |            | < 0.00002     |           | < 0.00002  | < 0.00002   | < 0.00002  | < 0.00002  | < 0.00002   | < 0.00002    | < 0.00002   | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002  |
| Molybdenum             | mg/L        | 0.04      | 0.0002     | 0.0002        | 0.0002    | 0.0001     | 0.0002      | 0.0002     | 0.0022     | 0.0002      | 0.0002       | 0.0001      | 0.0001     | < 0.0001   | < 0.0001   | 0.0001     |
| Nickel                 | mg/L        | 0.025     | < 0.01     | < 0.01        | < 0.01    | < 0.01     | < 0.01      | < 0.01     | < 0.01     | < 0.01      | < 0.01       | < 0.01      | < 0.01     | < 0.01     | < 0.01     | < 0.01     |
| Selenium               | mg/L        | 0.1       | < 0.001    | < 0.001       | < 0.001   | < 0.001    | < 0.001     | < 0.001    | < 0.001    | < 0.001     | < 0.001      | < 0.001     | < 0.001    | < 0.001    | < 0.001    | < 0.001    |
| Silver                 | mg/L        | 0.0001    | < 0.0001   | < 0.0001      | < 0.0001  | < 0.0001   | < 0.0001    | < 0.0001   | < 0.0001   | < 0.0001    | < 0.0001     | < 0.0001    | < 0.0001   | < 0.0001   | < 0.0001   | < 0.0001   |
| Strontium              | mg/L        | -         | 0.153      | 0.217         | 0.201     | 0.13       | 0.18        | 0.17       | 0.165      | 0.204       | 0.148        | 0.133       | 0.175      | 0.153      | 0.112      | 0.173      |
| Thallium               | mg/L        | 0.0003    | < 0.00005  | < 0.00005     | < 0.00005 | < 0.00005  | < 0.00005   | < 0.00005  | < 0.00005  | < 0.00005   | < 0.00005    | < 0.00005   | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L        | 0.006     | 0.0002     | 0.0002        | 0.0001    | 0.0001     | 0.0002      | 0.0002     | < 0.0001   | 0.0003      | 0.0002       | < 0.0001    | 0.0002     | < 0.0001   | < 0.0001   | 0.0001     |
| Zinc                   | mg/L        | 0.02      | < 0.005    | <b>0.028</b>  | 0.01      | 0.008      | <b>0.04</b> | 0.01       | 0.014      | 0.007       | <b>0.021</b> | 0.012       | < 0.005    | 0.008      | < 0.005    | 0.006      |
| Field pH               | pH unit     | -         |            | 7.79          |           | 7.4        | 7.46        | 7.98       | 7.84       | 7.56        | 7.85         | 7.15        | 6.96       | 8.1        | 8.26       | 7.7        |
| Field Temp             | deg C       | -         |            | 10.6          |           | 4.3        | 19.5        | 9.8        | 5          | 28          | 7.5          | 5.8         | 23         | 6.2        | 6.3        | 25         |
| Field Conductivity     | us/cm       | -         |            | 365           |           | 310        | 359         | 340        | 330        | 414         | 325          | 410         | 358        | 335        | 260        | 320        |
| Dissolved Oxygen       | mg/L        | -         |            | 11.25         |           | 13         | 10.76       | 7.8        | 9.82       | 4.9         | 7.63         | 16.22       | 4.22       | 6.21       | 8.82       | 2.92       |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

|                        |             | DUP       |            |           |           |           |           |            |            |            |           |           |           |           |           |           |
|------------------------|-------------|-----------|------------|-----------|-----------|-----------|-----------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Parameters             | Units       | PWQO      | SW2        | SW2       | SW2       | SW2       | SW2       | SW3        | SW3        | SW3        | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       |
|                        |             |           | 24-Oct-22  | 20-Apr-23 | 30-Aug-23 | 12-Oct-23 | 12-Oct-23 | 30-May-12  | 16-Aug-12  | 01-Oct-12  | 22-May-13 | 12-Aug-13 | 01-Oct-13 | 24-Apr-14 | 14-Jul-14 | 15-Oct-14 |
| Total Alkalinity       | mg/L        | -         | 164        | 139       | 191       | 159       | 161       | 190        | 170        | 160        | 141       | 207       | 160       | 123       | 181       | 163       |
| BOD                    | mg/L        | -         | < 3        | < 3       | <3        | <3        | <3        | 5          | < 2.0      | < 2.0      | < 3       | < 3       | < 3       | <3        | <3        | <3        |
| Calcium                | mg/L        | -         | 65.5       | 53.6      | 68.1      | 57.7      | 55.9      | 75         | 71         | 70         | 51.3      | 90.7      | 52.1      | 45.6      | 77.9      | 69.8      |
| Chloride               | mg/L        | -         | 18.3       | 8         | 11.2      | 9.5       | 9.5       | 14         | 14         | 14         | 9.2       | 10.6      | 11.1      | 6.8       | 10.6      | 13.4      |
| COD                    | mg/L        | -         | 23         | 20        | 37        | 47        | 46        | 38         | 36         | 27         | 38        | 65        | 41        | 24        | 31        | 29        |
| Colour                 | colour unit | -         | 39         | 41        | 51        | 67        | 73        | 43         | 61         | 44         | 80        | 160       | 66        | 42        | 56        | 48        |
| Specific Conductivity  | umhos/cm    | -         | 376        | 317       | 406       | 330       | 331       | 420        | 370        | 360        | 319       | 467       | 361       | 273       | 413       | 382       |
| DOC                    | mg/L        | -         | 16.2       | 6.6       | 13.5      | 22.9      | 23.6      | 9.1        | 13         | 13         | 21.1      | 28.3      | 20.5      | 11.3      | 12.9      | 18.2      |
| Fluoride               | mg/L        | -         | < 0.1      | < 0.1     | <0.1      | <0.1      | <0.1      | < 0.10     | < 0.10     | < 0.10     | 0.2       | 0.2       | 0.1       | <0.1      | 0.1       | <0.1      |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005    | < 0.005   | <0.005    | <0.005    | <0.005    |            | < 0.0020   | < 0.0020   | < 0.005   | < 0.005   | < 0.005   | <0.005    | <0.005    | <0.005    |
| Iron                   | mg/L        | 0.3       | 0.028      | 0.019     | 0.119     | 0.036     | 0.038     | 0.29       | 1.3        | 0.12       | 0.126     | 0.825     | 0.31      | 0.146     | 0.226     | 0.206     |
| Magnesium              | mg/L        | -         | 5.44       | 4.14      | 5.52      | 4.75      | 4.64      | 6          | 5.3        | 6.1        | 3.68      | 4.45      | 1.32      | 3.25      | 5.33      | 5.08      |
| Manganese              | mg/L        | -         | 0.005      | 0.008     | 0.198     | 0.012     | 0.023     | 0.12       | 0.062      | 0.026      | 0.054     | 0.046     | 0.053     | 0.012     | 0.104     | 0.078     |
| Nitrate                | mg/L        | -         | 0.4        | 0.12      | <0.05     | 0.09      | 0.21      | < 0.10     | < 0.10     | < 0.10     | < 0.1     | < 0.1     | < 0.1     | <0.1      | <0.1      | 0.1       |
| Nitrite                | mg/L        | -         | < 0.05     | < 0.05    | <0.05     | <0.05     | <0.05     | < 0.010    | < 0.010    | < 0.010    | < 0.1     | < 0.1     | < 0.1     | <0.1      | <0.1      | <0.1      |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 8          | 7.78      | 7.9       | 8.08      | 8.11      | 8.2        | 8.05       | 7.97       | 7.83      | 7.97      | 7.82      | 8.09      | 8.04      | 7.97      |
| Phenols                | mg/L        | 0.001     | < 0.001    | < 0.001   | <0.001    | <0.001    | <0.001    | < 0.0010   | < 0.0010   | < 0.0010   | < 0.001   | < 0.001   | 0.003     | < 0.001   | < 0.001   | < 0.001   |
| Total Phosphorus       | mg/L        | 0.03      | < 0.01     | < 0.01    | <0.1      | <0.1      | <0.1      | 0.059      | 0.03       | 0.026      | 0.02      | 0.02      | 0.01      | <0.1      | <0.1      | <0.1      |
| Potassium              | mg/L        | -         | 0.7        | 0.9       | 1.6       | 1.6       | 1.9       | 0.72       | 0.22       | 0.71       | 0.5       | 0.7       | 0.6       | 0.9       | 0.5       | 1.1       |
| Sodium                 | mg/L        | -         | 5.1        | 3.6       | 5.4       | 4.6       | 4.5       | 6.6        | 5.4        | 6.7        | 5.6       | 7.6       | 6         | 4.5       | 6.1       | 7         |
| Sulphate               | mg/L        | -         | 10         | 6         | 8         | 4         | 4         | < 1        | < 1        | 11         | 5         | 8         | 4         | 4         | 5         | 6         |
| Dissolved Solids       | mg/L        | -         | 204        | 160       | 215       | 180       | 178       | 232        | 203        | 207        | 160       | 247       | 171       | 138       | 215       | 199       |
| Tot Kjeh N             | mg/L        | -         | 0.4        | 0.5       | 3         | 1.6       | 0.5       | 0.92       | 1.1        | 0.46       | 1.6       | 1.24      | 0.6       | 0.5       | <0.1      | 0.6       |
| Ammonia (NH3-N)        | mg/L        | -         | 0.05       | 0.1       | 0.06      | 1.31      | 0.06      | < 0.01     | 0.04       | 0.06       | 0.054     | < 0.01    | < 0.01    | <0.01     | 0.06      | 0.05      |
| Total Suspended Solids | mg/L        | -         | 4          | < 3       | <3        | 7         | 6         | 3          | 19         | 6          | 8         | 7         | 8         | 6         | 4         | 8         |
| Turbidity              | ntu         | -         | 0.4        | 0.4       | 0.7       | 0.4       | 0.6       | 2.4        | 2.8        | 1.2        | 0.6       | 1.2       | 2.3       | 0.8       | 1         | 2.3       |
| Hardness (CaCO3)       | mg/L        | -         | 200        | 156       | 193       | 164       | 159       | 230        | 180        | 180        | 143       | 245       | 136       | 125       | 217       | 195       |
| Unionized Ammonia      | mg/L        | 0.02      | < 0.01     | < 0.01    | <0.01     | 0.01      | <0.01     | < 0.0010   | 0.001      | 0.003      | 0.001     | <0.0003   | <0.0001   | <0.0004   | 0.0005    | 0.0010    |
| Aluminum               | mg/L        | 0.075     | 0.04       | 0.01      | 0.02      | 0.04      | 0.02      | < 0.005    | < 0.005    | < 0.005    | 0.02      | 0.05      | 0.05      | 0.02      | 0.05      | 0.02      |
| Antimony               | mg/L        | 0.02      | 0.0003     | 0.0003    | 0.0004    | <0.0001   | 0.0001    | < 0.00050  | < 0.00050  | < 0.00050  | < 0.0001  | < 0.0001  | < 0.0001  | <0.0001   | 0.0003    | 0.0001    |
| Arsenic                | mg/L        | 0.005     | 0.0002     | 0.0002    | 0.0003    | 0.0002    | 0.0002    | < 0.0010   | < 0.0010   | < 0.0010   | 0.0004    | 0.0007    | 0.0003    | 0.0001    | 0.0004    | 0.0004    |
| Barium                 | mg/L        | -         | 0.029      | 0.021     | 0.038     | 0.026     | 0.025     | 0.041      | 0.035      | 0.03       | 0.026     | 0.033     | 0.037     | 0.017     | 0.037     | 0.038     |
| Beryllium              | mg/L        | 1.1       | < 0.002    | < 0.002   | <0.0001   | <0.0001   | <0.0001   | < 0.00050  | < 0.00050  | < 0.00050  | < 0.002   | < 0.002   | < 0.002   | <0.002    | <0.002    | <0.002    |
| Boron                  | mg/L        | 0.2       | < 0.005    | 0.006     | 0.007     | 0.007     | 0.006     | 0.011      | 0.012      | < 0.010    | < 0.005   | 0.017     | < 0.005   | 0.007     | 0.007     | 0.008     |
|                        |             |           | <          |           |           |           |           |            |            |            |           |           |           |           |           |           |
| Cadmium                | mg/L        | 0.0005    | < 0.000015 | 0.000015  | <0.000015 | <0.000015 | <0.000015 | < 0.00010  | < 0.00010  | < 0.00010  | < 0.00002 | 0.00004   | < 0.00002 | <0.00002  | <0.00002  | <0.00002  |
| Chromium (total)       | mg/L        | 0.001     | < 0.001    | < 0.001   | <0.001    | <0.001    | <0.001    | < 0.0050   | < 0.0050   | < 0.0050   | < 0.002   | < 0.0002  | 0.0003    | <0.0002   | 0.0056    | <0.0002   |
| Chromium (VI)          | mg/L        | 0.001     | < 0.001    | < 0.001   | <0.001    | <0.001    | <0.001    |            |            |            |           |           |           |           |           |           |
| Cobalt                 | mg/L        | 0.0009    | < 0.0001   | < 0.0001  | 0.0003    | 0.0001    | 0.0001    | < 0.00050  | < 0.00050  | < 0.00050  | < 0.0001  | < 0.005   | < 0.005   | <0.005    | <0.005    | <0.005    |
| Copper                 | mg/L        | 0.005     | 0.0002     | 0.0001    | 0.0003    | 0.0004    | 0.0013    | < 0.0010   | < 0.0010   | < 0.0010   | < 0.002   | 0.0005    | 0.0008    | 0.0002    | 0.0003    | 0.0002    |
| Lead                   | mg/L        | 0.005     | 0.00004    | 0.00004   | 0.00005   | 0.00005   | 0.00034   | < 0.00050  | < 0.00050  | < 0.00050  | 0.00008   | < 0.00002 | 0.00013   | 0.004     | 0.00004   | 0.00003   |
| Mercury                | mg/L        | 0.0002    | < 0.00002  | < 0.00002 | <0.00002  | <0.00002  | <0.00002  | < 0.00001  | < 0.00001  | < 0.00001  | < 0.00002 | < 0.00002 | < 0.00002 | <0.00002  | <0.00002  | <0.00002  |
| Molybdenum             | mg/L        | 0.04      | < 0.0001   | 0.0002    | 0.0001    | 0.0001    | <0.0001   | < 0.00050  | < 0.00050  | < 0.00050  | 0.0002    | 0.0009    | < 0.0001  | 0.0001    | 0.0003    | 0.0001    |
| Nickel                 | mg/L        | 0.025     | < 0.01     | < 0.01    | <0.0002   | 0.0005    | 0.0025    | < 0.0010   | < 0.0010   | < 0.0010   | < 0.01    | < 0.01    | < 0.01    | <0.01     | <0.01     | <0.01     |
| Selenium               | mg/L        | 0.1       | < 0.001    | < 0.001   | <0.001    | <0.001    | <0.001    | < 0.0020   | < 0.0020   | < 0.0020   | < 0.001   | < 0.001   | < 0.001   | <0.001    | <0.001    | 0.001     |
| Silver                 | mg/L        | 0.0001    | < 0.0001   | < 0.0001  | <0.0001   | <0.0001   | <0.0001   | < 0.00010  | < 0.00010  | < 0.00010  | < 0.00002 | < 0.00002 | < 0.00002 | <0.00002  | <0.00002  | <0.00002  |
| Strontium              | mg/L        | -         | 0.16       | 0.127     | 0.167     | 0.141     | 0.139     | 0.19       | 0.18       | 0.18       | --        | --        | --        | --        | 0.209     | 0.189     |
| Thallium               | mg/L        | 0.0003    | < 0.00005  | < 0.00005 | <0.00005  | <0.00005  | <0.00005  | < 0.000050 | < 0.000050 | < 0.000050 | < 0.00005 | < 0.00005 | < 0.00005 | <0.00005  | <0.00005  | <0.00005  |
| Vanadium               | mg/L        | 0.006     | < 0.0001   | < 0.0001  | <0.0001   | 0.0001    | 0.0001    | < 0.00050  | < 0.00050  | 0.00062    | < 0.005   | 0.0004    | 0.0004    | <0.0001   | 0.0002    | 0.0002    |
| Zinc                   | mg/L        | 0.02      | 0.008      | < 0.005   | 0.013     | <0.005    | 0.016     | < 0.0050   | 0.0065     | < 0.0050   | 0.009     | < 0.005   | 0.005     | 0.01      | 0.011     | <0.005    |
| Field pH               | pH unit     | -         | 8          | 7.9       | 7.28      | 7.68      | 7.68      | 8.38       | 7.84       | 8.21       | 7.77      | 7.85      | 7.37      | 8.51      | 7.35      | 7.87      |
| Field Temp             | deg C       | -         | 9.8        | 10.4      | 17.7      | 11.6      | 11.6      | 22.2       | 20.6       | 16.1       | 15.3      | 20.6      | 13.7      | 4         | 19.2      | 14.6      |
| Field Conductivity     | us/cm       | -         | 320        | 260       | 408       | 301       | 301       | 423        | 358.6      | 380        | 340       | 358.7     | 384       | 660       | 359.8     | 380       |
| Dissolved Oxygen       | mg/L        | -         | 5.6        | 8.65      | 1.82      | 4.3       | 4.3       | 10.04      | 6.39       | 9.42       | 6.13      | 6.43      | 5.28      | 4.6       | 4.32      | --        |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| General Parameters     |             |           | Filtered  | Filtered  | Filtered  | Filtered  | Filtered  | Filtered  | Filtered  | Filtered  | Filtered  | Filtered  | Filtered  | Filtered  | Filtered   |            |
|------------------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|
| Parameters             | Units       | PWQO      | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       | SW3        | SW3        |
|                        |             |           | 16-Apr-15 | 16-Apr-15 | 28-Jul-15 | 28-Jul-15 | 08-Oct-15 | 10-Aug-15 | 29-Apr-16 | 29-Apr-16 | 24-Aug-16 | 24-Aug-16 | 04-Oct-16 | 04-Oct-16 | 18-Apr-17  | 18-Apr-17  |
| Total Alkalinity       | mg/L        | -         | 149       | --        | 190       | 191       | 189       | --        | 140       | --        | 185       | 186       | 200       | --        | 146        |            |
| BOD                    | mg/L        | -         | < 2       | --        | < 3       | < 3       | < 3       | --        | < 3       | --        | < 3       | < 3       | < 3       | --        | < 3        |            |
| Calcium                | mg/L        | -         | 63.2      | 60.1      | 79.8      | 81.5      | 75.6      | 78.5      | 57.5      | 56.6      | 74.7      | 73.1      | 82        | 79.2      | 53.7       | 53.8       |
| Chloride               | mg/L        | -         | 11.3      | --        | 11.4      | 11.4      | 11.4      | --        | 10        | --        | 10.4      | 10.3      | 12.6      | --        | 12.5       |            |
| COD                    | mg/L        | -         | 26        | --        | 25        | 14        | 5         | 12        | 26        | --        | 28        | 36        | 28        | --        | 31         |            |
| Colour                 | colour unit | -         | 31        | --        | 42        | 42        | 27        | --        | 45        | --        | 54        | 50        | 38        | --        | 60         |            |
| Specific Conductivity  | umhos/cm    | -         | 331       | --        | 423       | 424       | 426       | --        | 317       | --        | 419       | 421       | 450       | --        | 336        |            |
| DOC                    | mg/L        | -         | 12.8      | --        | 10.5      | 10.7      | 5.4       | --        | 11.3      | --        | 14.7      | 14.2      | 8.8       | --        | 14.2       |            |
| Fluoride               | mg/L        | -         | 0.1       | --        | < 0.1     | < 0.1     | 0.1       | --        | < 0.1     | --        | < 0.1     | < 0.1     | < 0.1     | --        | < 0.1      |            |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005   | --        | < 0.005   | < 0.005   | < 0.005   | --        | < 5       | --        | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    |            |
| Iron                   | mg/L        | 0.3       | 0.403     | 0.269     | 0.464     | 0.381     | 0.176     | 0.089     | 0.041     | 0.032     | 0.141     | 0.109     | 0.461     | 0.244     | 0.058      | 0.052      |
| Magnesium              | mg/L        | -         | 3.96      | 3.87      | 6.62      | 6.76      | 5.85      | 6.09      | 4.21      | 4.15      | 5.62      | 5.56      | 6.33      | 6.17      | 3.55       | 3.55       |
| Manganese              | mg/L        | -         | 0.044     | 0.045     | 0.279     | 0.274     | 0.064     | 0.07      | 0.011     | 0.011     | 0.062     | 0.066     | 0.21      | 0.195     | 0.007      | 0.007      |
| Nitrate                | mg/L        | -         | 0.1       | --        | 0.1       | 0.1       | 0.2       | --        | 0.1       | --        | < 0.1     | 0.1       | < 0.1     | --        | < 0.1      |            |
| Nitrite                | mg/L        | -         | < 0.1     | --        | < 0.1     | < 0.1     | < 0.1     | --        | < 0.1     | --        | < 0.1     | < 0.1     | < 0.1     | --        | < 0.1      | --         |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 8.04      | --        | 8.08      | 8.14      | 8.13      | --        | 8.02      | --        | 8.08      | 8.14      | 7.95      | --        | 7.95       | --         |
| Phenols                | mg/L        | 0.001     | < 0.001   | --        | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.002     | --        | < 0.001   | < 0.001   | 0.001     | --        | < 0.001    | --         |
| Total Phosphorus       | mg/L        | 0.03      | < 0.1     | < 0.1     | 0.2       | 0.2       | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      |
| Potassium              | mg/L        | -         | 1.2       | 1.1       | 0.8       | 0.8       | 0.8       | 0.9       | 0.7       | 0.7       | 0.4       | 0.4       | 1         | 1         | 0.8        | 0.8        |
| Sodium                 | mg/L        | -         | 5.4       | 4.9       | 7.1       | 7.4       | 5.7       | 6         | 6.6       | 6.6       | 5.8       | 5.7       | 7         | 6.9       | 6.4        | 6.4        |
| Sulphate               | mg/L        | -         | 2         | --        | 9         | 9         | 13        | --        | 7         | --        | 17        | 16        | 10        | --        | 9          | --         |
| Dissolved Solids       | mg/L        | -         | 177       | --        | 230       | 233       | 228       | --        | 170       | --        | 225       | 224       | 239       | --        | 174        | --         |
| Tot Kjeh N             | mg/L        | -         | 0.7       | 0.9       | 0.5       | 0.5       | 0.4       | 1         | 0.5       | 0.6       | 0.7       | 0.6       | 0.6       | --        | 0.6        | --         |
| Ammonia (NH3-N)        | mg/L        | -         | 0.06      | --        | 0.09      | 0.06      | 0.09      | 0.09      | 0.03      | 0.04      | 0.04      | 0.03      | 0.04      | --        | 0.03       | --         |
| Total Suspended Solids | mg/L        | -         | 3         | --        | 3         | 4         | 3         | --        | 3         | --        | 16        | < 3       | 4         | --        | < 3        | --         |
| Turbidity              | ntu         | -         | 1.8       | --        | 1.3       | 1.1       | 1.5       | --        | 1         | --        | 2.4       | 0.6       | 2.3       | --        | 0.4        | --         |
| Hardness (CaCO3)       | mg/L        | -         | 174       | 166       | 227       | 231       | 213       | 221       | 161       | 159       | 210       | 206       | 232       | 232       | 172        | --         |
| Unionized Ammonia      | mg/L        | 0.02      | 0.0008    | --        | 0.0020    | 0.0014    | 0.0005    | 0.0005    | 0.0010    | 0.0013    | 0.0003    | 0.0002    | 0.0004    | --        | 0.00007    | --         |
| Aluminum               | mg/L        | 0.075     | 0.02      | 0.02      | 0.07      | 0.08      | 0.03      | 0.03      | 0.02      | 0.02      | 0.03      | 0.02      | 0.03      | 0.02      | 0.04       | --         |
| Antimony               | mg/L        | 0.02      | 0.0002    | 0.0001    | < 0.0005  | 0.0027    | 0.0005    | 0.0002    | < 0.0001  | < 0.0001  | 0.0006    | 0.0003    | < 0.0001  | < 0.0001  | < 0.0001   | < 0.0001   |
| Arsenic                | mg/L        | 0.005     | < 0.0001  | 0.0001    | 0.0021    | 0.0022    | 0.0002    | 0.0001    | 0.0002    | 0.0002    | 0.0004    | 0.0004    | 0.0003    | 0.0003    | 0.0003     | 0.0002     |
| Barium                 | mg/L        | -         | 0.067     | 0.065     | 0.059     | 0.061     | 0.036     | 0.039     | 0.019     | 0.018     | 0.04      | 0.04      | 0.046     | 0.044     | 0.019      | 0.02       |
| Beryllium              | mg/L        | 1.1       | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    |
| Boron                  | mg/L        | 0.2       | 0.011     | 0.01      | 0.008     | 0.009     | 0.006     | 0.006     | < 0.005   | < 0.005   | 0.009     | 0.009     | < 0.005   | < 0.005   | 0.012      | 0.014      |
| Cadmium                | mg/L        | 0.0005    | < 0.00002 | < 0.00002 | < 0.0001  | 0.0001    | 0.00003   | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | 0.00002   | < 0.000014 | < 0.000014 |
| Chromium (total)       | mg/L        | 0.001     | < 0.0002  | < 0.0002  | < 0.001   | 0.001     | < 0.0002  | < 0.0002  | < 0.0002  | < 0.0002  | < 0.0002  | < 0.0002  | 0.0004    | 0.0009    | < 0.001    | < 0.001    |
| Chromium (VI)          | mg/L        | 0.001     |           |           |           |           |           |           |           |           |           |           |           |           |            |            |
| Cobalt                 | mg/L        | 0.0009    | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.0001  | < 0.0001  | < 0.0001   | < 0.0001   |
| Copper                 | mg/L        | 0.005     | < 0.0001  | < 0.0001  | < 0.0005  | < 0.0005  | 0.0002    | 0.0014    | 0.0002    | 0.0004    | 0.0002    | 0.0003    | < 0.0001  | < 0.0001  | < 0.0001   | 0.0016     |
| Lead                   | mg/L        | 0.005     | < 0.00002 | < 0.00002 | 0.0001    | 0.0005    | 0.00005   | < 0.00002 | 0.00002   | < 0.00002 | 0.00003   | 0.00002   | 0.00014   | 0.00008   | < 0.00002  | 0.00002    |
| Mercury                | mg/L        | 0.0002    | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | --        | < 0.00002  | --         |
| Molybdenum             | mg/L        | 0.04      | < 0.0001  | < 0.0001  | 0.0012    | 0.0014    | 0.0002    | 0.0001    | 0.0002    | 0.0002    | 0.0002    | 0.0001    | < 0.0001  | 0.0001    | 0.0003     | 0.0003     |
| Nickel                 | mg/L        | 0.025     | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01     |
| Selenium               | mg/L        | 0.1       | < 0.001   | < 0.001   | < 0.005   | < 0.005   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001    | < 0.001    |
| Silver                 | mg/L        | 0.0001    | < 0.00002 | < 0.00002 | < 0.0001  | < 0.0001  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002 | 0.00003    | < 0.00002  |
| Strontium              | mg/L        | -         | 0.188     | 0.175     | 0.238     | 0.244     | 0.175     | 0.174     | 0.147     | 0.141     | 0.192     | 0.186     | 0.229     | 0.223     | 0.125      | 0.124      |
| Thallium               | mg/L        | 0.0003    | < 0.00005 | < 0.00005 | < 0.0003  | < 0.0003  | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005  |
| Vanadium               | mg/L        | 0.006     | < 0.0001  | < 0.0001  | 0.0013    | 0.0012    | 0.0001    | 0.0001    | < 0.0001  | < 0.0001  | < 0.0001  | < 0.0001  | 0.0002    | 0.0002    | 0.0002     | 0.0001     |
| Zinc                   | mg/L        | 0.02      | < 0.005   | < 0.005   | 0.033     | 0.034     | < 0.005   | 0.015     | < 0.005   | < 0.005   | 0.011     | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    |
| Field pH               | pH unit     | -         | 7.92      | 7.92      | 7.7       | 7.7       | 7.55      | 7.55      | 8.39      | 8.39      | 7.18      | 7.18      | 7.64      | 7.64      | 7.24       | 7.24       |
| Field Temp             | deg C       | -         | 8.2       | 8.2       | 22        | 22        | 8.3       | 8.3       | 6         | 6         | 20.6      | 20.6      | 14.3      | 14.3      | 6.1        | 6.1        |
| Field Conductivity     | us/cm       | -         | 320       | 320       | 403.8     | 403.8     | 315       | 315       | 265       | 265       | 400.3     | 400.3     | 425       | 425       | 267        | 267        |
| Dissolved Oxygen       | mg/L        | -         | 6.95      | 6.95      | 1.64      | 1.64      | 7.41      | 7.41      | 8.27      | 8.27      | 2.4       | 2.4       | 2.97      | 2.97      | 6.15       | 6.15       |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | Filtered     |               |              |            | Filtered    |            |              |            | Filtered   |             |             |             |             |              |
|------------------------|-------------|-----------|--------------|---------------|--------------|------------|-------------|------------|--------------|------------|------------|-------------|-------------|-------------|-------------|--------------|
|                        |             |           | SW3          | SW3           | SW3          | SW3        | SW3         | SW3        | SW3          | SW3        | SW3        | SW3         | SW3         | SW3         | SW3         | SW3          |
|                        |             |           | 20-Jul-17    | 20-Jul-17     | 24-Oct-17    | 24-Apr-18  | 18-Jul-18   | 18-Jul-18  | 16-Oct-18    | 16-Oct-18  | 12-Apr-19  | 08-Jul-19   | 22-Oct-19   | 23-Apr-20   | 20-Jul-20   | 20-Oct-20    |
| Total Alkalinity       | mg/L        | -         | 201          |               | 178          | 113        | 187         |            | 171          |            | 125        | 183         | 157         | 124         | 144         | 159          |
| BOD                    | mg/L        | -         | < 3          |               | 4            | < 3        | < 2         |            | 3            |            | < 3        | < 3         | < 3         | < 3         | 4           | < 3          |
| Calcium                | mg/L        | -         | 77.5         | 72.6          | 70.8         | 45.8       | 81.1        | 77.3       | 70.1         | 74.3       | 54.8       | 80          | 66.9        | 64.2        | 84.6        | 78.4         |
| Chloride               | mg/L        | -         | 8.7          |               | 11.4         | 8.5        | 14          |            | 13.5         |            | 11         | 11          | 13.2        | 13.5        | 11.4        | 15.8         |
| COD                    | mg/L        | -         | 61           |               | 129          | 19         | 17          |            | 22           |            | 32         | 45          | 28          | 28          | 36          | 31           |
| Colour                 | colour unit | -         | 80           |               | 68           | 32         | 44          |            | 36           |            | 43         | 74          | 37          | 44          | 55          | 46           |
| Specific Conductivity  | umhos/cm    | -         | 428          |               | 394          | 254        | 434         |            | 409          |            | 300        | 404         | 389         | 315         | 448         | 375          |
| DOC                    | mg/L        | -         | 22.3         |               | 22           | 7          | 8.5         |            | 9.4          |            | 10.8       | 16.4        | 9.4         | 10.9        | 13.3        | 14.6         |
| Fluoride               | mg/L        | -         | < 0.1        |               | < 0.1        | < 0.1      | < 0.1       |            | < 0.1        |            | < 0.1      | < 0.1       | < 0.1       | < 0.1       | < 0.1       | < 0.1        |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005      |               | < 0.005      | < 0.005    | < 0.005     |            | < 0.005      |            | < 0.005    | < 0.005     | < 0.005     | < 0.005     | < 0.005     | < 0.005      |
| Iron                   | mg/L        | 0.3       | <b>0.772</b> | <b>0.447</b>  | <b>0.401</b> | 0.059      | <b>0.6</b>  | 0.245      | 0.195        | 0.162      | 0.177      | 0.298       | 0.229       | 0.149       | <b>1.81</b> | <b>2.95</b>  |
| Magnesium              | mg/L        | -         | 6.11         | 5.08          | 5.93         | 3.23       | 6.28        | 5.69       | 7.12         | 7.4        | 3.68       | 5.92        | 5.34        | 5.21        | 6.67        | 5.65         |
| Manganese              | mg/L        | -         | 0.509        | 0.428         | 0.122        | 0.015      | 0.26        | 0.165      | 0.035        | 0.042      | 0.021      | 0.065       | 0.035       | 0.024       | 1.02        | 1.55         |
| Nitrate                | mg/L        | -         | < 0.05       |               | 0.1          | 0.21       | < 0.05      |            | 0.27         |            | 0.06       | 0.14        | 0.29        | 0.19        | 12.9        | < 0.05       |
| Nitrite                | mg/L        | -         | < 0.05       | --            | < 0.05       | < 0.05     | < 0.05      |            | < 0.05       |            | < 0.05     | < 0.05      | < 0.05      | < 0.05      | < 0.05      | < 0.05       |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 8.05         | --            | 7.79         | 8          | 8           |            | 8            |            | 7.98       | 7.97        | 7.99        | 7.84        | 7.46        | 7.91         |
| Phenols                | mg/L        | 0.001     | <b>0.006</b> | --            | <b>0.005</b> | < 0.001    | < 0.001     |            | <b>0.002</b> |            | < 0.002    | < 0.002     | < 0.001     | < 0.002     | < 0.002     | < 0.001      |
| Total Phosphorus       | mg/L        | 0.03      | < 0.1        | < 0.1         | <b>0.1</b>   | 0.02       | <b>0.08</b> |            | 0.01         |            | 0.02       | <b>0.06</b> | <b>0.07</b> | <b>0.06</b> | <b>0.24</b> | 0.02         |
| Potassium              | mg/L        | -         | 1            | 0.9           | 1.7          | 1          | 0.8         | 0.7        | 1.3          | 1.3        | 1.4        | 0.7         | 2           | 0.8         | 1           | 1.6          |
| Sodium                 | mg/L        | -         | 7.3          | 6.3           | 7.6          | 4.8        | 6.3         | 6          | 7.5          | 7.9        | 6.7        | 6.2         | 5.7         | 8           | 6.1         | 6            |
| Sulphate               | mg/L        | -         | 2            | --            | 4            | 3          | 7           |            | 10           |            | 5          | 3           | 16          | 10          | 4           | 8            |
| Dissolved Solids       | mg/L        | -         | 219          | --            | 209          | 137        | 229         |            | 212          |            | 158        | 218         | 211         | 176         | 203         | 204          |
| Tot Kjeh N             | mg/L        | -         | 0.9          | --            | 1.1          | 0.4        | 0.7         |            | 0.4          |            | 0.6        | 0.9         | 0.6         | 0.8         | 1.7         | 0.7          |
| Ammonia (NH3-N)        | mg/L        | -         | 0.09         | --            | 0.03         | 0.02       | 0.07        |            | 0.05         |            | 0.07       | 0.1         | 0.05        | 0.03        | 0.09        | 0.03         |
| Total Suspended Solids | mg/L        | -         | 10           | --            | 100          | < 3        | < 3         |            | 3            |            | < 3        | 4           | 104         | 9           | 8           | 13           |
| Turbidity              | ntu         | -         | 2.3          | --            | 17.5         | 1.3        | 2.8         |            | 2.9          |            | 0.8        | 2.4         | 2.9         | 2.1         | 5.7         | 1.8          |
| Hardness (CaCO3)       | mg/L        | -         | 219          | 202           | 192          | 128        | 229         | 217        | 205          | 216        | 150        | 218         | 189         | 160         | 221         | 219          |
| Unionized Ammonia      | mg/L        | 0.02      | 0.0019       | -             | 0.00008      | 0.0003     | 0.00007     |            | 0.0003       |            | < 0.01     | < 0.01      | < 0.01      | < 0.01      | < 0.01      | < 0.01       |
| Aluminum               | mg/L        | 0.075     | 0.03         | --            | 0.05         | 0.04       | 0.06        | 0.05       | 0.05         | 0.05       | 0.04       | 0.06        | 0.05        | 0.03        | 0.05        | 0.02         |
| Antimony               | mg/L        | 0.02      | 0.0001       | 0.0001        | < 0.0001     | < 0.0001   | 0.0001      | < 0.0001   | < 0.0001     | 0.0002     | < 0.0001   | 0.0003      | < 0.0001    | 0.0003      | 0.0002      | 0.0002       |
| Arsenic                | mg/L        | 0.005     | 0.001        | 0.001         | 0.0005       | 0.0003     | 0.0006      | 0.0005     | 0.0002       | 0.0002     | 0.0002     | 0.0005      | 0.0002      | 0.0002      | 0.0011      | 0.0008       |
| Barium                 | mg/L        | -         | 0.052        | 0.041         | 0.073        | 0.018      | 0.052       | 0.041      | 0.045        | 0.048      | 0.019      | 0.042       | 0.036       | 0.031       | 0.068       | 0.106        |
| Beryllium              | mg/L        | 1.1       | < 0.002      | < 0.002       | < 0.002      | < 0.002    | < 0.002     | < 0.002    | < 0.002      | < 0.002    | < 0.002    | < 0.002     | < 0.002     | < 0.002     | < 0.002     | < 0.002      |
| Boron                  | mg/L        | 0.2       | 0.009        | 0.009         | 0.011        | < 0.005    | 0.018       | 0.011      | 0.01         | 0.01       | 0.008      | 0.011       | 0.011       | 0.008       | 0.013       | 0.011        |
| Cadmium                | mg/L        | 0.0005    | < 0.000014   | 0.000083      | 0.000014     | < 0.000014 | 0.000107    | < 0.000015 | 0.000032     | < 0.000015 | < 0.000015 | < 0.000015  | < 0.000015  | < 0.000015  | < 0.000015  | 0.000023     |
| Chromium (total)       | mg/L        | 0.001     | < 0.001      | < 0.001       | < 0.001      | < 0.001    | < 0.001     | < 0.001    | < 0.001      | < 0.001    | 0.001      | < 0.001     | < 0.001     | 0.001       | < 0.001     | <b>0.002</b> |
| Chromium (VI)          | mg/L        | 0.001     |              |               |              |            |             |            |              |            |            |             |             |             |             |              |
| Cobalt                 | mg/L        | 0.0009    | 0.0003       | 0.0003        | < 0.0001     | < 0.0001   | 0.0004      | 0.0003     | < 0.0001     | < 0.0001   | 0.0002     | 0.0002      | 0.0002      | < 0.0001    | 0.0003      | 0.0008       |
| Copper                 | mg/L        | 0.005     | 0.0002       | <b>0.0063</b> | 0.0025       | 0.0006     | 0.0026      | 0.0003     | 0.0041       | 0.0006     | 0.0024     | 0.0003      | 0.0009      | 0.0004      | 0.0003      | 0.0016       |
| Lead                   | mg/L        | 0.005     | 0.00006      | 0.00038       | 0.00028      | 0.00009    | 0.00092     | 0.00008    | 0.00025      | 0.00002    | 0.00088    | 0.00002     | 0.00029     | 0.00012     | 0.00026     | 0.00048      |
| Mercury                | mg/L        | 0.0002    | < 0.00002    | --            | < 0.00002    | < 0.00002  | < 0.00002   |            | < 0.00002    |            | < 0.00002  | < 0.00002   | < 0.00002   | < 0.00002   | < 0.00002   | < 0.00002    |
| Molybdenum             | mg/L        | 0.04      | 0.0003       | 0.0004        | 0.0001       | 0.0001     | 0.0002      | 0.0001     | 0.0002       | 0.0002     | 0.0004     | 0.0002      | 0.0001      | 0.0003      | 0.0002      | 0.0002       |
| Nickel                 | mg/L        | 0.025     | < 0.01       | < 0.01        | < 0.01       | < 0.01     | < 0.01      | < 0.01     | < 0.01       | < 0.01     | < 0.01     | < 0.01      | < 0.01      | < 0.01      | < 0.01      | < 0.01       |
| Selenium               | mg/L        | 0.1       | < 0.001      | < 0.001       | < 0.001      | < 0.001    | < 0.001     | < 0.001    | < 0.001      | < 0.001    | < 0.001    | < 0.001     | < 0.001     | < 0.001     | < 0.001     | < 0.001      |
| Silver                 | mg/L        | 0.0001    | 0.00002      | < 0.00002     | < 0.00002    | < 0.00002  | < 0.0001    | < 0.0001   | < 0.0001     | < 0.0001   | < 0.0001   | < 0.0001    | < 0.0001    | < 0.0001    | < 0.0001    | < 0.0001     |
| Strontium              | mg/L        | -         | 0.23         | 0.197         | 0.204        | 0.103      | 0.201       | 0.188      | 0.218        | 0.229      | 0.123      | 0.209       | 0.172       | 0.162       | 0.22        | 0.166        |
| Thallium               | mg/L        | 0.0003    | < 0.00005    | < 0.00005     | < 0.00005    | < 0.00005  | < 0.00005   | < 0.00005  | < 0.00005    | < 0.00005  | < 0.00005  | < 0.00005   | < 0.00005   | < 0.00005   | < 0.00005   | < 0.00005    |
| Vanadium               | mg/L        | 0.006     | 0.0003       | 0.0002        | 0.0002       | < 0.0001   | 0.0003      | 0.0002     | 0.0001       | 0.0002     | 0.0002     | 0.0001      | 0.0003      | 0.0002      | 0.0003      | 0.0009       |
| Zinc                   | mg/L        | 0.02      | <b>0.037</b> | < 0.005       | <b>0.025</b> | 0.009      | <b>0.04</b> | < 0.005    | 0.016        | 0.01       | 0.009      | 0.011       | 0.008       | 0.013       | 0.007       | 0.008        |
| Field pH               | pH unit     | -         | 7.7          | 7.7           | 7.06         | 8.17       | 6.36        |            | 7.55         |            | 7.46       | 7.48        | 7.85        | 7.73        | 7.56        | 7.89         |
| Field Temp             | deg C       | -         | 21.5         | 21.5          | 14           | 3.7        | 21.5        |            | 7            |            | 2.5        | 19.1        | 9.8         | 3.6         | 23.6        | 7.8          |
| Field Conductivity     | us/cm       | -         | 339          | 339           | 356          | 272        | 405         |            | 350          |            | 300        | 362         | 330         | 360         | 424         | 333          |
| Dissolved Oxygen       | mg/L        | -         | 0.193        | 0.193         | 1.97         | 6.24       | 0.56        |            | 5.23         |            | 15.27      | 6.06        | 5.51        | 8.11        | 1.3         | 7.29         |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | DUP              |                  |                  |                  |                  |                  |                  |                  | DUP               |                  |                  |                  |                  |                  |
|------------------------|-------------|-----------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|------------------|------------------|
|                        |             |           | SW3<br>20-Apr-21 | SW3<br>19-Jul-21 | SW3<br>28-Oct-21 | SW3<br>21-Apr-22 | SW3<br>21-Apr-22 | SW3<br>20-Jul-22 | SW3<br>24-Oct-22 | SW3<br>20-Apr-23 | SW-3<br>20-Apr-23 | SW3<br>30-Aug-23 | SW3<br>12-Oct-23 | SW3<br>12-Oct-23 | SW4<br>30-May-12 | SW4<br>16-Aug-12 |
| Total Alkalinity       | mg/L        | -         | 147              | 178              | 171              | 157              | 155              | 180              | 165              | 160              | 159               | 215              | 164              | 164              | 170              | 180              |
| BOD                    | mg/L        | -         | < 3              | < 6              | < 6              | < 3              | < 3              | < 3              | < 3              | < 3              | < 3               | <3               | <3               | <3               | < 2.0            | < 2.0            |
| Calcium                | mg/L        | -         | 60.7             | 74.3             | 76.8             | 60.2             | 58               | 70.1             | 64.6             | 61.8             | 59.9              | 70.6             | 55.5             | 58.8             | 64               | 72               |
| Chloride               | mg/L        | -         | 15.7             | 12.5             | 19.9             | 17.3             | 16.4             | 13.5             | 25.5             | 12.9             | 12.9              | 13.3             | 12.9             | 12.7             | 13               | 14               |
| COD                    | mg/L        | -         | 37               | 63               | 56               | 21               | 28               | 38               | 38               | 156              | 28                | 54               | 58               | 46               | 36               | 40               |
| Colour                 | colour unit | -         | 68               | 106              | 81               | 49               | 49               | 70               | 53               | 63               | 56                | 88               | 68               | 70               | 55               | 53               |
| Specific Conductivity  | umhos/cm    | -         | 342              | 366              | 406              | 360              | 359              | 382              | 387              | 361              | 356               | 443              | 351              | 352              | 360              | 390              |
| DOC                    | mg/L        | -         | 18.2             | 25.3             | 23.9             | 14               | 13.7             | 19.7             | 18.3             | 16.9             | 16.6              | 24.8             | 23.1             | 23.2             | 15               | 13               |
| Fluoride               | mg/L        | -         | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1             | <0.1             | <0.1             | <0.1             | < 0.10           | < 0.10           |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005           | <0.005           | <0.005           | <0.005           | < 0.0020         | < 0.0020         |
| Iron                   | mg/L        | 0.3       | 0.188            | <b>0.488</b>     | <b>0.609</b>     | 0.093            | 0.1              | 0.169            | 0.17             | 0.066            | 0.076             | <b>0.397</b>     | 0.121            | 0.119            | 0.12             | 0.12             |
| Magnesium              | mg/L        | -         | 4.22             | 5.23             | 5.5              | 4.39             | 4.26             | 4.95             | 5.01             | 4.28             | 4.12              | 5.29             | 4.39             | 4.7              | 5.4              | 5.3              |
| Manganese              | mg/L        | -         | 0.018            | 0.138            | 0.18             | 0.01             | 0.009            | 0.029            | 0.033            | 0.008            | 0.008             | 0.124            | 0.019            | 0.028            | 0.015            | 0.028            |
| Nitrate                | mg/L        | -         | < 0.05           | 0.08             | < 0.05           | < 0.05           | < 0.05           | 0.06             | < 0.05           | < 0.05           | < 0.05            | <0.05            | <0.05            | 0.09             | < 0.10           | < 0.10           |
| Nitrite                | mg/L        | -         | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05           | < 0.05            | <0.05            | <0.05            | <0.05            | < 0.010          | < 0.010          |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 8.02             | 7.98             | 7.61             | 7.58             | 7.59             | 7.97             | 8.04             | 7.88             | 7.95              | 7.42             | 8.02             | 8                | 8.37             | 8.19             |
| Phenols                | mg/L        | 0.001     | < 0.002          | < 0.002          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001           | <0.001           | <0.001           | <0.001           | < 0.0010         | < 0.0010         |
| Total Phosphorus       | mg/L        | 0.03      | <b>0.17</b>      | <b>0.06</b>      | <b>0.1</b>       | <b>0.05</b>      | 0.03             | 0.03             | 0.02             | < 0.01           | 0.02              | <0.1             | <0.1             | <0.1             | <b>0.05</b>      | 0.026            |
| Potassium              | mg/L        | -         | 0.8              | 0.5              | 2                | 1.3              | 1.2              | 0.4              | 0.9              | 1.3              | 1.2               | 1.6              | 1.8              | 2                | < 0.20           | 0.45             |
| Sodium                 | mg/L        | -         | 7.8              | 7.3              | 9.1              | 7.3              | 7                | 7.1              | 7.6              | 7                | 6.9               | 7                | 6                | 6.4              | 6.4              | 5.8              |
| Sulphate               | mg/L        | -         | 7                | 2                | < 1              | 4                | 4                | 5                | 4                | 3                | 3                 | 3                | 4                | 4                | < 1              | < 1              |
| Dissolved Solids       | mg/L        | -         | 185              | 204              | 217              | 189              | 184              | 213              | 206              | 186              | 184               | 230              | 183              | 187              | 200              | 218              |
| Tot Kjeh N             | mg/L        | -         | 2.2              | 1                | 1.2              | 0.7              | 0.5              | 1.2              | 0.7              | 0.8              | 0.8               | 0.8              | 0.6              | 0.6              | 0.4              | 1.3              |
| Ammonia (NH3-N)        | mg/L        | -         | 0.03             | 0.05             | 0.07             | 0.08             | 0.07             | 0.5              | 0.03             | 0.27             | 0.29              | <0.05            | 0.09             | 0.08             | < 0.01           | 0.04             |
| Total Suspended Solids | mg/L        | -         | < 3              | 18               | 17               | 33               | 6                | 3                | 5                | < 3              | < 3               | <3               | 7                | 6                | 2                | < 1              |
| Turbidity              | ntu         | -         | 1.7              | 5.1              | 1.4              | 1                | 0.7              | 1.7              | 1.4              | 1.2              | 0.5               | 0.9              | 1.1              | 1.2              | 1.7              | 0.5              |
| Hardness (CaCO3)       | mg/L        | -         | 169              | 196              | 213              | 169              | 163              | 196              | 196              | 172              | 173               | 198              | 157              | 166              | 190              | 180              |
| Unionized Ammonia      | mg/L        | 0.02      | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01            | <0.01            | <0.01            | <0.01            | < 0.0019         | 0.00028          |
| Aluminum               | mg/L        | 0.075     | < 0.01           | 0.05             | 0.06             | 0.02             | 0.01             | 0.04             | 0.04             | 0.02             | 0.02              | 0.03             | 0.04             | 0.04             | < 0.005          | < 0.005          |
| Antimony               | mg/L        | 0.02      | 0.0003           | 0.0005           | 0.0004           | 0.0003           | 0.0002           | 0.0004           | 0.0002           | 0.0005           | 0.0005            | 0.0004           | <0.0001          | <0.0001          | < 0.00050        | < 0.00050        |
| Arsenic                | mg/L        | 0.005     | 0.0003           | 0.0007           | 0.0004           | 0.0002           | 0.0002           | 0.0004           | 0.0003           | 0.0002           | 0.0002            | 0.0007           | 0.0003           | 0.0003           | < 0.0010         | < 0.0010         |
| Barium                 | mg/L        | -         | 0.022            | 0.044            | 0.032            | 0.021            | 0.02             | 0.039            | 0.04             | 0.022            | 0.021             | 0.04             | 0.024            | 0.026            | 0.038            | 0.039            |
| Beryllium              | mg/L        | 1.1       | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002           | <0.0001          | <0.0001          | <0.0001          | < 0.00050        | < 0.00050        |
| Boron                  | mg/L        | 0.2       | 0.008            | 0.013            | 0.037            | < 0.005          | < 0.005          | 0.006            | < 0.005          | 0.005            | < 0.005           | 0.007            | 0.008            | 0.007            | 0.012            | 0.013            |
|                        |             |           |                  |                  |                  |                  |                  |                  |                  | <                | <                 |                  |                  |                  |                  |                  |
| Cadmium                | mg/L        | 0.0005    | < 0.000015       | < 0.000015       | < 0.000015       | < 0.000015       | < 0.000015       | < 0.000015       | < 0.000015       | 0.000015         | 0.000015          | <0.000015        | <0.000015        | <0.000015        | < 0.00010        | < 0.00010        |
| Chromium (total)       | mg/L        | 0.001     | < 0.001          | 0.001            | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001           | <0.001           | <0.001           | <0.001           | < 0.0050         | < 0.0050         |
| Chromium (VI)          | mg/L        | 0.001     |                  |                  |                  | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001           | <0.001           | <0.001           | <0.001           |                  |                  |
| Cobalt                 | mg/L        | 0.0009    | 0.0003           | 0.0001           | 0.0002           | < 0.0001         | < 0.0001         | 0.0001           | < 0.0001         | 0.0001           | < 0.0001          | 0.0003           | 0.0002           | 0.0001           | < 0.00050        | < 0.00050        |
| Copper                 | mg/L        | 0.005     | 0.0004           | 0.0005           | 0.0004           | 0.0005           | 0.0004           | 0.0002           | 0.0003           | 0.0004           | 0.0003            | 0.0001           | 0.0004           | 0.0006           | < 0.0010         | < 0.0010         |
| Lead                   | mg/L        | 0.005     | 0.00008          | 0.00024          | 0.00011          | 0.00005          | 0.00005          | 0.00004          | 0.00002          | 0.00006          | 0.00022           | 0.00003          | 0.00009          | 0.0001           | < 0.00050        | < 0.00050        |
| Mercury                | mg/L        | 0.0002    | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002         | <0.00002         | <0.00002         | <0.00002         | < 0.00001        | < 0.00001        |
| Molybdenum             | mg/L        | 0.04      | 0.0016           | 0.0002           | 0.0001           | 0.0003           | 0.0002           | 0.0002           | < 0.0001         | 0.0002           | 0.0002            | 0.0001           | 0.0001           | 0.0001           | < 0.00050        | < 0.00050        |
| Nickel                 | mg/L        | 0.025     | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01            | <0.0002          | 0.0009           | 0.0007           | < 0.0010         | < 0.0010         |
| Selenium               | mg/L        | 0.1       | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001           | <0.001           | <0.001           | <0.001           | < 0.0020         | < 0.0020         |
| Silver                 | mg/L        | 0.0001    | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001          | <0.0001          | <0.0001          | <0.0001          | < 0.00010        | < 0.00010        |
| Strontium              | mg/L        | -         | 0.144            | 0.19             | 0.185            | 0.147            | 0.141            | 0.182            | 0.171            | 0.15             | 0.144             | 0.19             | 0.142            | 0.153            | 0.18             | 0.19             |
| Thallium               | mg/L        | 0.0003    | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005         | <0.00005         | <0.00005         | <0.00005         | < 0.000050       | < 0.000050       |
| Vanadium               | mg/L        | 0.006     | 0.0002           | 0.0002           | 0.0003           | 0.0001           | 0.0001           | 0.0002           | < 0.0001         | 0.0001           | 0.0001            | <0.0001          | 0.0001           | 0.0001           | < 0.00050        | < 0.00050        |
| Zinc                   | mg/L        | 0.02      | 0.009            | <b>0.032</b>     | 0.015            | 0.009            | < 0.005          | 0.006            | 0.017            | < 0.005          | < 0.005           | 0.018            | 0.009            | 0.005            | < 0.0050         | 0.006            |
| Field pH               | pH unit     | -         | 7.1              | 6.7              | 7.95             | 8.36             | 8.36             | 7.4              | 7.88             | 7.85             | 7.85              | 7.29             | 7.7              | 7.7              | 8.69             | 7.31             |
| Field Temp             | deg C       | -         | 7.3              | 21.5             | 6.6              | 7                | 7                | 26.1             | 10.2             | 8.4              | 8.4               | 17.8             | 10               | 10               | 22.8             | 18.3             |
| Field Conductivity     | us/cm       | -         | 420              | 368              | 390              | 300              | 300              | 340              | 320              | 230              | 230               | 454              | 329              | 329              | 396              | 406.7            |
| Dissolved Oxygen       | mg/L        | -         | 13.15            | 1.14             | 5.9              | 8.86             | 8.86             | 2.31             | 5.86             | 9.05             | 9.05              | 1.15             | 3.92             | 3.92             | 16.06            | 2.4              |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance



Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | SW4            | SW4       | SW4           | SW4          | SW4       | SW4       | SW4       | SW4       | SW4          | SW4          | SW4          | SW4       | SW4          | SW4        |
|------------------------|-------------|-----------|----------------|-----------|---------------|--------------|-----------|-----------|-----------|-----------|--------------|--------------|--------------|-----------|--------------|------------|
|                        |             |           | 01-Oct-12      | 22-May-13 | 12-Aug-13     | 01-Oct-13    | 24-Apr-14 | 14-Jul-14 | 15-Oct-14 | 16-Apr-15 | 28-Jul-15    | 08-Oct-15    | 29-Apr-16    | 24-Aug-16 | 04-Oct-16    | 18-Apr-17  |
| Total Alkalinity       | mg/L        | -         | 180            | 143       | 128           | 154          | 117       | 170       | 158       | 116       | 189          | 199          | 131          | 175       | 205          | 123        |
| BOD                    | mg/L        | -         | < 2.0          | < 3       | < 3           | < 3          | <3        | <3        | <3        | < 2       | < 3          | < 3          | < 3          | < 3       | < 3          | < 3        |
| Calcium                | mg/L        | -         | 72             | 50.5      | 47.8          | 50.3         | 45.4      | 69.7      | 66.8      | 47.2      | 76.1         | 75.4         | 51.3         | 71.1      | 84.7         | 45.5       |
| Chloride               | mg/L        | -         | 16             | 8.2       | 4.8           | 10.9         | 6.7       | 7.3       | 12.5      | 8.9       | 9.8          | 13.2         | 10.5         | 9.6       | 12.9         | 11.4       |
| COD                    | mg/L        | -         | 86             | 35        | 69            | 49           | 24        | 39        | 37        | 30        | 47           | 14           | 30           | 54        | 44           | 31         |
| Colour                 | colour unit | -         | 50             | 82        | 200           | 70           | 40        | 70        | 58        | 46        | 78           | 43           | 50           | 87        | 51           | 59         |
| Specific Conductivity  | umhos/cm    | -         | 390            | 317       | 278           | 348          | 261       | 365       | 372       | 260       | 407          | 425          | 299          | 384       | 454          | 291        |
| DOC                    | mg/L        | -         | 15             | 20.5      | 28.3          | 23           | 11.4      | 15.5      | 20.8      | 12.4      | 19.1         | 13.5         | 12           | 20.7      | 15.9         | 13.7       |
| Fluoride               | mg/L        | -         | < 0.10         | 0.2       | 0.2           | 0.1          | <0.1      | <0.1      | <0.1      | 0.1       | < 0.1        | 0.1          | < 0.1        | < 0.1     | < 0.1        | < 0.1      |
| Cyanide (free)         | mg/L        | 0.005     | < 0.0020       | < 0.005   | < 0.005       | < 0.005      | <0.005    | <0.005    | <0.005    | < 0.005   | < 0.005      | < 0.005      | <0.00 5      | < 0.005   | < 0.005      | < 0.005    |
| Iron                   | mg/L        | 0.3       | 0.14           | 0.19      | 0.226         | <b>2.16</b>  | 0.056     | 0.192     | 0.104     | 0.046     | <b>0.866</b> | <b>0.347</b> | 0.05         | 0.183     | 0.21         | 0.049      |
| Magnesium              | mg/L        | -         | 6              | 3.63      | 2.43          | 3.98         | 3.09      | 4.29      | 4.96      | 2.99      | 5.66         | 5.87         | 3.68         | 5.05      | 6.45         | 2.97       |
| Manganese              | mg/L        | -         | 0.055          | 0.069     | 0.026         | 0.21         | 0.005     | 0.057     | 0.069     | 0.008     | 0.328        | 0.173        | 0.013        | 0.056     | 0.08         | 0.009      |
| Nitrate                | mg/L        | -         | < 0.10         | < 0.1     | < 0.1         | 0.1          | 0.1       | <0.1      | <0.1      | < 0.1     | < 0.1        | < 0.1        | < 0.1        | < 0.1     | < 0.1        | < 0.1      |
| Nitrite                | mg/L        | -         | < 0.010        | < 0.1     | < 0.1         | < 0.1        | <0.1      | <0.1      | <0.1      | < 0.1     | < 0.1        | < 0.1        | < 0.1        | < 0.1     | < 0.1        | < 0.1      |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 7.96           | 7.62      | 7.51          | 7.47         | 8.06      | 7.53      | 7.8       | 7.97      | 7.5          | 7.92         | 8            | 7.7       | 7.95         | 7.9        |
| Phenols                | mg/L        | 0.001     | < 0.0010       | < 0.001   | < 0.001       | <b>0.002</b> | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001      | < 0.001      | <b>0.003</b> | < 0.001   | <b>0.003</b> | 0.001      |
| Total Phosphorus       | mg/L        | 0.03      | <b>0.048</b>   | 0.02      | 0.02          | < 0.01       | <0.1      | <0.1      | <0.1      | < 0.1     | <b>0.2</b>   | < 0.1        | < 0.1        | < 0.1     | < 0.1        | < 0.1      |
| Potassium              | mg/L        | -         | 1.4            | 0.5       | 0.3           | 0.5          | 1         | 0.1       | 1.2       | 1.2       | 0.2          | 1.1          | 0.6          | 0.2       | 1.2          | 0.7        |
| Sodium                 | mg/L        | -         | 7.7            | 4.9       | 3.2           | 6            | 4.6       | 4.4       | 7         | 5.6       | 6.7          | 6.8          | 6.5          | 5.9       | 7.7          | 5.4        |
| Sulphate               | mg/L        | -         | 4              | 3         | < 1           | 2            | 3         | 1         | 4         | 3         | 1            | 7            | 5            | 6         | 5            | 7          |
| Dissolved Solids       | mg/L        | -         | 211            | 157       | 136           | 169          | 135       | 189       | 191       | 138       | 214          | 229          | 157          | 203       | 241          | 147        |
| Tot Kjel N             | mg/L        | -         | 1.8            | 1.4       | 1.08          | 0.76         | 0.5       | 1.1       | 0.6       | 0.6       | 0.9          | 0.6          | 0.5          | 1         | 0.8          | 0.6        |
| Ammonia (NH3-N)        | mg/L        | -         | 0.08           | 0.021     | 0.01          | < 0.01       | 0.01      | 0.07      | 0.05      | 0.01      | 0.03         | 0.05         | 0.09         | 0.04      | 0.03         | 0.03       |
| Total Suspended Solids | mg/L        | -         | 22             | 6         | 2             | 2            | <3        | 3         | 4         | < 3       | 8            | 3            | < 3          | < 3       | 11           | < 3        |
| Turbidity              | ntu         | -         | 6.4            | 1.2       | 0.5           | 0.5          | 0.7       | 0.6       | 0.7       | 0.4       | 2.2          | 1.2          | 0.5          | 0.6       | 1.8          | 0.6        |
| Hardness (CaCO3)       | mg/L        | -         | 190            | 141       | 129           | 142          | 126       | 192       | 187       | 130       | 214          | 213          | 143          | 199       | 237          | 145        |
| Unionized Ammonia      | mg/L        | 0.02      | 0.004          | 0.00013   | 0.000033      | <0.00004     | 0.0003    | 0.0001    | 0.0004    | 0.0002    | 0.0002       | 0.0001       | 0.0029       | 0.0001    | 0.0006       | 0.00008    |
| Aluminum               | mg/L        | 0.075     | < 0.005        | 0.02      | 0.03          | 0.03         | 0.02      | 0.03      | 0.02      | 0.01      | 0.07         | 0.03         | 0.04         | 0.03      | 0.02         | 0.05       |
| Antimony               | mg/L        | 0.02      | < 0.00050      | < 0.0001  | < 0.0001      | < 0.0001     | <0.0001   | 0.0001    | <0.0001   | 0.0002    | 0.0019       | < 0.0001     | 0.0002       | 0.0002    | < 0.0001     | < 0.0001   |
| Arsenic                | mg/L        | 0.005     | < 0.0010       | 0.0005    | 0.0007        | 0.0003       | 0.0001    | 0.0003    | 0.0003    | 0.0001    | 0.0021       | 0.0003       | 0.0005       | 0.0003    | 0.0002       | 0.0003     |
| Barium                 | mg/L        | -         | 0.04           | 0.029     | 0.021         | 0.036        | 0.021     | 0.037     | 0.032     | 0.018     | 0.069        | 0.043        | 0.047        | 0.051     | 0.016        | 0.019      |
| Beryllium              | mg/L        | 1.1       | < 0.00050      | < 0.002   | < 0.002       | < 0.002      | <0.002    | <0.002    | <0.002    | < 0.002   | < 0.002      | < 0.002      | < 0.002      | < 0.002   | < 0.002      | < 0.002    |
| Boron                  | mg/L        | 0.2       | < 0.010        | < 0.005   | 0.014         | < 0.005      | 0.007     | 0.008     | 0.007     | 0.008     | 0.008        | 0.006        | 0.011        | < 0.005   | < 0.005      | 0.013      |
| Cadmium                | mg/L        | 0.0005    | 0.0002         | < 0.00002 | 0.00007       | < 0.00002    | <0.00002  | <0.00002  | <0.00002  | < 0.00002 | < 0.0001     | < 0.00002    | < 0.00002    | 0.00003   | < 0.00002    | < 0.000014 |
| Chromium (total)       | mg/L        | 0.001     | < 0.0050       | < 0.002   | 0.0003        | < 0.0002     | <0.0002   | <0.0002   | <0.0002   | < 0.0002  | < 0.001      | < 0.0002     | < 0.0002     | 0.0005    | < 0.0002     | < 0.001    |
| Chromium (VI)          | mg/L        | 0.001     |                |           |               |              |           |           |           |           |              |              |              |           |              |            |
| Cobalt                 | mg/L        | 0.0009    | 0.00052        | < 0.0001  | < 0.005       | < 0.005      | <0.005    | <0.005    | <0.005    | < 0.005   | < 0.005      | < 0.005      | < 0.005      | < 0.0001  | < 0.005      | < 0.0001   |
| Copper                 | mg/L        | 0.005     | < 0.0010       | < 0.002   | <b>0.0057</b> | 0.0004       | 0.0002    | <0.0001   | 0.0002    | 0.0001    | < 0.0005     | 0.0001       | 0.0004       | < 0.0001  | 0.0001       | < 0.0001   |
| Lead                   | mg/L        | 0.005     | < 0.00050      | 0.00005   | < 0.00002     | < 0.00002    | 0.00009   | 0.00005   | 0.00004   | < 0.00002 | 0.0001       | 0.00002      | 0.00003      | 0.0001    | < 0.00002    | < 0.00002  |
| Mercury                | mg/L        | 0.0002    | < 0.00001      | < 0.00002 | < 0.00002     | < 0.00002    | <0.00002  | <0.00002  | <0.00002  | <0.00002  | <0.00002     | <0.00002     | < 0.00002    | < 0.00002 | < 0.00002    | < 0.00002  |
| Molybdenum             | mg/L        | 0.04      | 0.00054        | 0.0001    | < 0.0001      | < 0.0001     | 0.0001    | <0.0001   | 0.0001    | < 0.0001  | 0.0006       | 0.0001       | < 0.0001     | < 0.0001  | 0.0001       | 0.0001     |
| Nickel                 | mg/L        | 0.025     | < 0.0010       | < 0.01    | < 0.01        | < 0.01       | <0.01     | <0.01     | <0.01     | < 0.01    | < 0.01       | < 0.01       | < 0.01       | < 0.01    | < 0.01       | < 0.01     |
| Selenium               | mg/L        | 0.1       | < 0.0020       | < 0.001   | < 0.001       | < 0.001      | <0.001    | <0.001    | 0.001     | < 0.001   | < 0.005      | < 0.001      | < 0.001      | < 0.001   | < 0.001      | < 0.001    |
| Silver                 | mg/L        | 0.0001    | <b>0.00021</b> | < 0.00002 | < 0.00002     | < 0.00002    | <0.00002  | <0.00002  | <0.00002  | 0.00003   | < 0.0001     | < 0.00002    | < 0.00002    | < 0.00002 | < 0.00002    | < 0.00002  |
| Strontium              | mg/L        | -         | 0.19           | --        | --            | --           | --        | 0.195     | 0.18      | 0.119     | 0.237        | 0.175        | 0.191        | 0.234     | 0.13         | 0.103      |
| Thallium               | mg/L        | 0.0003    | 0.000075       | < 0.00005 | < 0.00005     | < 0.00005    | <0.00005  | <0.00005  | <0.00005  | < 0.00005 | < 0.0003     | < 0.00005    | < 0.00005    | < 0.00005 | < 0.00005    | < 0.00005  |
| Vanadium               | mg/L        | 0.006     | 0.0006         | < 0.005   | 0.0002        | 0.0002       | <0.0001   | <0.0001   | <0.0001   | 0.0001    | 0.0005       | < 0.0001     | < 0.0001     | 0.0002    | < 0.0001     | < 0.0001   |
| Zinc                   | mg/L        | 0.02      | 0.0068         | < 0.005   | < 0.005       | < 0.005      | 0.014     | 0.017     | <0.005    | < 0.005   | <b>0.03</b>  | < 0.005      | <b>0.061</b> | < 0.005   | < 0.005      | < 0.005    |
| Field pH               | pH unit     | -         | 8.27           | 7.31      | 7             | 7.15         | 8.28      | 6.53      | 7.45      | 7.89      | 7.09         | 7.06         | 8.39         | 6.86      | 7.89         | 7.25       |
| Field Temp             | deg C       | -         | 16             | 17.1      | 17.7          | 14.5         | 6         | 18.2      | 14.7      | 11.4      | 20.9         | 13           | 5.8          | 20.6      | 15.5         | 7.5        |
| Field Conductivity     | us/cm       | -         | 400            | 330       | 737.7         | 369          | 310       | 277.9     | 370       | 310       | 376.3        | 340          | 235          | 375.5     | 420          | 242        |
| Dissolved Oxygen       | mg/L        | -         | 9.15           | 3.9       | 2.39          | 1.15         | 3.21      | 1.35      | --        | 6.6       | 0.09         | 4.81         | 6.35         | 1.98      | 3.02         | 6.47       |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | SW4          | SW4          | SW4        | SW4          | SW4           | SW4        | SW4          | SW4         | SW4        | SW4          | SW4        | SW4         | SW4          | SW4         | SW4        |
|------------------------|-------------|-----------|--------------|--------------|------------|--------------|---------------|------------|--------------|-------------|------------|--------------|------------|-------------|--------------|-------------|------------|
|                        |             |           | 20-Jul-17    | 24-Oct-17    | 24-Apr-18  | 18-Jul-18    | 16-Oct-18     | 12-Apr-19  | 08-Jul-19    | 22-Oct-19   | 23-Apr-20  | 20-Jul-20    | 20-Oct-20  | 20-Apr-21   | 19-Jul-21    | 28-Oct-21   | 21-Apr-22  |
| Total Alkalinity       | mg/L        | -         | 194          | 151          | 113        | 190          | 165           | 91         | 158          | 155         | 111        | 169          | 149        | 132         | 161          | 119         | 140        |
| BOD                    | mg/L        | -         | < 3          | 4            | < 3        | < 2          | 3             | < 3        | < 3          | < 3         | < 3        | < 3          | < 3        | < 3         | 5            | 7           | < 3        |
| Calcium                | mg/L        | -         | 70.8         | 59.8         | 44.8       | 81.2         | 73.4          | 40.8       | 72.1         | 62.6        | 52         | 78.7         | 68.3       | 55          | 64.1         | 53.6        | 47.6       |
| Chloride               | mg/L        | -         | 7.8          | 11.4         | 8.5        | 14           | 15.7          | 14.9       | 6.5          | 16.9        | 12         | 10.6         | 23.1       | 13.2        | 10.1         | 12.9        | 12.6       |
| COD                    | mg/L        | -         | 74           | 60           | 15         | 33           | 39            | 23         | 58           | 39          | 25         | 48           | 54         | 38          | 73           | 74          | 22         |
| Colour                 | colour unit | -         | 125          | 66           | 31         | 70           | 52            | 36         | 130          | 44          | 47         | 62           | 92         | 67          | 150          | 109         | 46         |
| Specific Conductivity  | umhos/cm    | -         | 406          | 347          | 233        | 438          | 395           | 243        | 334          | 393         | 275        | 376          | 368        | 310         | 331          | 282         | 309        |
| DOC                    | mg/L        | -         | 26.2         | 22           | 7.5        | 14.3         | 16            | 8.9        | 24.3         | 11.5        | 11.1       | 18           | 19.2       | 18.3        | 26.7         | 29.3        | 13.5       |
| Fluoride               | mg/L        | -         | < 0.1        | < 0.1        | < 0.1      | < 0.1        | < 0.1         | < 0.1      | < 0.1        | < 0.1       | < 0.1      | 0.1          | < 0.1      | < 0.1       | < 0.1        | < 0.1       | < 0.1      |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005      | < 0.005      | < 0.005    | < 0.005      | < 0.005       | < 0.005    | < 0.005      | < 0.005     | < 0.005    | < 0.005      | < 0.005    | < 0.005     | < 0.005      | < 0.005     | < 0.005    |
| Iron                   | mg/L        | 0.3       | <b>0.331</b> | 0.223        | 0.032      | <b>0.465</b> | 0.146         | 0.065      | <b>0.876</b> | 0.107       | 0.026      | <b>0.472</b> | 0.169      | 0.094       | <b>1.19</b>  | 0.183       | 0.036      |
| Magnesium              | mg/L        | -         | 3.24         | 5.24         | 2.33       | 6.51         | 6.88          | 2.51       | 5.06         | 4.9         | 3.63       | 6.73         | 4.46       | 3.86        | 4.17         | 3.11        | 3.59       |
| Manganese              | mg/L        | -         | 0.356        | 0.049        | 0.038      | 0.473        | 0.018         | 0.014      | 0.288        | 0.023       | 0.007      | 0.213        | 0.053      | 0.013       | 0.312        | 0.023       | 0.004      |
| Nitrate                | mg/L        | -         | < 0.05       | < 0.05       | < 0.05     | < 0.05       | < 0.05        | < 0.05     | < 0.05       | < 0.05      | 0.1        | < 0.05       | < 0.05     | < 0.05      | 0.06         | < 0.05      | < 0.05     |
| Nitrite                | mg/L        | -         | < 0.05       | < 0.05       | < 0.05     | < 0.05       | < 0.05        | < 0.05     | < 0.05       | < 0.05      | < 0.05     | < 0.05       | < 0.05     | < 0.05      | < 0.05       | < 0.05      | < 0.05     |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 7.91         | 7.89         | 7.87       | 7.86         | 7.95          | 7.84       | 7.67         | 7.98        | 7.2        | 7.84         | 7.83       | 7.99        | 7.69         | 7.04        | 7.37       |
| Phenols                | mg/L        | 0.001     | <b>0.014</b> | <b>0.005</b> | < 0.001    | < 0.001      | <b>0.002</b>  | < 0.002    | < 0.002      | < 0.001     | < 0.002    | < 0.002      | < 0.001    | < 0.002     | < 0.002      | < 0.001     | < 0.001    |
| Total Phosphorus       | mg/L        | 0.03      | < 0.1        | < 0.1        | 0.02       | <b>0.05</b>  | 0.01          | 0.02       | 0.02         | <b>0.08</b> | 0.01       | <b>0.08</b>  | 0.01       | <b>0.06</b> | <b>0.14</b>  | <b>0.13</b> | 0.02       |
| Potassium              | mg/L        | -         | 1.1          | 1.2          | 1          | 0.5          | 1.4           | 1.3        | 0.2          | 2           | 0.7        | 0.4          | 2.6        | 0.8         | 0.7          | 1           | 1          |
| Sodium                 | mg/L        | -         | 4.6          | 7.3          | 4.4        | 7.2          | 8.8           | 7.9        | 5.2          | 7.2         | 6.3        | 6.3          | 8.4        | 7           | 5.3          | 5.1         | 5.8        |
| Sulphate               | mg/L        | -         | 1            | 3            | 2          | 2            | 5             | 3          | < 1          | 13          | 7          | 2            | 2          | 6           | < 1          | < 1         | 3          |
| Dissolved Solids       | mg/L        | -         | 212          | 179          | 134        | 227          | 210           | 124        | 185          | 211         | 149        | 207          | 198        | 167         | 182          | 148         | 158        |
| Tot Kjeh N             | mg/L        | -         | 1.1          | 1            | 0.4        | 0.7          | 0.6           | 0.5        | 0.8          | 0.9         | 0.4        | 1.1          | 0.9        | 0.5         | 2.1          | 1.3         | 0.5        |
| Ammonia (NH3-N)        | mg/L        | -         | 0.05         | 0.03         | 0.03       | 0.03         | 0.04          | 0.03       | 0.06         | 0.02        | 0.01       | 0.03         | 0.02       | 0.01        | 0.04         | 0.08        | 0.05       |
| Total Suspended Solids | mg/L        | -         | 10           | < 3          | < 3        | 4            | < 3           | < 3        | 6            | 10          | < 3        | 12           | 7          | < 3         | 6            | 43          | < 3        |
| Turbidity              | ntu         | -         | 1.3          | 0.5          | 0.5        | 1.2          | 2.7           | 0.8        | 1.4          | 2.6         | 1          | 4.1          | 1          | 0.9         | 8.6          | 0.8         | 0.7        |
| Hardness (CaCO3)       | mg/L        | -         | 190          | 169          | 122        | 230          | 212           | 110        | 189          | 177         | 139        | 203          | 189        | 153         | 178          | 154         | 134        |
| Unionized Ammonia      | mg/L        | 0.02      | 0.0012       | 0.00008      | 0.00051    | 0.00009      | 0.0004        | < 0.01     | < 0.01       | < 0.01      | < 0.01     | < 0.01       | < 0.01     | < 0.01      | < 0.01       | < 0.01      | < 0.01     |
| Aluminum               | mg/L        | 0.075     | 0.03         | 0.04         | 0.03       | 0.06         | 0.05          | 0.03       | 0.06         | 0.06        | 0.03       | 0.04         | 0.01       | < 0.01      | 0.05         | 0.03        | < 0.01     |
| Antimony               | mg/L        | 0.02      | < 0.0001     | < 0.0001     | < 0.0001   | < 0.0001     | < 0.0001      | 0.0003     | 0.0004       | 0.0001      | 0.0003     | 0.0002       | 0.0001     | 0.0003      | 0.0005       | < 0.0001    | 0.0003     |
| Arsenic                | mg/L        | 0.005     | 0.0011       | 0.0004       | 0.0003     | 0.0005       | 0.0003        | 0.0002     | 0.0006       | 0.0002      | 0.0002     | 0.0004       | 0.0004     | 0.0003      | 0.0007       | 0.0005      | 0.0002     |
| Barium                 | mg/L        | -         | 0.028        | 0.044        | 0.013      | 0.065        | 0.046         | 0.015      | 0.077        | 0.035       | 0.019      | 0.064        | 0.029      | 0.023       | 0.048        | 0.017       | 0.017      |
| Beryllium              | mg/L        | 1.1       | < 0.002      | < 0.002      | < 0.002    | < 0.002      | < 0.002       | < 0.002    | < 0.002      | < 0.002     | < 0.002    | < 0.002      | < 0.002    | < 0.002     | < 0.002      | < 0.002     | < 0.002    |
| Boron                  | mg/L        | 0.2       | 0.008        | 0.011        | < 0.005    | 0.016        | 0.01          | 0.007      | 0.011        | 0.007       | 0.005      | 0.016        | 0.018      | 0.006       | 0.011        | 0.009       | < 0.005    |
| Cadmium                | mg/L        | 0.0005    | < 0.000014   | 0.000018     | < 0.000014 | < 0.000015   | 0.000041      | < 0.000015 | < 0.000015   | < 0.000015  | < 0.000015 | < 0.000015   | < 0.000015 | < 0.000015  | < 0.000015   | < 0.000015  | < 0.000015 |
| Chromium (total)       | mg/L        | 0.001     | < 0.001      | < 0.001      | < 0.001    | 0.001        | 0.001         | < 0.001    | < 0.001      | < 0.001     | < 0.001    | < 0.001      | 0.001      | < 0.001     | < 0.001      | 0.001       | < 0.001    |
| Chromium (VI)          | mg/L        | 0.001     |              |              |            |              |               |            |              |             |            |              |            |             |              |             | < 0.001    |
| Cobalt                 | mg/L        | 0.0009    | 0.0005       | < 0.0001     | < 0.0001   | 0.0003       | < 0.0001      | 0.0002     | 0.0002       | 0.0002      | < 0.0001   | < 0.0001     | < 0.0001   | < 0.0001    | 0.0003       | < 0.0001    | < 0.0001   |
| Copper                 | mg/L        | 0.005     | 0.0001       | 0.0026       | 0.0002     | < 0.0001     | <b>0.0077</b> | 0.0004     | 0.0003       | 0.0008      | 0.0002     | 0.0001       | 0.0005     | 0.0002      | 0.0007       | 0.0001      | 0.0002     |
| Lead                   | mg/L        | 0.005     | 0.00002      | 0.00021      | < 0.00002  | < 0.00002    | 0.00031       | 0.00008    | 0.00003      | 0.00015     | < 0.00002  | 0.00004      | 0.00006    | < 0.00002   | 0.00079      | 0.00004     | 0.00002    |
| Mercury                | mg/L        | 0.0002    | < 0.00002    | < 0.00002    | < 0.00002  | < 0.00002    | < 0.00002     | < 0.00002  | < 0.00002    | < 0.00002   | < 0.00002  | < 0.00002    | < 0.00002  | < 0.00002   | < 0.00002    | < 0.00002   | < 0.00002  |
| Molybdenum             | mg/L        | 0.04      | 0.0001       | 0.0001       | 0.0001     | < 0.0001     | 0.0001        | 0.0001     | < 0.0001     | 0.0002      | 0.0002     | < 0.0001     | 0.0001     | 0.0002      | 0.0003       | < 0.0001    | 0.0001     |
| Nickel                 | mg/L        | 0.025     | < 0.01       | < 0.01       | < 0.01     | < 0.01       | < 0.01        | < 0.01     | < 0.01       | < 0.01      | < 0.01     | < 0.01       | < 0.01     | < 0.01      | < 0.01       | < 0.01      | < 0.01     |
| Selenium               | mg/L        | 0.1       | < 0.001      | < 0.001      | < 0.001    | < 0.001      | < 0.001       | < 0.001    | < 0.001      | < 0.001     | < 0.001    | < 0.001      | < 0.001    | < 0.001     | < 0.001      | < 0.001     | < 0.001    |
| Silver                 | mg/L        | 0.0001    | < 0.00002    | < 0.00002    | < 0.00002  | < 0.0001     | < 0.0001      | < 0.0001   | < 0.0001     | < 0.0001    | < 0.0001   | < 0.0001     | < 0.0001   | < 0.0001    | < 0.0001     | < 0.0001    | < 0.0001   |
| Strontium              | mg/L        | -         | 0.159        | 0.178        | 0.087      | 0.223        | 0.22          | 0.084      | 0.183        | 0.168       | 0.114      | 0.232        | 0.142      | 0.129       | 0.162        | 0.118       | 0.115      |
| Thallium               | mg/L        | 0.0003    | < 0.00005    | < 0.00005    | < 0.00005  | < 0.00005    | < 0.00005     | < 0.00005  | < 0.00005    | < 0.00005   | < 0.00005  | < 0.00005    | < 0.00005  | < 0.00005   | < 0.00005    | < 0.00005   | < 0.00005  |
| Vanadium               | mg/L        | 0.006     | 0.0002       | < 0.0001     | < 0.0001   | < 0.0001     | < 0.0001      | 0.0001     | < 0.0001     | < 0.0001    | < 0.0001   | < 0.0001     | < 0.0001   | 0.0001      | 0.0004       | < 0.0001    | < 0.0001   |
| Zinc                   | mg/L        | 0.02      | < 0.005      | 0.018        | < 0.005    | <b>0.036</b> | <b>0.022</b>  | 0.008      | <b>0.026</b> | 0.006       | < 0.005    | 0.01         | < 0.005    | 0.01        | <b>0.023</b> | 0.01        | < 0.005    |
| Field pH               | pH unit     | -         | 7.68         | 7.02         | 8.16       | 6.83         | 7.84          | 7.48       | 7.34         | 7.55        | 7.83       | 7.03         | 8.87       | 7.05        | 6.54         | 8.15        | 8          |
| Field Temp             | deg C       | -         | 23           | 15.1         | 4.6        | 22.8         | 7.9           | 4          | 19.7         | 10.3        | 5.7        | 20.8         | 7.7        | 6.8         | 22.2         | 6.2         | 7.5        |
| Field Conductivity     | us/cm       | -         | 314          | 313          | 268        | 395          | 343           | 290        | 343          | 320         | 295        | 470          | 320        | 410         | 315          | 285         | 265        |
| Dissolved Oxygen       | mg/L        | -         | 0.6          | 5.27         | 4.87       | 2.11         | 8.77          | 13.39      | 1.07         | 3.4         | 6.38       | 20.8         | 4.71       | 10.43       | 0.83         | 3.23        | 6.23       |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | SW4        | SW4        | SW4          | SW4          | SW4          | SW12        | SW12         | SW12          | SW12           | SW12         | SW12         | SW12          | SW12          | SW12      | SW12      |
|------------------------|-------------|-----------|------------|------------|--------------|--------------|--------------|-------------|--------------|---------------|----------------|--------------|--------------|---------------|---------------|-----------|-----------|
|                        |             |           | 20-Jul-22  | 24-Oct-22  | 20-Apr-23    | 30-Aug-23    | 12-Oct-23    | 22-May-13   | 24-Apr-14    | 15-Oct-14     | 17-Apr-15      | 29-Apr-16    | 18-Apr-17    | 20-Jul-17     | 23-Oct-17     | 24-Apr-18 | 12-Apr-19 |
| Total Alkalinity       | mg/L        | -         | 152        | 145        | 139          | 207          | 152          | 267         | 206          | 430           | 227            | 134          | 122          | 210           | 180           | 227       | 108       |
| BOD                    | mg/L        | -         | < 3        | < 3        | < 3          | <3           | <3           | < 3         | <3           | 11            | 10             | < 3          | < 3          | 5             | < 3           | < 3       | < 3       |
| Calcium                | mg/L        | -         | 60.7       | 56.1       | 54.8         | 68.2         | 55.7         | 95          | 77.8         | 145           | 87.3           | 52           | 44           | 79.8          | 77.9          | 85.8      | 52.1      |
| Chloride               | mg/L        | -         | 11.1       | 20         | 12           | 15           | 11.5         | 17.3        | 16.1         | 44.7          | 15.6           | 7.9          | 7.1          | 9.1           | 10.7          | 13        | 5.3       |
| COD                    | mg/L        | -         | 64         | 39         | 30           | 61           | 58           | 68          | 42           | 74            | 40             | 43           | 53           | 73            | 57            | 41        | 77        |
| Colour                 | colour unit | -         | 114        | 64         | 58           | 91           | 79           | 132         | 76           | 96            | 51             | 72           | 112          | 120           | 80            | 60        | 72        |
| Specific Conductivity  | umhos/cm    | -         | 319        | 341        | 319          | 426          | 326          | 575         | 475          | 974           | 483            | 292          | 266          | 442           | 388           | 476       | 243       |
| DOC                    | mg/L        | -         | 29.2       | 19.8       | 9.5          | 27.1         | 25.5         | 34.4        | 19.4         | 47.2          | 16.7           | 15.6         | 19.8         | 25.4          | 26            | 13.8      | 13.6      |
| Fluoride               | mg/L        | -         | < 0.1      | < 0.1      | < 0.1        | <0.1         | <0.1         | 0.2         | <0.1         | <0.1          | 0.1            | < 0.1        | < 0.1        | < 0.1         | < 0.1         | < 0.1     | < 0.1     |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005    | < 0.005    | < 0.005      | <0.005       | <0.005       | < 0.005     | <0.005       | <0.005        | < 0.005        | < 0.005      | < 0.005      | < 0.005       | < 0.005       | < 0.005   | < 0.005   |
| Iron                   | mg/L        | 0.3       | 0.104      | 0.098      | 0.083        | <b>0.753</b> | <b>0.357</b> | <b>1.17</b> | <b>1.28</b>  | <b>1.24</b>   | <b>5.82</b>    | 0.063        | 0.047        | <b>2.96</b>   | <b>3.21</b>   | 2.79      | 0.903     |
| Magnesium              | mg/L        | -         | 3.61       | 4.3        | 3.73         | 4.86         | 4.38         | 6.5         | 5.14         | 12.4          | 5.82           | 3.31         | 2.67         | 5.61          | 5.92          | 6.98      | 3.18      |
| Manganese              | mg/L        | -         | 0.019      | 0.009      | 0.009        | 0.363        | 0.105        | 0.074       | 0.153        | 0.457         | 0.301          | 0.02         | 0.004        | 0.36          | 0.153         | 0.294     | 0.135     |
| Nitrate                | mg/L        | -         | 0.1        | 0.06       | 0.1          | 0.1          | <0.05        | 0.2         | 0.2          | 0.9           | 0.1            | < 0.1        | < 0.1        | < 0.05        | 0.09          | < 0.05    | < 0.05    |
| Nitrite                | mg/L        | -         | < 0.05     | < 0.05     | < 0.05       | <0.05        | <0.05        | < 0.1       | < 0.1        | 0.4           | 0.2            | < 0.1        | < 0.1        | 0.05          | < 0.05        | < 0.05    | < 0.05    |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 8.13       | 7.93       | 7.65         | 7.06         | 7.75         | 7.78        | 8.02         | 7.85          | 7.93           | 7.7          | 7.82         | 7.84          | 7.86          | 7.87      | 7.93      |
| Phenols                | mg/L        | 0.001     | < 0.001    | < 0.001    | < 0.001      | <0.001       | <0.001       | < 0.001     | < 0.001      | < 0.001       | < 0.001        | <b>0.008</b> | <b>0.002</b> | <b>0.009</b>  | <b>0.006</b>  | < 0.001   | < 0.002   |
| Total Phosphorus       | mg/L        | 0.03      | 0.03       | 0.01       | 0.01         | <0.1         | <0.1         | <b>0.07</b> | <0.1         | <b>0.1</b>    | <b>0.4</b>     | <0.1         | < 0.1        | <b>0.2</b>    | <b>0.4</b>    | 0.06      | 0.16      |
| Potassium              | mg/L        | -         | 0.1        | 0.5        | 1.2          | 1.2          | 1.3          | 6.2         | 5.9          | 24.4          | 6.5            | 1.4          | 1.2          | 2.5           | 3.9           | 5.8       | 3.1       |
| Sodium                 | mg/L        | -         | 5.7        | 6.3        | 6.5          | 6.9          | 5.8          | 18.5        | 13.8         | 41.4          | 14.7           | 5.2          | 3.5          | 8.4           | 7.2           | 13.7      | 3.9       |
| Sulphate               | mg/L        | -         | 1          | 3          | 3            | <1           | 1            | 3           | 5            | 7             | < 1            | 4            | 4            | 1             | < 1           | < 1       | 1         |
| Dissolved Solids       | mg/L        | -         | 178        | 177        | 165          | 222          | 172          | 310         | 252          | 548           | 276            | 154          | 135          | 234           | 218           | 265       | 135       |
| Tot Kjeh N             | mg/L        | -         | 1.4        | 0.6        | 0.7          | 1            | 0.7          | 2.6         | 2.7          | 6.7           | 4.2            | 0.9          | 0.7          | 1.5           | 8             | 2.1       | 1.1       |
| Ammonia (NH3-N)        | mg/L        | -         | 0.24       | 0.05       | 0.19         | <0.05        | 0.06         | 0.081       | 2.14         | 5.89          | 1.51           | 0.05         | 0.04         | 0.14          | 0.08          | 1.59      | 0.05      |
| Total Suspended Solids | mg/L        | -         | 10         | 40         | < 3          | 6            | 6            | 12          | 3            | 38            | 10             | 98           | < 3          | 88            | 190           | 8         | 26        |
| Turbidity              | ntu         | -         | 1.7        | 0.7        | 0.6          | 1.4          | 1.4          | 4.2         | 2.7          | 13.1          | 7.1            | 11.4         | 0.8          | 32.7          | 75.2          | 12.6      | 9.1       |
| Hardness (CaCO3)       | mg/L        | -         | 167        | 175        | 154          | 190          | 157          | 266         | 216          | 414           | 242            | 144          | 144          | 222           | 193           | 243       | 121       |
| Unionized Ammonia      | mg/L        | 0.02      | 0.0100     | < 0.01     | < 0.01       | <0.01        | <0.1         | 0.0007      | <b>0.031</b> | <b>0.039</b>  | 0.0039         | 0.0053       | 0.0001       | 0.0017        | 0.0003        | 0.0158    | < 0.01    |
| Aluminum               | mg/L        | 0.075     | 0.03       | 0.03       | 0.01         | 0.03         | 0.04         | 0.05        | 0.04         | <b>0.18</b>   | <b>0.14</b>    | 0.03         | 0.05         | 0.03          | 0.05          | 0.05      | 0.36      |
| Antimony               | mg/L        | 0.02      | 0.0004     | 0.0004     | 0.0006       | 0.0004       | <0.0001      | 0.0001      | <0.0001      | 0.0003        | 0.0003         | < 0.0001     | < 0.0001     | 0.0002        | < 0.0001      | < 0.0001  | < 0.0001  |
| Arsenic                | mg/L        | 0.005     | 0.0005     | 0.0002     | 0.0002       | 0.0005       | 0.0002       | 0.0009      | 0.0005       | 0.0019        | 0.0014         | 0.0004       | 0.0004       | 0.0023        | 0.0014        | 0.0007    | 0.0006    |
| Barium                 | mg/L        | -         | 0.023      | 0.029      | 0.022        | 0.045        | 0.052        | 0.04        | 0.025        | 0.076         | 0.043          | 0.013        | 0.012        | 0.043         | 0.064         | 0.046     | 0.024     |
| Beryllium              | mg/L        | 1.1       | < 0.002    | < 0.002    | < 0.002      | <0.0001      | <0.0001      | < 0.002     | <0.002       | <0.002        | < 0.002        | < 0.002      | < 0.002      | < 0.002       | < 0.002       | < 0.002   | < 0.002   |
| Boron                  | mg/L        | 0.2       | < 0.005    | < 0.005    | 0.006        | 0.007        | 0.008        | 0.112       | 0.034        | 0.13          | 0.035          | < 0.005      | 0.009        | 0.026         | 0.023         | 0.054     | 0.019     |
|                        |             |           | <          |            |              |              |              |             |              |               |                |              |              |               |               |           |           |
| Cadmium                | mg/L        | 0.0005    | < 0.000015 | < 0.000015 | 0.000015     | <0.000015    | <0.000015    | < 0.00002   | <0.00002     | 0.00014       | 0.00019        | < 0.00002    | < 0.000014   | 0.00007       | 0.00019       | 1.4E-05   | 6.8E-05   |
| Chromium (total)       | mg/L        | 0.001     | < 0.001    | < 0.001    | <b>0.002</b> | <0.001       | <0.001       | < 0.002     | 0.0004       | 0.0009        | 0.0007         | <0.0002      | < 0.001      | < 0.001       | < 0.001       | 0.001     | 0.001     |
| Chromium (VI)          | mg/L        | 0.001     | < 0.001    | < 0.001    | < 0.001      | <0.001       | <0.001       |             |              |               |                |              |              |               |               |           |           |
| Cobalt                 | mg/L        | 0.0009    | 0.0001     | < 0.0001   | < 0.0001     | 0.0003       | 0.0002       | 0.0006      | <0.005       | <0.005        | < 0.005        | < 0.005      | < 0.0001     | 0.0009        | 0.0009        | 0.001     | 0.0007    |
| Copper                 | mg/L        | 0.005     | 0.0001     | 0.0001     | 0.0003       | 0.0002       | 0.0003       | < 0.002     | 0.0005       | <b>0.0084</b> | <b>0.006</b>   | 0.0003       | < 0.0001     | <b>0.0074</b> | <b>0.0079</b> | 0.0012    | 0.0067    |
| Lead                   | mg/L        | 0.005     | < 0.00002  | < 0.00002  | 0.00005      | 0.00004      | 0.00005      | 0.00013     | 0.00021      | 0.00114       | 0.00162        | 0.00007      | < 0.00002    | 0.00064       | <b>0.0072</b> | 0.00021   | 0.00146   |
| Mercury                | mg/L        | 0.0002    | < 0.00002  | < 0.00002  | < 0.00002    | <0.00002     | <0.00002     | < 0.00002   | <0.00002     | <0.00002      | <0.00002       | <0.00002     | < 0.00002    | < 0.00002     | 0.00006       | < 0.00002 | < 0.00002 |
| Molybdenum             | mg/L        | 0.04      | < 0.0001   | < 0.0001   | 0.0001       | <0.0001      | <0.0001      | 0.0003      | 0.0002       | 0.0009        | 0.0001         | 0.0001       | 0.0002       | 0.0003        | 0.0003        | 0.0002    | 0.0003    |
| Nickel                 | mg/L        | 0.025     | < 0.01     | < 0.01     | < 0.01       | <0.0002      | 0.0005       | < 0.01      | < 0.01       | < 0.01        | < 0.01         | < 0.01       | < 0.01       | < 0.01        | < 0.01        | < 0.01    | < 0.01    |
| Selenium               | mg/L        | 0.1       | < 0.001    | < 0.001    | < 0.001      | <0.001       | <0.001       | < 0.001     | <0.001       | 0.002         | < 0.001        | < 0.001      | < 0.001      | < 0.001       | < 0.001       | < 0.001   | < 0.001   |
| Silver                 | mg/L        | 0.0001    | < 0.0001   | < 0.0001   | < 0.0001     | <0.0001      | <0.0001      | < 0.00002   | <0.00002     | 0.00008       | <b>0.00018</b> | < 0.00002    | < 0.00002    | 0.00004       | < 0.00002     | < 0.00002 | < 0.0001  |
| Strontium              | mg/L        | -         | 0.154      | 0.144      | 0.131        | 0.181        | 0.145        | --          | --           | 0.485         | 0.236          | 0.115        | 0.089        | 0.223         | 0.206         | 0.233     | 0.108     |
| Thallium               | mg/L        | 0.0003    | < 0.00005  | < 0.00005  | < 0.00005    | <0.00005     | <0.00005     | < 0.00005   | <0.00005     | <0.00005      | 0.00015        | < 0.00005    | < 0.00005    | < 0.00005     | < 0.00005     | < 0.00005 | < 0.00005 |
| Vanadium               | mg/L        | 0.006     | < 0.0001   | < 0.0001   | < 0.0001     | <0.0001      | <0.0001      | < 0.005     | <0.0001      | 0.0005        | 0.0006         | 0.0001       | 0.0002       | 0.0006        | 0.0017        | 0.0004    | 0.0009    |
| Zinc                   | mg/L        | 0.02      | < 0.005    | 0.006      | 0.007        | <b>0.04</b>  | 0.009        | < 0.005     | 0.012        | <b>0.025</b>  | <b>0.021</b>   | <0.005       | < 0.005      | <b>0.03</b>   | <b>0.073</b>  | 0.027     | 0.009     |
| Field pH               | pH unit     | -         | 7.95       | 8.04       | 7.81         | 6.93         | 7.23         | 7.43        | 8.17         | 7.41          | 7.34           | 8.96         | 7.37         | 7.52          | 7.18          | 7.85      | 7.92      |
| Field Temp             | deg C       | -         | 27.8       | 12.8       | 11.8         | 17.6         | 13.6         | 16.6        | 2.1          | 14.3          | 4.2            | 5.5          | 4.2          | 18.8          | 12.8          | 6.5       | 1         |
| Field Conductivity     | us/cm       | -         | 280        | 290        | 230          | 429          | 320          | 620         | 550          | 930           | 590            | 250          | 218          | 407           | 343           | 471       | 230       |
| Dissolved Oxygen       | mg/L        | -         | 1.93       | 2.85       | 7.81         | 0.4          | 1.64         | 3.24        | 1.81         | 0.7           | 5.2            | 5.96         | 4.93         | 0.99          | 3.4           | 2.74      | 16.62     |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

|                        |             |           | 10m       | 10m       | 10m       | 10m       | 10m       | 10m       | 10m       | 10m       | 10m       | 10m       | 15m       | 15m       | 15m        | 15m       | 15m        |
|------------------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|------------|
| Parameters             | Units       | PWQO      | SW12      | SW12      | SW12      | SW12      | SW12      | SW12      | SW12      | SW12      | SW12      | SW12      | SW12      | SW12      | SW12       | SW12      | SW12       |
|                        |             |           | 20-Oct-20 | 20-Apr-21 | 19-Jul-21 | 28-Oct-21 | 21-Apr-22 | 20-Jul-22 | 24-Oct-22 | 19-Apr-23 | 30-Aug-23 | 12-Oct-23 | 21-May-15 | 02-May-17 | 21-Jun-17  | 24-Apr-18 | 24-Apr-19  |
| Total Alkalinity       | mg/L        | -         | Dry       | Dry       | Dry       | Dry       | Dry       | Dry       | Dry       | Dry       | Dry       | Dry       | 346       | 212       | 224        | 153       | 197        |
| BOD                    | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 5         | < 3       | < 3        | < 3       | < 3        |
| Calcium                | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 174       | 79.5      | 80.2       | 55.7      | 74.3       |
| Chloride               | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 28.3      | 10.5      | 9.8        | 7.7       | 11.2       |
| COD                    | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 124       | 43        | 60         | 35        | 52         |
| Colour                 | colour unit | -         |           |           |           |           |           |           |           |           |           |           | 82        | 64        | 95         | 64        | 58         |
| Specific Conductivity  | umhos/cm    | -         |           |           |           |           |           |           |           |           |           |           | 748       | 471       | 461        | 296       | 429        |
| DOC                    | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 26.4      | 10.4      | 20.8       | 11.8      | 18.4       |
| Fluoride               | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 0.1       | < 0.1     | < 0.1      | < 0.1     | < 0.1      |
| Cyanide (free)         | mg/L        | 0.005     |           |           |           |           |           |           |           |           |           |           | < 0.005   | < 0.005   | < 0.005    | < 0.005   | < 0.005    |
| Iron                   | mg/L        | 0.3       |           |           |           |           |           |           |           |           |           |           | 6.64      | 1.26      | 1.05       | 0.994     | 1.48       |
| Magnesium              | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 11.2      | 5.44      | 4.99       | 4.27      | 4.85       |
| Manganese              | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 0.601     | 0.064     | 0.085      | 0.121     | 0.071      |
| Nitrate                | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 0.1       | 0.2       | 0.08       | 0.09      | < 0.05     |
| Nitrite                | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | < 0.1     | < 0.1     | < 0.05     | < 0.05    | < 0.05     |
| pH Lab                 | pH unit     | 6.5 - 8.5 |           |           |           |           |           |           |           |           |           |           | 7.73      | 8         | 7.89       | 7.76      | 7.63       |
| Phenols                | mg/L        | 0.001     |           |           |           |           |           |           |           |           |           |           | < 0.001   | 0.005     | 0.009      | < 0.001   | < 0.002    |
| Total Phosphorus       | mg/L        | 0.03      |           |           |           |           |           |           |           |           |           |           | 0.4       | < 0.1     | < 0.1      | 0.29      | 0.1        |
| Potassium              | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 9.2       | 4         | 2.9        | 2.8       | 4.3        |
| Sodium                 | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 27.4      | 11.1      | 10.1       | 6.4       | 9.8        |
| Sulphate               | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | < 1       | 10        | < 1        | 1         | < 1        |
| Dissolved Solids       | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 466       | 251       | 245        | 172       | 226        |
| Tot Kjeh N             | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 4.2       | 1.1       | 1          | 1.4       | 1.4        |
| Ammonia (NH3-N)        | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 1.18      | 0.23      | 0.5        | 0.35      | 0.47       |
| Total Suspended Solids | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 1020      | 25        | 24         | 348       | 50         |
| Turbidity              | ntu         | -         |           |           |           |           |           |           |           |           |           |           | 591       | 32.2      | 23.2       | 326       | 14.4       |
| Hardness (CaCO3)       | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 482       |           | 246        | 157       | 205        |
| Unionized Ammonia      | mg/L        | 0.02      |           |           |           |           |           |           |           |           |           |           | 0.0023    | --        | 0.0025     | 0.0012    | < 0.01     |
| Aluminum               | mg/L        | 0.075     |           |           |           |           |           |           |           |           |           |           | 1.2       | 0.06      | 0.11       | 0.2       | 0.05       |
| Antimony               | mg/L        | 0.02      |           |           |           |           |           |           |           |           |           |           | < 0.0001  | 0.0001    | 0.0001     | < 0.0001  | < 0.0001   |
| Arsenic                | mg/L        | 0.005     |           |           |           |           |           |           |           |           |           |           | 0.0014    | 0.0008    | 0.0013     | 0.0005    | 0.0009     |
| Barium                 | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 0.07      | 0.044     | 0.033      | 0.029     | 0.027      |
| Beryllium              | mg/L        | 1.1       |           |           |           |           |           |           |           |           |           |           | < 0.002   | < 0.002   | < 0.002    | < 0.002   | < 0.002    |
| Boron                  | mg/L        | 0.2       |           |           |           |           |           |           |           |           |           |           | 0.061     | 0.082     | 0.053      | 0.016     | 0.049      |
| Cadmium                | mg/L        | 0.0005    |           |           |           |           |           |           |           |           |           |           | 0.00013   | 0.000032  | < 0.000014 | 4.4E-05   | < 0.000015 |
| Chromium (total)       | mg/L        | 0.001     |           |           |           |           |           |           |           |           |           |           | 0.0014    | 0.001     | < 0.001    | < 0.001   | 0.001      |
| Chromium (VI)          | mg/L        | 0.001     |           |           |           |           |           |           |           |           |           |           |           |           |            |           |            |
| Cobalt                 | mg/L        | 0.0009    |           |           |           |           |           |           |           |           |           |           | < 0.005   | 0.0006    | 0.0004     | 0.0004    | 0.0005     |
| Copper                 | mg/L        | 0.005     |           |           |           |           |           |           |           |           |           |           | 0.0037    | 0.0021    | 0.0006     | 0.0084    | 0.0012     |
| Lead                   | mg/L        | 0.005     |           |           |           |           |           |           |           |           |           |           | 0.00493   | 0.0008    | 0.00033    | 0.00142   | 0.00019    |
| Mercury                | mg/L        | 0.0002    |           |           |           |           |           |           |           |           |           |           | <0.00002  | 0.00003   | < 0.00002  | < 0.00002 | < 0.00002  |
| Molybdenum             | mg/L        | 0.04      |           |           |           |           |           |           |           |           |           |           | < 0.0001  | 0.0003    | 0.0003     | 0.0002    | 0.0003     |
| Nickel                 | mg/L        | 0.025     |           |           |           |           |           |           |           |           |           |           | < 0.01    | < 0.01    | < 0.01     | < 0.01    | < 0.01     |
| Selenium               | mg/L        | 0.1       |           |           |           |           |           |           |           |           |           |           | < 0.001   | < 0.001   | < 0.001    | < 0.001   | < 0.001    |
| Silver                 | mg/L        | 0.0001    |           |           |           |           |           |           |           |           |           |           | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002 | < 0.0001   |
| Strontium              | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 0.424     | 0.209     | 0.218      | 0.141     | 0.179      |
| Thallium               | mg/L        | 0.0003    |           |           |           |           |           |           |           |           |           |           | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005 | < 0.00005  |
| Vanadium               | mg/L        | 0.006     |           |           |           |           |           |           |           |           |           |           | 0.0015    | 0.0014    | 0.0007     | 0.0005    | 0.0004     |
| Zinc                   | mg/L        | 0.02      |           |           |           |           |           |           |           |           |           |           | 0.159     | 0.011     | 0.009      | 0.019     | 0.011      |
| Field pH               | pH unit     | -         |           |           |           |           |           |           |           |           |           |           | 6.99      | --        | 7.22       | 7.54      | 8.14       |
| Field Temp             | deg C       | -         |           |           |           |           |           |           |           |           |           |           | 10.8      | --        | 16.4       | 1.9       | 1.9        |
| Field Conductivity     | us/cm       | -         |           |           |           |           |           |           |           |           |           |           | 581       | --        | 362        | 330.3     | 460        |
| Dissolved Oxygen       | mg/L        | -         |           |           |           |           |           |           |           |           |           |           | 2.26      | --        | 2.22       | 4.31      | 4          |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | 20m               | 20m               | 25m               | 25m               | 25m               | 30m               | 30m               | 30m               | 30m               | 30m               |
|------------------------|-------------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                        |             |           | SW12<br>21-Jun-17 | SW12<br>11-May-20 | SW12<br>21-May-15 | SW12<br>24-Apr-18 | SW12<br>28-Apr-22 | SW12<br>02-May-17 | SW12<br>24-Apr-19 | SW12<br>11-May-20 | SW12<br>26-Apr-21 | SW12<br>28-Apr-22 |
| Total Alkalinity       | mg/L        | -         | 175               | 216               | 164               | 106               | 308               | 140               | 77                | 129               | 251               | 205               |
| BOD                    | mg/L        | -         | < 3               | < 3               | < 3               | < 3               | 10                | < 3               | < 3               | 4                 | 10                | < 3               |
| Calcium                | mg/L        | -         | 66.7              | 89.3              | 64.4              | 48.2              | 101               | 52.5              | 32.1              | 54.2              | 99                | 71                |
| Chloride               | mg/L        | -         | 7.6               | 17.9              | 8                 | 5.1               | 16.3              | 7.3               | 3.9               | 9.4               | 17.1              | 11.9              |
| COD                    | mg/L        | -         | 61                | 48                | 52                | 551               | 40                | 46                | 55                | 123               | 121               | 38                |
| Colour                 | colour unit | -         | 130               | 61                | 100               | 160               | 53                | 108               | 100               | 69                | 70                | 66                |
| Specific Conductivity  | umhos/cm    | -         | 364               | 489               | 346               | 211               | 605               | 299               | 178               | 293               | 514               | 416               |
| DOC                    | mg/L        | -         | 21.2              | 17                | 22.2              | 13.9              | 19.8              | 11.9              | 18.2              | 16.5              | 20.3              | 19.1              |
| Fluoride               | mg/L        | -         | < 0.1             | < 0.1             | 0.1               | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |
| Iron                   | mg/L        | 0.3       | <b>0.406</b>      | <b>0.367</b>      | <b>0.704</b>      | <b>3.19</b>       | <b>0.549</b>      | 0.237             | 0.081             | 0.16              | <b>1.72</b>       | <b>0.4</b>        |
| Magnesium              | mg/L        | -         | 4.41              | 5.23              | 4.27              | 4.08              | 7.39              | 3.04              | 1.97              | 3.12              | 6.15              | 4.63              |
| Manganese              | mg/L        | -         | 0.033             | 0.051             | 0.176             | 0.208             | 0.063             | 0.01              | 0.007             | 0.035             | 0.155             | 0.041             |
| Nitrate                | mg/L        | -         | < 0.05            | 0.22              | 0.1               | 0.05              | 0.37              | < 0.1             | < 0.05            | < 0.05            | 0.1               | 0.22              |
| Nitrite                | mg/L        | -         | < 0.05            | < 0.05            | < 0.1             | < 0.05            | < 0.05            | < 0.1             | < 0.05            | < 0.05            | < 0.05            | < 0.05            |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 7.9               | 7.95              | 7.81              | 7.6               | 8                 | 8.01              | 7.37              | 7.76              | 8.09              | 7.93              |
| Phenols                | mg/L        | 0.001     | <b>0.005</b>      | < 0.002           | < 0.001           | < 0.001           | < 0.001           | <b>0.004</b>      | < 0.002           | < 0.002           | < 0.002           | 0.001             |
| Total Phosphorus       | mg/L        | 0.03      | < 0.1             | <b>0.04</b>       | <b>0.3</b>        | <b>0.42</b>       | <b>0.06</b>       | < 0.1             | 0.03              | <b>0.09</b>       | <b>0.24</b>       | 0.03              |
| Potassium              | mg/L        | -         | 1.6               | 3.4               | 2                 | 2.5               | 5.6               | 1.4               | 1.7               | 1.4               | 3.9               | 3.3               |
| Sodium                 | mg/L        | -         | 6.5               | 13.3              | 6.2               | 4                 | 15.9              | 4.7               | 2.6               | 5.1               | 14.1              | 9.6               |
| Sulphate               | mg/L        | -         | < 1               | 6                 | < 1               | 1                 | < 1               | 3                 | < 1               | 2                 | 2                 | 1                 |
| Dissolved Solids       | mg/L        | -         | 192               | 265               | 185               | 132               | 332               | 156               | 90                | 157               | 294               | 226               |
| Tot Kjeh N             | mg/L        | -         | 1.2               | 0.7               | 3.4               | 5.6               | 1.3               | 0.6               | 0.6               | 1.9               | 2.8               | 1                 |
| Ammonia (NH3-N)        | mg/L        | -         | 0.02              | 0.04              | 0.11              | 0.04              | 0.38              | 0.01              | 0.04              | 0.03              | 0.05              | 0.68              |
| Total Suspended Solids | mg/L        | -         | 21                | 8                 | 14                | 500               | 230               | 5                 | 8                 | 85                | 390               | 25                |
| Turbidity              | ntu         | -         | 15.7              | 6.6               | 3.3               | 481               | 18.1              | 4.6               | 0.7               | 31.9              | 214               | 1                 |
| Hardness (CaCO3)       | mg/L        | -         | 198               | 245               | 179               | 137               | 283               |                   | 90                | 148               | 265               | 196               |
| Unionized Ammonia      | mg/L        | 0.02      | 0.0001            | < 0.01            | 0.0004            | 0.0002            | < 0.01            | --                | < 0.01            | < 0.01            | < 0.01            | < 0.01            |
| Aluminum               | mg/L        | 0.075     | 0.06              | 0.04              | <b>0.09</b>       | <b>1.1</b>        | 0.04              | 0.04              | 0.03              | 0.03              | 0.06              | 0.03              |
| Antimony               | mg/L        | 0.02      | 0.0001            | 0.0001            | < 0.0001          | < 0.0001          | 0.0002            | < 0.0001          | < 0.0001          | < 0.0001          | 0.0004            | 0.0003            |
| Arsenic                | mg/L        | 0.005     | 0.0011            | 0.0005            | 0.0005            | 0.0012            | 0.0004            | 0.0006            | 0.0005            | 0.0005            | 0.0007            | 0.0004            |
| Barium                 | mg/L        | -         | 0.029             | 0.029             | 0.03              | 0.043             | 0.032             | 0.018             | 0.01              | 0.017             | 0.037             | 0.022             |
| Beryllium              | mg/L        | 1.1       | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           |
| Boron                  | mg/L        | 0.2       | 0.016             | 0.055             | < 0.005           | 0.012             | 0.071             | 0.006             | 0.01              | < 0.005           | 0.051             | 0.026             |
| Cadmium                | mg/L        | 0.0005    | < 0.000014        | < 0.000015        | 0.00002           | 0.00022           | < 0.000015        | < 0.000014        | < 0.000015        | 0.000016          | 0.000046          | < 0.000015        |
| Chromium (total)       | mg/L        | 0.001     | < 0.001           | < 0.001           | 0.0003            | <b>0.002</b>      | < 0.001           | < 0.001           | 0.001             | < 0.001           | 0.001             | < 0.001           |
| Chromium (VI)          | mg/L        | 0.001     |                   |                   |                   |                   | < 0.001           |                   |                   |                   |                   | < 0.001           |
| Cobalt                 | mg/L        | 0.0009    | 0.0001            | 0.0003            | < 0.005           | 0.0009            | 0.0005            | < 0.0001          | < 0.0001          | 0.0001            | 0.0007            | 0.0003            |
| Copper                 | mg/L        | 0.005     | 0.0003            | 0.001             | 0.001             | <b>0.0089</b>     | 0.0006            | 0.0005            | 0.001             | 0.0013            | 0.0014            | 0.0004            |
| Lead                   | mg/L        | 0.005     | 0.00023           | 0.00019           | 0.00084           | <b>0.00729</b>    | 0.00016           | 0.00017           | 0.00021           | 0.00052           | 0.00185           | 0.00014           |
| Mercury                | mg/L        | 0.0002    | < 0.00002         | < 0.00002         | < 0.00002         | 0.00003           | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L        | 0.04      | 0.0002            | 0.0004            | < 0.0001          | 0.0002            | 0.0002            | 0.0002            | 0.0002            | 0.0004            | 0.0002            | 0.0003            |
| Nickel                 | mg/L        | 0.025     | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            |
| Selenium               | mg/L        | 0.1       | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |
| Silver                 | mg/L        | 0.0001    | < 0.00002         | < 0.0001          | < 0.00002         | 0.00002           | < 0.0001          | < 0.00002         | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          |
| Strontium              | mg/L        | -         | 0.17              | 0.196             | 0.151             | 0.122             | 0.256             | 0.113             | 0.067             | 0.11              | 0.234             | 0.157             |
| Thallium               | mg/L        | 0.0003    | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         |
| Vanadium               | mg/L        | 0.006     | 0.0004            | 0.0003            | 0.0001            | 0.0025            | 0.0002            | 0.0004            | 0.0001            | 0.0004            | 0.0011            | 0.0002            |
| Zinc                   | mg/L        | 0.02      | <b>0.033</b>      | <b>0.026</b>      | 0.014             | <b>0.048</b>      | < 0.005           | < 0.005           | 0.013             | 0.008             | <b>0.025</b>      | < 0.005           |
| Field pH               | pH unit     | -         | 7.36              | 7.2               | 7.26              | 7.72              | 7.88              | --                | 8.23              | 7.33              | 7.12              | 7.96              |
| Field Temp             | deg C       | -         | 16.6              | 5.2               | 10.9              | 0.5               | 5.8               | --                | 2.4               | 4.7               | 4.2               | 5.4               |
| Field Conductivity     | us/cm       | -         | 297               | 441               | 244               | 240.8             | 496               | --                | 175               | 283               | 467               | 357               |
| Dissolved Oxygen       | mg/L        | -         | 2.85              | 4.01              | 2.24              | 12.51             | 5.11              | --                | 4.13              | 5.7               | 4.51              | 6.12              |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance



Surface Water Quality -  
General Parameters

| General Parameters     |             |           |                   |                   |                   |                   |                   |                   |                   |                   | 10m               | 10m               | 10m               | 10m               | 10m               | 10m               |
|------------------------|-------------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Parameters             | Units       | PWQO      | SW13<br>22-May-13 | SW13<br>12-Aug-13 | SW13<br>24-Apr-14 | SW13<br>15-Oct-14 | SW13<br>17-Apr-15 | SW13<br>29-Apr-16 | SW13<br>24-Aug-16 | SW13<br>04-Oct-16 | SW13<br>20-Jul-17 | SW13<br>23-Oct-17 | SW13<br>24-Apr-18 | SW13<br>12-Apr-19 | SW13<br>24-Apr-19 | SW13<br>22-Oct-19 |
| Total Alkalinity       | mg/L        | -         | 300               | 256               | 153               | 249               | 196               | Dry               | Dry               | Dry               | 159               | 172               | 120               | 69                | 162               | Dry               |
| BOD                    | mg/L        | -         | 5                 | < 3               | <3                | 41                | 4                 |                   |                   |                   | < 3               | < 3               | < 3               | < 3               | < 3               |                   |
| Calcium                | mg/L        | -         | 99.2              | 104               | 56.2              | 112               | 79.7              |                   |                   |                   | 62.5              | 67.3              | 50.1              | 29.1              | 60.4              |                   |
| Chloride               | mg/L        | -         | 18.8              | 14.3              | 9.9               | 20.8              | 13.2              |                   |                   |                   | 6                 | 10.2              | 6                 | 3.6               | 9.1               |                   |
| COD                    | mg/L        | -         | 71                | 63                | 38                | 101               | 63                |                   |                   |                   | 58                | 73                | 70                | 59                | 47                |                   |
| Colour                 | colour unit | -         | 124               | 145               | 92                | 130               | 74                |                   |                   |                   | 135               | 92                | 74                | 115               | 75                |                   |
| Specific Conductivity  | umhos/cm    | -         | 642               | 549               | 338               | 604               | 417               |                   |                   |                   | 338               | 374               | 241               | 159               | 359               |                   |
| DOC                    | mg/L        | -         | 29.9              | 25                | 17.8              | 41.8              | 17.2              |                   |                   |                   | 23.5              | 23                | 11.9              | 16.6              | 17.6              |                   |
| Fluoride               | mg/L        | -         | 0.2               | 0.2               | <0.1              | <0.1              | < 0.1             |                   |                   |                   | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             |                   |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005           | < 0.005           | <0.005            | <0.005            | < 0.005           |                   |                   |                   | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |                   |
| Iron                   | mg/L        | 0.3       | 1.98              | 0.924             | 0.514             | 5.49              | 4.46              |                   |                   |                   | 0.162             | 0.161             | 0.911             | 0.247             | 1.23              |                   |
| Magnesium              | mg/L        | -         | 6.48              | 5.65              | 3.31              | 6.93              | 5.18              |                   |                   |                   | 4.61              | 5.2               | 3.71              | 1.91              | 3.53              |                   |
| Manganese              | mg/L        | -         | 0.242             | 0.14              | 0.054             | 1.01              | 0.354             |                   |                   |                   | 0.072             | 0.035             | 0.107             | 0.054             | 0.079             |                   |
| Nitrate                | mg/L        | -         | 0.3               | < 0.1             | 0.2               | 0.4               | < 0.1             |                   |                   |                   | < 0.05            | 0.08              | 0.05              | < 0.05            | < 0.05            |                   |
| Nitrite                | mg/L        | -         | 0.2               | < 0.1             | <0.1              | <0.1              | < 0.1             |                   |                   |                   | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            |                   |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 7.67              | 7.83              | 8.03              | 7.58              | 7.8               |                   |                   |                   | 7.8               | 7.93              | 7.73              | 7.59              | 7.63              |                   |
| Phenols                | mg/L        | 0.001     | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   |                   |                   | 0.01              | 0.005             | <0.001            | < 0.002           | < 0.002           |                   |
| Total Phosphorus       | mg/L        | 0.03      | 0.1               | 0.1               | < 0.1             | 2.2               | 0.4               |                   |                   |                   | < 0.1             | < 0.1             | 0.05              | 0.08              | 0.14              |                   |
| Potassium              | mg/L        | -         | 6.3               | 4.2               | 3.1               | 12.1              | 6.3               |                   |                   |                   | 1.9               | 3.1               | 2.2               | 1.6               | 3.1               |                   |
| Sodium                 | mg/L        | -         | 18.1              | 13.6              | 7.5               | 14.2              | 13                |                   |                   |                   | 5.2               | 7                 | 5.5               | 2.3               | 6.6               |                   |
| Sulphate               | mg/L        | -         | 4                 | 5                 | 4                 | 2                 | 1                 |                   |                   |                   | < 1               | 1                 | 1                 | 1                 | < 1               |                   |
| Dissolved Solids       | mg/L        | -         | 338               | 301               | 178               | 326               | 243               |                   |                   |                   | 175               | 197               | 135               | 82                | 183               |                   |
| Tot Kjel N             | mg/L        | -         | 4.6               | 1.65              | 1.3               | 2                 | 4.3               |                   |                   |                   | 1.2               | 1.1               | 0.6               | 0.7               | 1.4               |                   |
| Ammonia (NH3-N)        | mg/L        | -         | 0.623             | 0.21              | 0.69              | 0.16              | 1.62              |                   |                   |                   | 0.06              | 0.03              | 0.13              | 0.03              | 0.35              |                   |
| Total Suspended Solids | mg/L        | -         | 40                | 8                 | 4                 | 356               | 18                |                   |                   |                   | 14                | < 3               | 5                 | 6                 | 7                 |                   |
| Turbidity              | ntu         | -         | 18                | 1.9               | 1                 | 21.3              | 4.8               |                   |                   |                   | 2.1               | 1.1               | 4.6               | 6.9               | 3.3               |                   |
| Hardness (CaCO3)       | mg/L        | -         | 275               | 282               | 154               | 308               | 220               |                   |                   |                   | 175               | 184               | 140               | 81                | 173               |                   |
| Unionized Ammonia      | mg/L        | 0.02      | 0.004             | 0.001             | 0.007             | 0.001             | 0.007             |                   |                   |                   | 0.0018            | 0.0004            | 0.0025            | < 0.01            | 0.0100            |                   |
| Aluminum               | mg/L        | 0.075     | 0.05              | 0.11              | 0.03              | 0.23              | 0.07              |                   |                   |                   | 0.02              | 0.05              | 0.03              | 0.03              | 0.06              |                   |
| Antimony               | mg/L        | 0.02      | 0.0002            | < 0.0001          | <0.0001           | 0.0003            | 0.0004            |                   |                   |                   | 0.0002            | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          |                   |
| Arsenic                | mg/L        | 0.005     | 0.001             | 0.0017            | 0.0004            | 0.0032            | 0.0011            |                   |                   |                   | 0.0011            | 0.0006            | 0.0006            | 0.0003            | 0.0008            |                   |
| Barium                 | mg/L        | -         | 0.045             | 0.041             | 0.017             | 0.076             | 0.037             |                   |                   |                   | 0.031             | 0.036             | 0.029             | 0.01              | 0.024             |                   |
| Beryllium              | mg/L        | 1.1       | < 0.002           | < 0.002           | <0.002            | <0.002            | < 0.002           |                   |                   |                   | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           |                   |
| Boron                  | mg/L        | 0.2       | 0.098             | 0.074             | 0.017             | 0.201             | 0.022             |                   |                   |                   | 0.01              | 0.01              | 0.009             | 0.007             | 0.025             |                   |
| Cadmium                | mg/L        | 0.0005    | 0.00006           | 0.00094           | <0.00002          | 0.00011           | 0.00064           |                   |                   |                   | 0.000094          | 0.000018          | 0.000086          | 0.000023          | < 0.000015        |                   |
| Chromium (total)       | mg/L        | 0.001     | < 0.002           | 0.0028            | 0.0008            | 0.0008            | 0.0006            |                   |                   |                   | < 0.001           | < 0.001           | 0.001             | 0.001             | < 0.001           |                   |
| Chromium (VI)          | mg/L        | 0.001     |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cobalt                 | mg/L        | 0.0009    | 0.0008            | < 0.005           | <0.005            | <0.005            | < 0.005           |                   |                   |                   | 0.0002            | < 0.0001          | 0.0003            | 0.0002            | 0.0005            |                   |
| Copper                 | mg/L        | 0.005     | < 0.002           | 0.0084            | 0.0006            | 0.0109            | 0.01              |                   |                   |                   | 0.0143            | 0.0027            | 0.015             | 0.003             | 0.0012            |                   |
| Lead                   | mg/L        | 0.005     | 0.00098           | 0.00208           | 0.0001            | 0.00277           | 0.00325           |                   |                   |                   | 0.0006            | 0.00048           | 0.004             | 0.00098           | 0.00023           |                   |
| Mercury                | mg/L        | 0.0002    | < 0.00002         | < 0.00002         | <0.00002          | <0.00002          | <0.00002          |                   |                   |                   | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |                   |
| Molybdenum             | mg/L        | 0.04      | 0.0004            | 0.0007            | 0.0002            | 0.0011            | 0.0001            |                   |                   |                   | 0.0003            | 0.0001            | 0.0005            | 0.0002            | 0.0003            |                   |
| Nickel                 | mg/L        | 0.025     | < 0.01            | < 0.01            | <0.01             | <0.01             | < 0.01            |                   |                   |                   | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            |                   |
| Selenium               | mg/L        | 0.1       | < 0.001           | < 0.001           | <0.001            | 0.002             | < 0.001           |                   |                   |                   | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   |
| Silver                 | mg/L        | 0.0001    | < 0.00002         | 0.00003           | <0.00002          | 0.00009           | 0.00018           |                   |                   |                   | 0.00002           | < 0.00002         | < 0.00002         | < 0.0001          | < 0.0001          |                   |
| Strontium              | mg/L        | -         | --                | --                | --                | 0.281             | 0.2               |                   |                   |                   | 0.17              | 0.176             | 0.121             | 0.06              | 0.127             |                   |
| Thallium               | mg/L        | 0.0003    | < 0.00005         | < 0.00005         | <0.00005          | <0.00005          | 0.00036           |                   |                   |                   | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         |                   |
| Vanadium               | mg/L        | 0.006     | < 0.005           | 0.0004            | <0.0001           | 0.001             | 0.0005            |                   |                   |                   | 0.0001            | 0.0001            | 0.0004            | 0.0002            | 0.0004            |                   |
| Zinc                   | mg/L        | 0.02      | 0.005             | 0.021             | 0.013             | 0.049             | 0.038             |                   |                   |                   | 0.027             | 0.033             | 0.074             | 0.013             | 0.013             |                   |
| Field pH               | pH unit     | -         | 7.35              | 7.37              | 7.99              | 7.26              | 7.6               |                   |                   |                   | 7.93              | 7.73              | 8.26              | 8.2               | 8.51              |                   |
| Field Temp             | deg C       | -         | 15.4              | 14.4              | 2.7               | 13.7              | 2.5               |                   |                   |                   | 19                | 12.6              | 3                 | 0.6               | 1.9               |                   |
| Field Conductivity     | us/cm       | -         | 710               | 739.4             | 410               | 530               | 620               |                   |                   |                   | 264               | 284               | 314               | 160               | 451               |                   |
| Dissolved Oxygen       | mg/L        | -         | 2.96              | 2.35              | 1.95              | 1.77              | 8.1               |                   |                   |                   | 1.41              | 3.82              | 2                 | 12.65             | 3.34              |                   |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

|                        |             |           | 10m       | 10m       | 10m       | 10m       | 10m       | 10m       | 10m       | 10m       | 10m        | 10m       | 10m       | 10m       | 10m       | 10m       |
|------------------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|
| Parameters             | Units       | PWQO      | SW13      | SW13      | SW13      | SW13      | SW13      | SW13      | SW13      | SW13      | SW13       | SW13      | SW13      | SW13      | SW13      | SW13      |
|                        |             |           | 23-Apr-20 | 11-May-20 | 20-Jul-20 | 20-Oct-20 | 20-Apr-21 | 26-Apr-21 | 19-Jul-21 | 28-Oct-21 | 21-Apr-22  | 28-Apr-22 | 20-Jul-22 | 24-Oct-22 | 20-Apr-23 | 30-Aug-23 |
| Total Alkalinity       | mg/L        | -         | Dry       | 668       | Dry       | Dry       | 396       | 473       | Dry       | Dry       | 341        | 442       | Dry       | Dry       | 275       | Dry       |
| BOD                    | mg/L        | -         |           | 6         |           |           | 19        | 11        |           |           | 4          | 19        |           |           | 8         |           |
| Calcium                | mg/L        | -         |           | 261       |           |           | 359       | 282       |           |           | 113        | 149       |           |           | 90.6      |           |
| Chloride               | mg/L        | -         |           | 76.9      |           |           | 32.8      | 46.2      |           |           | 32.7       | 32.8      |           |           | 19.5      |           |
| COD                    | mg/L        | -         |           | 114       |           |           | 830       | 456       |           |           | 92         | 187       |           |           | 105       |           |
| Colour                 | colour unit | -         |           | 53        |           |           | 101       | 58        |           |           | 51         | 59        |           |           | 91        |           |
| Specific Conductivity  | umhos/cm    | -         |           | 1480      |           |           | 837       | 1000      |           |           | 767        | 877       |           |           | 613       |           |
| DOC                    | mg/L        | -         |           | 23.5      |           |           | 41.6      | 22.7      |           |           | 18.1       | 49.7      |           |           | 27.8      |           |
| Fluoride               | mg/L        | -         |           | < 0.1     |           |           | < 0.1     | < 0.1     |           |           | < 0.1      | < 0.1     |           |           | < 0.1     |           |
| Cyanide (free)         | mg/L        | 0.005     |           | < 0.005   |           |           | < 0.005   | < 0.005   |           |           | < 0.005    | < 0.005   |           |           | < 0.005   |           |
| Iron                   | mg/L        | 0.3       |           | 9.72      |           |           | 125       | 77.1      |           |           | 6.2        | 51.9      |           |           | 4.8       |           |
| Magnesium              | mg/L        | -         |           | 19.1      |           |           | 15.9      | 14.7      |           |           | 8.63       | 10.4      |           |           | 5.78      |           |
| Manganese              | mg/L        | -         |           | 0.611     |           |           | 3.95      | 2.43      |           |           | 0.362      | 0.542     |           |           | 0.177     |           |
| Nitrate                | mg/L        | -         |           | 0.18      |           |           | < 0.05    | 0.19      |           |           | 0.16       | 0.09      |           |           | 0.24      |           |
| Nitrite                | mg/L        | -         |           | < 0.05    |           |           | < 0.05    | < 0.05    |           |           | < 0.05     | < 0.05    |           |           | < 0.05    |           |
| pH Lab                 | pH unit     | 6.5 - 8.5 |           | 7.84      |           |           | 7.97      | 7.9       |           |           | 7.95       | 7.9       |           |           | 7.86      |           |
| Phenols                | mg/L        | 0.001     |           | < 0.002   |           |           | < 0.002   | 0.002     |           |           | < 0.001    | < 0.001   |           |           | < 0.001   |           |
| Total Phosphorus       | mg/L        | 0.03      |           | 0.58      |           |           | 3.26      | 1.23      |           |           | 0.12       | 0.64      |           |           | 0.21      |           |
| Potassium              | mg/L        | -         |           | 19.2      |           |           | 13        | 10.5      |           |           | 8.1        | 10.6      |           |           | 5.7       |           |
| Sodium                 | mg/L        | -         |           | 76.9      |           |           | 30.2      | 33.2      |           |           | 23.1       | 31.4      |           |           | 13.6      |           |
| Sulphate               | mg/L        | -         |           | 17        |           |           | < 1       | 2         |           |           | < 1        | < 1       |           |           | < 1       |           |
| Dissolved Solids       | mg/L        | -         |           | 850       |           |           | 457       | 751       |           |           | 401        | 557       |           |           | 305       |           |
| Tot Kjel N             | mg/L        | -         |           | 13.4      |           |           | 29.2      | 13.4      |           |           | 3.6        | 7.2       |           |           | 3.3       |           |
| Ammonia (NH3-N)        | mg/L        | -         |           | 8.79      |           |           | 1.81      | 2.33      |           |           | 3.57       | 4.4       |           |           | 1.41      |           |
| Total Suspended Solids | mg/L        | -         |           | 140       |           |           | 440       | 285       |           |           | 24         | 1760      |           |           | 103       |           |
| Turbidity              | ntu         | -         |           | 88.2      |           |           | 4630      | 1170      |           |           | 24.7       | 466       |           |           | 6.8       |           |
| Hardness (CaCO3)       | mg/L        | -         |           | 731       |           |           | 963       | 487       |           |           | 317        | 415       |           |           | 274       |           |
| Unionized Ammonia      | mg/L        | 0.02      |           | 0.01      |           |           | < 0.01    | < 0.01    |           |           | 0.02       | 0.03      |           |           | 0.01      |           |
| Aluminum               | mg/L        | 0.075     |           | 0.1       |           |           | 0.04      | 0.1       |           |           | 0.04       | 0.05      |           |           | 0.03      |           |
| Antimony               | mg/L        | 0.02      |           | 0.0002    |           |           | < 0.001   | < 0.001   |           |           | 0.0003     | 0.0003    |           |           | 0.0005    |           |
| Arsenic                | mg/L        | 0.005     |           | 0.0013    |           |           | 0.0152    | 0.0106    |           |           | 0.0015     | 0.006     |           |           | 0.0009    |           |
| Barium                 | mg/L        | -         |           | 0.12      |           |           | 0.478     | 0.288     |           |           | 0.047      | 0.164     |           |           | 0.042     |           |
| Beryllium              | mg/L        | 1.1       |           | < 0.002   |           |           | < 0.002   | < 0.002   |           |           | < 0.002    | < 0.002   |           |           | < 0.002   |           |
| Boron                  | mg/L        | 0.2       |           | 0.332     |           |           | 0.215     | 0.18      |           |           | 0.047      | 0.095     |           |           | 0.041     |           |
| Cadmium                | mg/L        | 0.0005    |           | 0.000075  |           |           | 0.00275   | 0.00129   |           |           | < 0.000015 | 0.000029  |           |           | 0.000027  |           |
| Chromium (total)       | mg/L        | 0.001     |           | 0.001     |           |           | 0.017     | 0.011     |           |           | < 0.001    | < 0.001   |           |           | < 0.001   |           |
| Chromium (VI)          | mg/L        | 0.001     |           |           |           |           |           |           |           |           | < 0.001    | < 0.001   |           |           | < 0.001   |           |
| Cobalt                 | mg/L        | 0.0009    |           | 0.0017    |           |           | 0.0137    | 0.0084    |           |           | 0.0012     | 0.0021    |           |           | 0.0007    |           |
| Copper                 | mg/L        | 0.005     |           | 0.0019    |           |           | 0.0396    | 0.0239    |           |           | 0.0007     | 0.0015    |           |           | 0.001     |           |
| Lead                   | mg/L        | 0.005     |           | 0.00191   |           |           | 0.0499    | 0.038     |           |           | 0.00018    | 0.00127   |           |           | 0.00111   |           |
| Mercury                | mg/L        | 0.0002    |           | < 0.00002 |           |           | 0.00032   | 0.00005   |           |           | < 0.00002  | < 0.00002 |           |           | < 0.00002 |           |
| Molybdenum             | mg/L        | 0.04      |           | 0.0002    |           |           | < 0.001   | < 0.001   |           |           | 0.0001     | 0.0002    |           |           | < 0.0001  |           |
| Nickel                 | mg/L        | 0.025     |           | < 0.01    |           |           | 0.02      | 0.01      |           |           | < 0.01     | < 0.01    |           |           | < 0.01    |           |
| Selenium               | mg/L        | 0.1       |           | < 0.001   |           |           | < 0.01    | < 0.01    |           |           | < 0.001    | < 0.001   |           |           | < 0.001   |           |
| Silver                 | mg/L        | 0.0001    |           | < 0.0001  |           |           | < 0.0002  | < 0.0002  |           |           | < 0.0001   | < 0.0001  |           |           | < 0.0001  |           |
| Strontium              | mg/L        | -         |           | 0.784     |           |           | 0.793     | 0.672     |           |           | 0.303      | 0.413     |           |           | 0.224     |           |
| Thallium               | mg/L        | 0.0003    |           | < 0.00005 |           |           | < 0.0005  | < 0.0005  |           |           | < 0.00005  | < 0.00005 |           |           | < 0.00005 |           |
| Vanadium               | mg/L        | 0.006     |           | 0.0011    |           |           | 0.0218    | 0.015     |           |           | 0.0003     | 0.0012    |           |           | 0.0005    |           |
| Zinc                   | mg/L        | 0.02      |           | 0.055     |           |           | 0.95      | 0.449     |           |           | 0.009      | 0.024     |           |           | 0.013     |           |
| Field pH               | pH unit     | -         |           | 6.91      |           |           | 7.12      | 6.59      |           |           | 8          | 7.66      |           |           | 7.76      |           |
| Field Temp             | deg C       | -         |           | 8.1       |           |           | 5.2       | 3.1       |           |           | 5.1        | 9         |           |           | 10.2      |           |
| Field Conductivity     | us/cm       | -         |           | 1038      |           |           | 1150      | 827       |           |           | 230        | 725       |           |           | 395       |           |
| Dissolved Oxygen       | mg/L        | -         |           | 2.25      |           |           | 14.53     | 4.5       |           |           | 5.6        | 1.97      |           |           | 8.33      |           |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

|                        |             |           | 10m       | 15m       | 15m        | 15m       | 15m       | 15m        | 25m       | 30m       | 30m       | 30m        | 30m        | 30m       | 30m       | 30m       |
|------------------------|-------------|-----------|-----------|-----------|------------|-----------|-----------|------------|-----------|-----------|-----------|------------|------------|-----------|-----------|-----------|
| Parameters             | Units       | PWQO      | SW13      | SW13      | SW13       | SW13      | SW13      | SW13       | SW13      | SW13      | SW13      | SW13       | SW13       | SW13      | SW13      | SW13      |
|                        |             |           | 12-Oct-23 | 21-May-15 | 02-May-17  | 21-Jun-17 | 24-Apr-18 | 11-May-20  | 21-May-15 | 17-Apr-15 | 29-Apr-16 | 18-Apr-17  | 02-May-17  | 21-Jun-17 | 20-Jul-17 | 23-Oct-17 |
| Total Alkalinity       | mg/L        | -         | Dry       | 402       | 145        | 159       | 169       | 181        | 159       | 109       | 157       | 144        | 120        | 167       | 165       | 161       |
| BOD                    | mg/L        | -         |           | 15        | < 3        | < 3       | < 3       | 7          | 3         | 2         | < 3       | < 3        | < 3        | < 3       | 6         | 4         |
| Calcium                | mg/L        | -         |           | 231       | 50.9       | 63.9      | 54.2      | 72         | 60.7      | 48.1      | 60.9      | 49.1       | 49         | 62.9      | 64.3      | 68.3      |
| Chloride               | mg/L        | -         |           | 38.4      | 7.9        | 6.4       | 9         | 13.7       | 7.6       | 5.6       | 10.1      | 8.1        | 6.6        | 9.9       | 6         | 10.2      |
| COD                    | mg/L        | -         |           | 230       | 41         | 125       | 39        | 50         | 67        | 38        | 44        | 43         | 52         | 77        | 94        | 565       |
| Colour                 | colour unit | -         |           | 70        | 101        | 105       | 62        | 69         | 92        | 70        | 68        | 105        | 101        | 145       | 120       | 86        |
| Specific Conductivity  | umhos/cm    | -         |           | 871       | 315        | 336       | 339       | 405        | 336       | 235       | 349       | 308        | 260        | 359       | 337       | 350       |
| DOC                    | mg/L        | -         |           | 22.3      | 7.9        | 21.4      | 12        | 17.6       | 17.1      | 13.9      | 15.6      | 19.6       | 10.2       | 33.8      | 25.3      | 26.5      |
| Fluoride               | mg/L        | -         |           | 0.1       | < 0.1      | < 0.1     | < 0.1     | < 0.1      | 0.1       | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.1     | < 0.1     | < 0.1     |
| Cyanide (free)         | mg/L        | 0.005     |           | < 0.005   | < 0.005    | < 0.005   | < 0.005   | < 0.005    | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005    | < 0.005   | < 0.005   | < 0.005   |
| Iron                   | mg/L        | 0.3       |           | 21.7      | 0.225      | 0.544     | 1.25      | 0.402      | 0.717     | 0.201     | 0.11      | 0.149      | 0.093      | 0.078     | 0.271     | 0.733     |
| Magnesium              | mg/L        | -         |           | 13.1      | 2.95       | 4.24      | 4.14      | 4.07       | 3.91      | 2.92      | 3.78      | 2.87       | 3.46       | 3.41      | 4.58      | 4.83      |
| Manganese              | mg/L        | -         |           | 0.469     | 0.008      | 0.112     | 0.123     | 0.044      | 0.06      | 0.028     | 0.008     | 0.007      | 0.039      | 0.015     | 0.543     | 0.184     |
| Nitrate                | mg/L        | -         |           | 0.1       | < 0.1      | < 0.05    | < 0.05    | 0.29       | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.05    | < 0.05    | 0.27      |
| Nitrite                | mg/L        | -         |           | < 0.1     | < 0.1      | < 0.05    | < 0.05    | < 0.05     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1      | < 0.05    | < 0.05    | < 0.05    |
| pH Lab                 | pH unit     | 6.5 - 8.5 |           | 7.83      | 7.98       | 7.77      | 7.75      | 7.99       | 7.84      | 7.88      | 7.97      | 7.97       | 7.89       | 7.83      | 8.09      | 8         |
| Phenols                | mg/L        | 0.001     |           | < 0.001   | 0.003      | 0.003     | < 0.001   | < 0.002    | < 0.001   | < 0.001   | 0.006     | 0.014      | 0.003      | 0.004     | 0.01      | 0.006     |
| Total Phosphorus       | mg/L        | 0.03      |           | 1.7       | < 0.1      | 0.1       | 0.15      | 0.04       | 0.3       | < 0.1     | < 0.1     | < 0.1      | < 0.1      | 0.2       | 0.2       | 0.2       |
| Potassium              | mg/L        | -         |           | 10.1      | 1.4        | 1.2       | 2.8       | 2.3        | 1.4       | 2.1       | 1.9       | 1.4        | 1.3        | 0.7       | 1.6       | 2.2       |
| Sodium                 | mg/L        | -         |           | 38.3      | 4.9        | 5.4       | 6.8       | 9          | 5.5       | 4.2       | 7.1       | 4.3        | 4.2        | 5.4       | 5.1       | 6.3       |
| Sulphate               | mg/L        | -         |           | < 1       | 4          | < 1       | 1         | 3          | < 1       | 2         | 3         | 4          | 3          | < 1       | 1         | 1         |
| Dissolved Solids       | mg/L        | -         |           | 595       | 159        | 177       | 182       | 218        | 176       | 130       | 181       | 156        | 140        | 183       | 180       | 190       |
| Tot Kjel N             | mg/L        | -         |           | 3.9       | 0.6        | 4.5       | 2.2       | 0.8        | 5.8       | 1.4       | 0.7       | 0.6        | 0.9        | 1.1       | 1.6       | 6.5       |
| Ammonia (NH3-N)        | mg/L        | -         |           | 1.51      | < 0.01     | 0.02      | 0.5       | 0.06       | 0.07      | 0.03      | 0.04      | 0.03       | < 0.01     | 0.01      | 0.05      | 0.06      |
| Total Suspended Solids | mg/L        | -         |           | 1710      | 4          | 28        | 42        | 260        | 104       | < 3       | < 3       | 7          | 7          | 4         | 64        | 40        |
| Turbidity              | ntu         | -         |           | 967       | 5.1        | 8.9       | 75.1      | 14.9       | 15.3      | 0.4       | 1.1       | 3.1        | 2.4        | 1.9       | 6.2       | 16.3      |
| Hardness (CaCO3)       | mg/L        | -         |           | 630       |            | 181       | 153       | 197        | 168       | 132       | 168       | 168        |            | 198       | 179       | 179       |
| Unionized Ammonia      | mg/L        | 0.02      |           | 0.003     | --         | 0.00008   | 0.0012    | < 0.01     | 0.0002    | 0.0002    | 0.004     | 0.00008    | --         | 0.0005    | 0.0006    | 0.0005    |
| Aluminum               | mg/L        | 0.075     |           | 1.61      | 0.03       | 0.02      | 0.08      | 0.05       | 0.11      | 0.06      | 0.03      | 0.07       | 0.02       | 0.03      | 0.02      | 0.05      |
| Antimony               | mg/L        | 0.02      |           | 0.0001    | 0.0004     | 0.0001    | < 0.0001  | 0.0001     | < 0.0001  | 0.0003    | < 0.0001  | < 0.0001   | 0.0003     | 0.0001    | 0.0002    | < 0.0001  |
| Arsenic                | mg/L        | 0.005     |           | 0.0019    | 0.0006     | 0.0011    | 0.0008    | 0.0005     | 0.0005    | 0.0004    | 0.0004    | 0.0005     | 0.0005     | 0.0019    | 0.0013    | 0.001     |
| Barium                 | mg/L        | -         |           | 0.104     | 0.017      | 0.033     | 0.028     | 0.024      | 0.027     | 0.018     | 0.015     | 0.015      | 0.019      | 0.021     | 0.036     | 0.044     |
| Beryllium              | mg/L        | 1.1       |           | < 0.002   | < 0.002    | < 0.002   | < 0.002   | < 0.002    | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002    | < 0.002   | < 0.002   | < 0.002   |
| Boron                  | mg/L        | 0.2       |           | 0.047     | 0.006      | 0.01      | 0.016     | 0.012      | < 0.005   | 0.009     | < 0.005   | 0.016      | < 0.005    | 0.007     | 0.011     | 0.018     |
| Cadmium                | mg/L        | 0.0005    |           | 0.00014   | < 0.000014 | 0.000082  | 0.000031  | < 0.000015 | 0.00004   | 0.00016   | < 0.00002 | < 0.000014 | < 0.000014 | 0.00005   | 0.000079  | 0.000074  |
| Chromium (total)       | mg/L        | 0.001     |           | 0.0017    | < 0.001    | < 0.001   | < 0.001   | 0.001      | 0.0003    | 0.0004    | < 0.0002  | < 0.001    | < 0.001    | < 0.001   | < 0.001   | < 0.001   |
| Chromium (VI)          | mg/L        | 0.001     |           |           |            |           |           |            |           |           |           |            |            |           |           |           |
| Cobalt                 | mg/L        | 0.0009    |           | < 0.005   | 0.0001     | 0.0002    | 0.0004    | 0.0002     | < 0.005   | < 0.005   | < 0.005   | < 0.0001   | < 0.0001   | < 0.0001  | 0.0005    | 0.0002    |
| Copper                 | mg/L        | 0.005     |           | 0.0045    | 0.0006     | 0.004     | 0.0081    | 0.0009     | 0.0016    | 0.0054    | 0.0003    | < 0.0001   | 0.0002     | 0.0029    | 0.006     | 0.0031    |
| Lead                   | mg/L        | 0.005     |           | 0.00502   | 0.00015    | 0.00392   | 0.00167   | 0.00057    | 0.00143   | 0.00126   | 0.00008   | 0.00004    | 0.00021    | 0.00119   | 0.00115   | 0.00312   |
| Mercury                | mg/L        | 0.0002    |           | 0.00003   | 0.00003    | < 0.00002 | < 0.00002 | < 0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | < 0.00002  | 0.00008    | < 0.00002 | < 0.00002 | < 0.00002 |
| Molybdenum             | mg/L        | 0.04      |           | < 0.0001  | 0.0002     | 0.0002    | 0.0002    | 0.0002     | < 0.0001  | < 0.0001  | 0.0001    | 0.0002     | 0.0002     | 0.0003    | 0.0003    | 0.0002    |
| Nickel                 | mg/L        | 0.025     |           | < 0.01    | < 0.01     | < 0.01    | < 0.01    | < 0.01     | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01     | < 0.01    | < 0.01    | < 0.01    |
| Selenium               | mg/L        | 0.1       |           | < 0.001   | < 0.001    | < 0.001   | < 0.001   | < 0.001    | < 0.001   | < 0.001   | < 0.001   | < 0.001    | < 0.001    | < 0.001   | < 0.001   | < 0.001   |
| Silver                 | mg/L        | 0.0001    |           | < 0.00002 | < 0.00002  | < 0.00002 | < 0.00002 | < 0.0001   | < 0.00002 | 0.00019   | < 0.00002 | < 0.00002  | < 0.00002  | < 0.00002 | 0.00002   | < 0.00002 |
| Strontium              | mg/L        | -         |           | 0.52      | 0.11       | 0.164     | 0.135     | 0.147      | 0.141     | 0.11      | 0.137     | 0.1        | 0.116      | 0.151     | 0.18      | 0.178     |
| Thallium               | mg/L        | 0.0003    |           | < 0.00005 | < 0.00005  | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005 | 0.00009   | < 0.00005 | < 0.00005  | < 0.00005  | < 0.00005 | < 0.00005 | < 0.00005 |
| Vanadium               | mg/L        | 0.006     |           | 0.0019    | 0.0004     | 0.0004    | 0.0004    | 0.0003     | 0.0001    | 0.0003    | 0.0001    | < 0.0001   | 0.0002     | 0.0002    | 0.0002    | 0.0003    |
| Zinc                   | mg/L        | 0.02      |           | 0.082     | 0.192      | 0.037     | 0.017     | 0.045      | 0.033     | 0.015     | < 0.005   | < 0.005    | 0.056      | 0.008     | 0.026     | 0.027     |
| Field pH               | pH unit     | -         |           | 7.05      | --         | 7.14      | 7.42      | 7.28       | 7.15      | 7.65      | 8.87      | 7.38       | --         | 8.22      | 7.53      | 7.5       |
| Field Temp             | deg C       | -         |           | 10.5      | --         | 16.2      | 1.6       | 5.6        | 10.8      | 7         | 5.6       | 4.8        | --         | 16.2      | 18.3      | 13.5      |
| Field Conductivity     | us/cm       | -         |           | 640       | --         | 275       | 537       | 402        | 242.5     | 270       | 285       | 250        | --         | 293       | 272       | 325       |
| Dissolved Oxygen       | mg/L        | -         |           | 0.35      | --         | 2.43      | 3.48      | 1.77       | 0.55      | 7.81      | 6.2       | 6.21       | --         | 1.22      | 1.04      | 0.75      |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

|                        |             |           | 30m           | 30m        | 30m        | 30m         | 30m         | 30m       | 30m        | 30m            | 30m          | 30m          | 30m         | 30m          | 30m        | 30m         |
|------------------------|-------------|-----------|---------------|------------|------------|-------------|-------------|-----------|------------|----------------|--------------|--------------|-------------|--------------|------------|-------------|
| Parameters             | Units       | PWQO      | SW13          | SW13       | SW13       | SW13        | SW13        | SW13      | SW13       | SW13           | SW13         | SW13         | SW13        | SW13         | SW13       | SW13        |
|                        |             |           | 24-Apr-18     | 24-Apr-18  | 12-Apr-19  | 24-Apr-19   | 08-Jul-19   | 22-Oct-19 | 23-Apr-20  | 20-Oct-20      | 20-Apr-21    | 26-Apr-21    | 19-Jul-21   | 28-Oct-21    | 21-Apr-22  | 28-Apr-22   |
| Total Alkalinity       | mg/L        | -         | 88            | 89         | 69         | 78          | 183         | Dry       | 137        | 206            | 140          | 151          | 210         | 159          | 120        | 130         |
| BOD                    | mg/L        | -         | < 3           | < 3        | < 3        | < 3         | 3           |           | < 3        | 15             | 3            | 6            | < 6         | 6            | < 3        | < 3         |
| Calcium                | mg/L        | -         | 38.9          | 32.8       | 30.8       | 32.5        | 72.4        |           | 61.1       | 88.7           | 58.8         | 61.3         | 76.5        | 72.3         | 41.3       | 49.3        |
| Chloride               | mg/L        | -         | 4.1           | 4.1        | 3.7        | 3.9         | 8.2         |           | 10.2       | 19.2           | 7.8          | 8.8          | 12.2        | 13.1         | 6.8        | 7.2         |
| COD                    | mg/L        | -         | 96            | 37         | 53         | 47          | 331         |           | 38         | 194            | 95           | 94           | 61          | 143          | 42         | 56          |
| Colour                 | colour unit | -         | 100           | 85         | 121        | 101         | 140         |           | 63         | 104            | 77           | 78           | 118         | 78           | 85         | 79          |
| Specific Conductivity  | umhos/cm    | -         | 190           | 183        | 160        | 180         | 340         |           | 320        | 422            | 298          | 318          | 428         | 360          | 259        | 269         |
| DOC                    | mg/L        | -         | 13            | 11.8       | 17.1       | 18.9        | 26.5        |           | 14.1       | 35.9           | 20.4         | 19.8         | 26.1        | 21.8         | 20.7       | 18.3        |
| Fluoride               | mg/L        | -         | < 0.1         | < 0.1      | < 0.1      | < 0.1       | < 0.1       |           | < 0.1      | < 0.1          | < 0.1        | < 0.1        | < 0.1       | < 0.1        | < 0.1      | < 0.1       |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005       | < 0.005    | < 0.005    | < 0.005     | < 0.005     |           | < 0.005    | < 0.005        | < 0.005      | < 0.005      | < 0.005     | < 0.005      | < 0.005    | < 0.005     |
| Iron                   | mg/L        | 0.3       | 0.246         | 0.062      | 0.16       | 0.035       | 0.246       |           | 0.047      | <b>1.79</b>    | <b>0.392</b> | <b>0.552</b> | 0.107       | <b>0.838</b> | 0.122      | 0.197       |
| Magnesium              | mg/L        | -         | 3.3           | 2.16       | 2.01       | 2.14        | 4.32        |           | 3.6        | 5.13           | 3.36         | 3.67         | 4.42        | 4.27         | 2.69       | 3.18        |
| Manganese              | mg/L        | -         | 0.035         | 0.006      | 0.06       | 0.004       | 0.209       |           | 0.006      | 1.03           | 0.096        | 0.123        | 0.068       | 0.09         | 0.024      | 0.04        |
| Nitrate                | mg/L        | -         | < 0.05        | < 0.05     | < 0.05     | < 0.05      | 0.08        |           | 0.14       | < 0.05         | < 0.05       | < 0.05       | 0.12        | < 0.05       | < 0.05     | < 0.05      |
| Nitrite                | mg/L        | -         | < 0.05        | < 0.05     | < 0.05     | < 0.05      | < 0.05      |           | < 0.05     | < 0.05         | < 0.05       | < 0.05       | < 0.05      | < 0.05       | < 0.05     | < 0.05      |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 7.87          | 7.67       | 7.61       | 7.37        | 7.78        |           | 7.91       | 7.83           | 7.93         | 7.87         | 8           | 7.34         | 7.15       | 7.8         |
| Phenols                | mg/L        | 0.001     | <0.001        | < 0.001    | < 0.002    | < 0.002     | < 0.002     |           | < 0.002    | < 0.001        | < 0.002      | < 0.002      | < 0.002     | < 0.001      | < 0.001    | < 0.001     |
| Total Phosphorus       | mg/L        | 0.03      | <b>0.17</b>   | 0.02       | <b>0.1</b> | <b>0.04</b> | <b>0.46</b> |           | 0.01       | <b>0.27</b>    | <b>0.2</b>   | <b>0.19</b>  | <b>0.05</b> | <b>0.37</b>  | 0.03       | <b>0.05</b> |
| Potassium              | mg/L        | -         | 1.4           | 1.3        | 1.7        | 1.8         | 0.7         |           | 1.9        | 3              | 1.7          | 1.8          | 1.8         | 2.2          | 1.6        | 1.8         |
| Sodium                 | mg/L        | -         | 3.6           | 2.5        | 2.5        | 2.5         | 5.5         |           | 6.3        | 8.5            | 5.3          | 5.9          | 6.8         | 5.8          | 3.8        | 4.8         |
| Sulphate               | mg/L        | -         | 2             | 1          | 1          | < 1         | < 1         |           | 6          | 3              | 1            | 2            | < 1         | < 1          | 2          | 2           |
| Dissolved Solids       | mg/L        | -         | 103           | 98         | 84         | 90          | 202         |           | 171        | 246            | 159          | 175          | 236         | 194          | 130        | 146         |
| Tot Kjel N             | mg/L        | -         | 2.2           | 0.4        | 1.1        | 0.6         | 4.7         |           | 0.5        | 3.8            | 1.6          | 2.1          | 1           | 5.8          | 0.6        | 2.6         |
| Ammonia (NH3-N)        | mg/L        | -         | 0.04          | 0.02       | 0.09       | 0.04        | 0.09        |           | 0.01       | 0.01           | 0.04         | 0.04         | 0.08        | 0.09         | 0.06       | 2.55        |
| Total Suspended Solids | mg/L        | -         | 10            | < 3        | 15         | 4           | 92          |           | 6          | 2240           | 14           | 76           | 15          | 29           | 7          | 52          |
| Turbidity              | ntu         | -         | 5.8           | 0.7        | 7.2        | 0.9         | 64.8        |           | 1.4        | 620            | 21.4         | 105          | 8.3         | 25.1         | 4.5        | 6.5         |
| Hardness (CaCO3)       | mg/L        | -         | 111           | 91         | 83         | 90          | 190         |           | 163        | 243            | 161          | 169          | 228         | 197          | 114        | 136         |
| Unionized Ammonia      | mg/L        | 0.02      | 0.0004        | 0.00004    | < 0.01     | < 0.01      | < 0.01      |           | < 0.01     | < 0.01         | < 0.01       | < 0.01       | < 0.01      | < 0.01       | < 0.01     | <b>0.04</b> |
| Aluminum               | mg/L        | 0.075     | 0.04          | 0.03       | 0.06       | 0.03        | 0.06        |           | 0.03       | 0.02           | < 0.01       | 0.05         | 0.05        | 0.06         | 0.01       | 0.02        |
| Antimony               | mg/L        | 0.02      | < 0.0001      | < 0.0001   | < 0.0001   | 0.0003      | 0.0003      |           | 0.0002     | 0.0001         | 0.0003       | 0.0003       | 0.0006      | 0.0004       | 0.0003     | 0.0003      |
| Arsenic                | mg/L        | 0.005     | 0.0003        | 0.0003     | 0.0004     | 0.0004      | 0.0008      |           | 0.0003     | 0.0009         | 0.0005       | 0.0006       | 0.0017      | 0.0006       | 0.0003     | 0.0003      |
| Barium                 | mg/L        | -         | 0.026         | 0.008      | 0.01       | 0.008       | 0.028       |           | 0.016      | 0.045          | 0.02         | 0.022        | 0.027       | 0.025        | 0.013      | 0.015       |
| Beryllium              | mg/L        | 1.1       | < 0.002       | < 0.002    | < 0.002    | < 0.002     | < 0.002     |           | < 0.002    | < 0.002        | < 0.002      | < 0.002      | < 0.002     | < 0.002      | < 0.002    | < 0.002     |
| Boron                  | mg/L        | 0.2       | 0.005         | < 0.005    | 0.01       | 0.005       | 0.009       |           | 0.015      | 0.022          | 0.01         | 0.011        | 0.023       | 0.013        | 0.005      | 0.008       |
| Cadmium                | mg/L        | 0.0005    | 0.000074      | < 0.000015 | < 0.000015 | < 0.000015  | < 0.000015  |           | < 0.000015 | 0.000119       | 0.000025     | 0.000033     | < 0.000015  | 0.000029     | < 0.000015 | < 0.000015  |
| Chromium (total)       | mg/L        | 0.001     | < 0.001       | < 0.001    | 0.001      | < 0.001     | < 0.001     |           | < 0.001    | <b>0.002</b>   | < 0.001      | 0.001        | < 0.001     | 0.001        | < 0.001    | < 0.001     |
| Chromium (VI)          | mg/L        | 0.001     |               |            |            |             |             |           |            |                |              |              |             |              | < 0.001    | < 0.001     |
| Cobalt                 | mg/L        | 0.0009    | < 0.0001      | < 0.0001   | 0.0001     | 0.0001      | 0.0003      |           | < 0.0001   | <b>0.001</b>   | 0.0002       | 0.0002       | 0.0001      | 0.0003       | 0.0001     | 0.0001      |
| Copper                 | mg/L        | 0.005     | <b>0.0092</b> | 0.0002     | 0.0009     | 0.0003      | 0.0003      |           | 0.0004     | 0.0027         | 0.0006       | 0.0007       | 0.0002      | 0.0012       | 0.0003     | 0.0007      |
| Lead                   | mg/L        | 0.005     | 0.00261       | 0.00003    | 0.00023    | 0.00009     | 0.00027     |           | 0.00006    | <b>0.00597</b> | 0.00123      | 0.0015       | 0.00012     | 0.00216      | 0.00017    | 0.00055     |
| Mercury                | mg/L        | 0.0002    | < 0.00002     | < 0.00002  | < 0.00002  | < 0.00002   | < 0.00002   |           | < 0.00002  | 0.00004        | < 0.00002    | < 0.00002    | < 0.00002   | < 0.00002    | < 0.00002  | < 0.00002   |
| Molybdenum             | mg/L        | 0.04      | 0.0002        | 0.0001     | 0.0002     | 0.0001      | < 0.0001    |           | 0.0002     | 0.0002         | 0.0001       | 0.0001       | 0.0003      | < 0.0001     | 0.0001     | < 0.0001    |
| Nickel                 | mg/L        | 0.025     | < 0.01        | < 0.01     | < 0.01     | < 0.01      | < 0.01      |           | < 0.01     | < 0.01         | < 0.01       | < 0.01       | < 0.01      | < 0.01       | < 0.01     | < 0.01      |
| Selenium               | mg/L        | 0.1       | < 0.001       | < 0.001    | < 0.001    | < 0.001     | < 0.001     |           | < 0.001    | < 0.001        | < 0.001      | < 0.001      | < 0.001     | < 0.001      | < 0.001    | < 0.001     |
| Silver                 | mg/L        | 0.0001    | < 0.00002     | < 0.00002  | < 0.0001   | < 0.0001    | < 0.0001    |           | < 0.0001   | < 0.0001       | < 0.0001     | < 0.0001     | < 0.0001    | < 0.0001     | < 0.0001   | < 0.0001    |
| Strontium              | mg/L        | -         | 0.105         | 0.067      | 0.063      | 0.069       | 0.164       |           | 0.121      | 0.171          | 0.118        | 0.133        | 0.179       | 0.151        | 0.09       | 0.104       |
| Thallium               | mg/L        | 0.0003    | < 0.00005     | < 0.00005  | < 0.00005  | < 0.00005   | < 0.00005   |           | < 0.00005  | < 0.00005      | < 0.00005    | < 0.00005    | < 0.00005   | < 0.00005    | < 0.00005  | < 0.00005   |
| Vanadium               | mg/L        | 0.006     | 0.0003        | 0.0001     | 0.0001     | 0.0001      | 0.0001      |           | 0.0002     | 0.0008         | 0.0003       | 0.0004       | 0.0001      | 0.0005       | 0.0002     | 0.0002      |
| Zinc                   | mg/L        | 0.02      | <b>0.027</b>  | < 0.005    | 0.015      | < 0.005     | 0.013       |           | < 0.005    | <b>0.03</b>    | 0.018        | <b>0.022</b> | 0.013       | <b>0.023</b> | < 0.005    | 0.006       |
| Field pH               | pH unit     | -         | 7.95          | 7.44       | 8.34       | 8.51        | 7.31        |           | 7.7        | 8.5            | 7.08         | 7.1          | 6.97        | 8.23         | 8          | 8.05        |
| Field Temp             | deg C       | -         | 2.9           | 0.1        | 0.5        | 3.7         | 16.6        |           | 1          | 7.1            | 5.2          | 6.4          | 19.7        | 5.6          | 5.1        | 5.9         |
| Field Conductivity     | us/cm       | -         | 205           | 221.8      | 170        | 165         | 309         |           | 365        | 470            | 390          | 285          | 403         | 350          | 230        | 243         |
| Dissolved Oxygen       | mg/L        | -         | 4.77          | 6.18       | 14.54      | 4.3         | 7.31        |           | 5.66       | 2.55           | 12.81        | 6.32         | 1.55        | 6.43         | 5.6        | 2.82        |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

|                        |             |           | 30m       | 30m       | 30m       | 30m       | 30m       | Filtered   |           |           |           |           |           |           | 10m       |           |
|------------------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                        |             |           | SW13      | SW13      | SW13      | SW13      | SW13      | SW14       | SW14      | SW14      | SW14      | SW14      | SW14      | SW14      | SW14      | SW14      |
| Parameters             | Units       | PWQO      | 20-Jul-22 | 24-Oct-22 | 19-Apr-23 | 30-Aug-23 | 12-Oct-23 | 30-May-12  | 22-May-13 | 12-Aug-13 | 01-Oct-13 | 24-Apr-14 | 24-Jul-14 | 15-Oct-14 | 16-Apr-15 | 21-May-15 |
| Total Alkalinity       | mg/L        | -         | 185       | Dry       | 122       | Dry       | 216       | 270        | 157       | 151       | 193       | 93        | 210       | 171       | 102       | 174       |
| BOD                    | mg/L        | -         | 4         |           | < 3       |           | 13        | 11         | < 3       | < 3       | < 3       | <3        | <3        | <3        | < 2       | < 3       |
| Calcium                | mg/L        | -         | 76.4      |           | 46.5      |           | 79.2      | 120        | 57.4      | 78.9      | 65.1      | 36.4      | 85.9      | 74.1      | 43        | 66.3      |
| Chloride               | mg/L        | -         | 12        |           | 5.3       |           | 15.7      | 22         | 8.8       | 7.7       | 11.6      | 4.7       | 9.1       | 14        | 5.2       | 7.9       |
| COD                    | mg/L        | -         | 93        |           | 51        |           | 242       | 83         | 45        | 61        | 68        | 39        | 58        | 43        | 37        | 50        |
| Colour                 | colour unit | -         | 105       |           | 95        |           | 92        | 83         | 116       | 145       | 52        | 130       | 98        | 125       | 76        | 90        |
| Specific Conductivity  | umhos/cm    | -         | 387       |           | 263       |           | 447       | 570        | 337       | 379       | 421       | 209       | 447       | 404       | 218       | 361       |
| DOC                    | mg/L        | -         | 28        |           | 11.8      |           | 50.2      | 27         | 21        | 29.8      | 30.4      | 17.4      | 21.6      | 30.4      | 13.9      | 10.8      |
| Fluoride               | mg/L        | -         | < 0.1     |           | < 0.1     |           | <0.1      | < 0.10     | 0.2       | 0.2       | 0.1       | <0.1      | <0.1      | <0.1      | < 0.1     | 0.1       |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005   |           | < 0.005   |           | <0.005    | < 0.0020   | < 0.005   | < 0.005   | < 0.005   | <0.005    | <0.005    | <0.005    | < 0.005   | < 0.005   |
| Iron                   | mg/L        | 0.3       | 1.52      |           | 0.527     |           | 8.79      | 3.7        | 0.108     | 0.839     | 0.727     | 0.124     | 1.07      | 0.089     | 0.154     | 0.618     |
| Magnesium              | mg/L        | -         | 4.19      |           | 2.79      |           | 5.15      | 6.6        | 3.32      | 3.87      | 4.04      | 2.3       | 4.66      | 4.6       | 2.66      | 4.4       |
| Manganese              | mg/L        | -         | 0.471     |           | 0.081     |           | 0.349     | 0.68       | 0.046     | 0.12      | 0.615     | 0.009     | 0.911     | 0.051     | 0.087     | 0.066     |
| Nitrate                | mg/L        | -         | 0.08      |           | 0.06      |           | 0.06      | < 0.10     | < 0.1     | 0.1       | < 0.1     | <0.1      | <0.1      | <0.1      | 0.1       | < 0.1     |
| Nitrite                | mg/L        | -         | < 0.05    |           | < 0.05    |           | 0.06      | < 0.010    | < 0.1     | < 0.1     | < 0.1     | <0.1      | <0.1      | <0.1      | < 0.1     | < 0.1     |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 7.88      |           | 7.38      |           | 8.08      | 7.67       | 7.76      | 7.9       | 7.72      | 8.01      | 7.82      | 7.77      | 7.91      | 8.03      |
| Phenols                | mg/L        | 0.001     | < 0.001   |           | < 0.001   |           | <0.001    | 0.0044     | < 0.001   | < 0.001   | 0.003     | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   |
| Total Phosphorus       | mg/L        | 0.03      | 0.18      |           | 0.05      |           | 1.1       | 0.4        | 0.03      | 0.09      | 0.1       | <0.1      | <0.1      | <0.1      | < 0.1     | 0.1       |
| Potassium              | mg/L        | -         | 1.4       |           | 1.8       |           | 6.4       | 15         | 1.4       | 1.4       | 2.8       | 1.5       | 1.8       | 4         | 2         | 2.5       |
| Sodium                 | mg/L        | -         | 5.9       |           | 3.8       |           | 7         | 11         | 5         | 4.8       | 5.9       | 3         | 6.5       | 7.9       | 3.6       | 6         |
| Sulphate               | mg/L        | -         | 1         |           | < 1       |           | 2         | < 1        | 2         | 3         | < 1       | 3         | <1        | <1        | 2         | < 1       |
| Dissolved Solids       | mg/L        | -         | 214       |           | 134       |           | 254       | 321        | 172       | 191       | 208       | 107       | 236       | 208       | 120       | 193       |
| Tot Kjel N             | mg/L        | -         | 2.5       |           | 0.8       |           | 6.3       | 5.2        | 0.9       | 1.1       | 2.55      | 0.6       | 1.3       | 0.7       | 1         | 1         |
| Ammonia (NH3-N)        | mg/L        | -         | 0.53      |           | 0.06      |           | 0.29      | 0.8        | 0.033     | 0.03      | 0.08      | 0.01      | 0.19      | 0.04      | < 0.01    | 0.05      |
| Total Suspended Solids | mg/L        | -         | 21        |           | 16        |           | 360       | 98         | < 2       | 7         | 66        | <3        | 34        | 84        | 22        | 28        |
| Turbidity              | ntu         | -         | 37.2      |           | 10.2      |           | 34.1      | 86         | 1.7       | 0.5       | 21        | 0.7       | 13.3      | 10.7      | 4.3       | 8.9       |
| Hardness (CaCO3)       | mg/L        | -         | 208       |           | 130       |           | 219       | 270        | 157       | 213       | 179       | 101       | 234       | 204       | 118       | 184       |
| Unionized Ammonia      | mg/L        | 0.02      | < 0.01    |           | < 0.01    |           | <0.01     | 0.0049     | 0.0001    | 0.0002    | 0.0007    | 0.0003    | 0.0005    | 0.0002    | <0.0001   | 0.0004    |
| Aluminum               | mg/L        | 0.075     | 0.05      |           | 0.02      |           | 0.06      | 0.011      | 0.04      | 0.53      | 0.25      | 0.03      | 0.12      | 0.03      | 0.06      | 0.24      |
| Antimony               | mg/L        | 0.02      | 0.0006    |           | 0.0006    |           | 0.0001    | < 0.00050  | < 0.0001  | < 0.0001  | < 0.0001  | <0.0001   | 0.0003    | <0.0001   | 0.0002    | 0.0002    |
| Arsenic                | mg/L        | 0.005     | 0.0009    |           | 0.0004    |           | 0.002     | 0.003      | 0.0007    | 0.0011    | 0.002     | 0.0003    | 0.0019    | 0.0008    | 0.0003    | 0.0006    |
| Barium                 | mg/L        | -         | 0.033     |           | 0.015     |           | 0.068     | 0.086      | 0.019     | 0.028     | 0.037     | 0.01      | 0.037     | 0.022     | 0.018     | 0.026     |
| Beryllium              | mg/L        | 1.1       | < 0.002   |           | < 0.002   |           | <0.0001   | < 0.00050  | < 0.002   | < 0.002   | < 0.002   | <0.002    | <0.002    | <0.002    | < 0.002   | < 0.002   |
| Boron                  | mg/L        | 0.2       | 0.007     |           | 0.007     |           | 0.026     | 0.02       | < 0.005   | 0.014     | < 0.005   | 0.007     | 0.006     | 0.012     | 0.009     | < 0.005   |
|                        |             |           |           |           | <         |           |           |            |           |           |           |           |           |           |           |           |
| Cadmium                | mg/L        | 0.0005    | 0.000016  |           | 0.000015  |           | 0.000099  | < 0.00010  | < 0.00002 | 0.00003   | 0.00024   | <0.00002  | <0.00002  | <0.00002  | 0.0001    | 0.00004   |
| Chromium (total)       | mg/L        | 0.001     | < 0.001   |           | < 0.001   |           | 0.001     | < 0.0050   | < 0.002   | 0.0009    | 0.0018    | <0.0002   | <0.0002   | <0.0002   | 0.0003    | 0.0005    |
| Chromium (VI)          | mg/L        | 0.001     | < 0.001   |           | < 0.001   |           | <0.001    |            |           |           |           |           |           |           |           |           |
| Cobalt                 | mg/L        | 0.0009    | 0.0008    |           | 0.0002    |           | 0.001     | 0.0018     | < 0.0001  | < 0.005   | < 0.005   | <0.005    | <0.005    | <0.005    | < 0.005   | < 0.005   |
| Copper                 | mg/L        | 0.005     | 0.0011    |           | 0.0003    |           | 0.0025    | 0.0043     | < 0.002   | 0.0029    | 0.004     | 0.0004    | 0.0006    | 0.0004    | 0.0044    | 0.0015    |
| Lead                   | mg/L        | 0.005     | 0.00109   |           | 0.00024   |           | 0.00445   | 0.0044     | 0.00009   | 0.00163   | 0.00292   | 0.00008   | 0.00031   | 0.00004   | 0.00084   | 0.00105   |
| Mercury                | mg/L        | 0.0002    | < 0.00002 |           | < 0.00002 |           | 0.00004   | < 0.00001  | < 0.00002 | < 0.00002 | < 0.00002 | <0.00002  | <0.00002  | <0.00002  | <0.00002  | <0.00002  |
| Molybdenum             | mg/L        | 0.04      | < 0.0001  |           | < 0.0001  |           | 0.0002    | < 0.00050  | 0.0002    | < 0.0001  | 0.0003    | 0.0001    | 0.0003    | 0.0001    | < 0.0001  | < 0.0001  |
| Nickel                 | mg/L        | 0.025     | < 0.01    |           | < 0.01    |           | 0.002     | 0.0018     | < 0.01    | < 0.01    | < 0.01    | <0.01     | <0.01     | <0.01     | < 0.01    | < 0.01    |
| Selenium               | mg/L        | 0.1       | < 0.001   |           | < 0.001   |           | <0.001    | < 0.0020   | < 0.001   | < 0.001   | < 0.001   | <0.001    | <0.001    | <0.001    | < 0.001   | < 0.001   |
| Silver                 | mg/L        | 0.0001    | < 0.0001  |           | < 0.0001  |           | <0.0001   | < 0.00010  | < 0.00002 | < 0.00002 | 0.00003   | <0.00002  | <0.00002  | <0.00002  | 0.00012   | < 0.00002 |
| Strontium              | mg/L        | -         | 0.177     |           | 0.1       |           | 0.191     | 0.25       | --        | --        | --        | --        | 0.211     | 0.176     | 0.105     | 0.147     |
| Thallium               | mg/L        | 0.0003    | < 0.00005 |           | < 0.00005 |           | <0.00005  | < 0.000050 | < 0.00005 | < 0.00005 | < 0.00005 | <0.00005  | <0.00005  | <0.00005  | 0.00005   | < 0.00005 |
| Vanadium               | mg/L        | 0.006     | 0.0003    |           | 0.0002    |           | 0.0011    | 0.0018     | < 0.005   | 0.0016    | 0.0008    | <0.0001   | 0.0006    | <0.0001   | 0.0003    | 0.0004    |
| Zinc                   | mg/L        | 0.02      | 0.019     |           | 0.007     |           | 0.037     | 0.01       | < 0.005   | 0.018     | 0.008     | 0.029     | 0.013     | 0.01      | 0.013     | 0.036     |
| Field pH               | pH unit     | -         | 7.3       |           | 7.84      |           | 7.53      | 7.2        | 7.22      | 7.36      | 7.53      | 8.41      | 6.96      | 7.2       | 7.44      | 7.72      |
| Field Temp             | deg C       | -         | 21.6      |           | 10.6      |           | 8.7       | 19.8       | 14.9      | 15.6      | 14.2      | 4.3       | 16.4      | 13.8      | 12        | 8.9       |
| Field Conductivity     | us/cm       | -         | 325       |           | 240       |           | 328       | 609        | 350       | 262.3     | 424       | 350       | 356.9     | 370       | 250       | 248.8     |
| Dissolved Oxygen       | mg/L        | -         | 4.05      |           | 7.85      |           | 2.69      | 5.39       | 6.05      | 8.17      | 6.15      | 3.48      | 2.42      | 1.3       | 4.44      | 3.6       |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance



Surface Water Quality -  
General Parameters

|                        |             |           | 10m               |                   |                   |                   |                   | 10m               |                   |                   |                   |                   |                   |                   |                   |                   |  |
|------------------------|-------------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--|
| Parameters             | Units       | PWQO      | SW14<br>29-Apr-16 | SW14<br>24-Aug-16 | SW14<br>04-Oct-16 | SW14<br>18-Apr-17 | SW14<br>21-Jun-17 | SW14<br>20-Jul-17 | SW14<br>23-Oct-17 | SW14<br>24-Apr-18 | SW14<br>24-Apr-18 | SW14<br>12-Apr-19 | SW14<br>24-Apr-19 | SW14<br>08-Jul-19 | SW14<br>22-Oct-19 | SW14<br>23-Apr-20 |  |
| Total Alkalinity       | mg/L        | -         | 128               | Dry               | Dry               | 115               | 163               | 159               | 164               | 92                | 93                | 64                | 91                | 209               | Dry               | 104               |  |
| BOD                    | mg/L        | -         | < 3               |                   |                   | < 3               | < 3               | < 3               | 6                 | < 3               | < 3               | < 3               | < 3               | < 3               |                   | < 3               |  |
| Calcium                | mg/L        | -         | 51.4              |                   |                   | 39.7              | 66.2              | 76.4              | 67.9              | 40.1              | 36.1              | 29.4              | 38.7              | 93.8              |                   | 52.3              |  |
| Chloride               | mg/L        | -         | 6.8               |                   |                   | 7                 | 7                 | 5.5               | 9.5               | 4                 | 3.9               | 3.2               | 5.6               | 10.2              |                   | 7.1               |  |
| COD                    | mg/L        | -         | 50                |                   |                   | 58                | 74                | 602               | 561               | 39                | 42                | 51                | 51                | 65                |                   | 52                |  |
| Colour                 | colour unit | -         | 84                |                   |                   | 134               | 112               | 140               | 88                | 140               | 130               | 143               | 144               | 143               |                   | 115               |  |
| Specific Conductivity  | umhos/cm    | -         | 278               |                   |                   | 254               | 339               | 332               | 360               | 196               | 186               | 147               | 210               | 445               |                   | 239               |  |
| DOC                    | mg/L        | -         | 15.8              |                   |                   | 21.3              | 21.1              | 24.9              | 25.1              | 8.9               | 13                | 17.1              | 18.7              | 31.9              |                   | 17.6              |  |
| Fluoride               | mg/L        | -         | < 0.1             |                   |                   | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             |                   | < 0.1             |  |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005           |                   |                   | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |                   | < 0.005           |  |
| Iron                   | mg/L        | 0.3       | 0.038             |                   |                   | 0.065             | 0.29              | 4.08              | 0.356             | 0.253             | 0.197             | 0.233             | 0.27              | 1.22              |                   | 0.142             |  |
| Magnesium              | mg/L        | -         | 3.31              |                   |                   | 2.53              | 4.35              | 4.91              | 5.12              | 3.22              | 2.87              | 1.88              | 2.26              | 5.53              |                   | 4.14              |  |
| Manganese              | mg/L        | -         | 0.008             |                   |                   | 0.013             | 0.344             | 2.69              | 0.159             | 0.032             | 0.063             | 0.043             | 0.137             | 1.32              |                   | 0.053             |  |
| Nitrate                | mg/L        | -         | 0.1               |                   |                   | < 0.1             | 0.05              | < 0.05            | 0.13              | 0.08              | 0.07              | < 0.05            | < 0.05            | 0.06              |                   | 0.05              |  |
| Nitrite                | mg/L        | -         | < 0.1             |                   |                   | < 0.1             | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            |                   | < 0.05            |  |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 7.93              |                   |                   | 7.89              | 7.75              | 8.14              | 7.96              | 7.95              | 7.61              | 7.61              | 7.83              | 7.92              |                   | 7.73              |  |
| Phenols                | mg/L        | 0.001     | 0.008             |                   |                   | 0.004             | 0.009             | 0.013             | 0.028             | < 0.001           | < 0.001           | < 0.002           | < 0.002           | < 0.002           |                   | < 0.002           |  |
| Total Phosphorus       | mg/L        | 0.03      | < 0.1             |                   |                   | < 0.1             | < 0.1             | 0.6               | 0.1               | 0.03              | 0.03              | 0.05              | 0.04              | 0.09              |                   | 0.03              |  |
| Potassium              | mg/L        | -         | 1.6               |                   |                   | 1.2               | 1.8               | 1.8               | 3                 | 1.4               | 1.4               | 1.5               | 1.9               | 2.5               |                   | 1.4               |  |
| Sodium                 | mg/L        | -         | 4.8               |                   |                   | 3.3               | 5.8               | 4.8               | 6.7               | 3.5               | 3.1               | 2.1               | 3.7               | 6.7               |                   | 5.2               |  |
| Sulphate               | mg/L        | -         | 4                 |                   |                   | 4                 | < 1               | < 1               | 1                 | 2                 | 2                 | 1                 | 1                 | < 1               |                   | 4                 |  |
| Dissolved Solids       | mg/L        | -         | 149               |                   |                   | 127               | 184               | 180               | 193               | 107               | 106               | 78                | 107               | 247               |                   | 137               |  |
| Tot Kjel N             | mg/L        | -         | 0.6               |                   |                   | 0.7               | 0.8               | 29.9              | 4.8               | 0.5               | 0.6               | 0.7               | 0.7               | 1                 |                   | 0.7               |  |
| Ammonia (NH3-N)        | mg/L        | -         | 0.04              |                   |                   | 0.02              | 0.03              | 0.18              | 0.05              | 0.04              | 0.06              | 0.04              | 0.09              | 0.17              |                   | 0.01              |  |
| Total Suspended Solids | mg/L        | -         | < 3               |                   |                   | < 3               | 25                | 38                | 320               | 9                 | 11                | < 3               | < 3               | 16                |                   | < 3               |  |
| Turbidity              | ntu         | -         | 0.5               |                   |                   | 1                 | 9                 | 7.7               | 154               | 4.4               | 12.8              | 0.8               | 2.4               | 36.6              |                   | 0.7               |  |
| Hardness (CaCO3)       | mg/L        | -         | 142               |                   |                   | 140               | 189               | 211               | 178               | 113               | 102               | 78                | 106               | 247               |                   | 122               |  |
| Unionized Ammonia      | mg/L        | 0.02      | 0.0013            |                   |                   | 0.00005           | 0.0004            | 0.0138            | 0.0002            | 0.0011            | 0.0003            | < 0.01            | < 0.01            | < 0.01            |                   | < 0.01            |  |
| Aluminum               | mg/L        | 0.075     | 0.03              |                   |                   | 0.04              | 0.07              | 0.03              | 0.04              | 0.04              | 0.09              | 0.05              | 0.04              | 0.05              |                   | 0.04              |  |
| Antimony               | mg/L        | 0.02      | < 0.0001          |                   |                   | < 0.0001          | 0.0001            | 0.0004            | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | 0.0002            | 0.0003            |                   | 0.0002            |  |
| Arsenic                | mg/L        | 0.005     | 0.0004            |                   |                   | 0.0005            | 0.0011            | 0.0033            | 0.0008            | 0.0002            | 0.0002            | 0.0004            | 0.0005            | 0.0028            |                   | 0.0003            |  |
| Barium                 | mg/L        | -         | 0.012             |                   |                   | 0.011             | 0.029             | 0.072             | 0.041             | 0.023             | 0.018             | 0.01              | 0.015             | 0.041             |                   | 0.025             |  |
| Beryllium              | mg/L        | 1.1       | < 0.002           |                   |                   | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           |                   | < 0.002           |  |
| Boron                  | mg/L        | 0.2       | < 0.005           |                   |                   | 0.012             | 0.01              | 0.019             | 0.016             | < 0.005           | < 0.005           | 0.008             | 0.009             | 0.008             |                   | 0.007             |  |
| Cadmium                | mg/L        | 0.0005    | < 0.00002         |                   |                   | < 0.000014        | < 0.000014        | 0.000423          | 0.000096          | 0.000041          | 0.000049          | < 0.000015        | < 0.000015        | < 0.000015        |                   | < 0.000015        |  |
| Chromium (total)       | mg/L        | 0.001     | < 0.0002          |                   |                   | < 0.001           | < 0.001           | 0.001             | < 0.001           | < 0.001           | < 0.001           | 0.001             | < 0.001           | < 0.001           |                   | 0.001             |  |
| Chromium (VI)          | mg/L        | 0.001     |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |  |
| Cobalt                 | mg/L        | 0.0009    | < 0.005           |                   |                   | < 0.0001          | 0.0002            | 0.0027            | 0.0002            | 0.0001            | 0.0002            | 0.0001            | 0.0003            | 0.0013            |                   | < 0.0001          |  |
| Copper                 | mg/L        | 0.005     | 0.0002            |                   |                   | < 0.0001          | 0.0001            | 0.0039            | 0.0049            | 0.0062            | 0.0066            | 0.0011            | 0.0005            | 0.0009            |                   | 0.0003            |  |
| Lead                   | mg/L        | 0.005     | 0.00006           |                   |                   | 0.00002           | 0.00005           | 0.0135            | 0.00223           | 0.00126           | 0.00163           | 0.00036           | 0.00014           | 0.00036           |                   | 0.00015           |  |
| Mercury                | mg/L        | 0.0002    | < 0.00002         |                   |                   | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |                   | < 0.00002         |  |
| Molybdenum             | mg/L        | 0.04      | 0.0001            |                   |                   | 0.0002            | 0.0002            | 0.0004            | 0.0002            | 0.0002            | 0.0002            | 0.0001            | 0.0001            | 0.0003            |                   | < 0.0001          |  |
| Nickel                 | mg/L        | 0.025     | < 0.01            |                   |                   | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            |                   | < 0.01            |  |
| Selenium               | mg/L        | 0.1       | < 0.001           |                   |                   | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   | < 0.001           |  |
| Silver                 | mg/L        | 0.0001    | < 0.00002         |                   |                   | < 0.00002         | < 0.00002         | 0.00004           | < 0.00002         | < 0.00002         | < 0.00002         | < 0.0001          | < 0.0001          | < 0.0001          |                   | < 0.0001          |  |
| Strontium              | mg/L        | -         | 0.118             |                   |                   | 0.083             | 0.173             | 0.209             | 0.18              | 0.104             | 0.091             | 0.06              | 0.081             | 0.214             |                   | 0.129             |  |
| Thallium               | mg/L        | 0.0003    | < 0.00005         |                   |                   | < 0.00005         | < 0.00005         | 0.00005           | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         |                   | < 0.00005         |  |
| Vanadium               | mg/L        | 0.006     | 0.0001            |                   |                   | 0.0001            | 0.0001            | 0.0027            | 0.0004            | 0.0004            | 0.0003            | 0.0002            | 0.0004            | 0.0006            |                   | 0.0002            |  |
| Zinc                   | mg/L        | 0.02      | < 0.005           |                   |                   | < 0.005           | 0.049             | 0.107             | 0.048             | 0.018             | 0.014             | 0.013             | 0.015             | 0.013             |                   | 0.012             |  |
| Field pH               | pH unit     | -         | 8.39              |                   |                   | 7.38              | 7.66              | 8.34              | 7.18              | 8.29              | 7.65              | 8.19              | 7.98              | 7.31              |                   | 7.93              |  |
| Field Temp             | deg C       | -         | 5.8               |                   |                   | 4.8               | 15                | 19.3              | 13.1              | 6.9               | 4.7               | 1                 | 2.9               | 16.8              |                   | 3.6               |  |
| Field Conductivity     | us/cm       | -         | 235               |                   |                   | 250               | 289               | 307               | 271               | 1930              | 203.8             | 170               | 194               | 396               |                   | 260               |  |
| Dissolved Oxygen       | mg/L        | -         | 6.35              |                   |                   | 5.52              | 2.6               | 2.65              | 1.79              | 5.18              | 7.02              | 15.1              | 6.16              | 3.14              |                   | 6.44              |  |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | SW14<br>27-Apr-20 | SW14<br>20-Jul-20 | SW14<br>20-Oct-20 | SW14<br>20-Apr-21 | SW14<br>26-Apr-21 | SW14<br>19-Jul-21 | SW14<br>28-Oct-21 | SW14<br>21-Apr-22 | SW14<br>28-Apr-22 | SW14<br>20-Jul-22 | SW14<br>19-Apr-23 | SW14<br>30-Aug-23 | SW14<br>12-Oct-23 | SW15<br>22-May-13 |
|------------------------|-------------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L        | -         | 118               | Dry               | Dry               | 132               | 132               | 169               | 174               | 106               | 124               | 164               | 108               | Dry               | Dry               | 482               |
| BOD                    | mg/L        | -         | < 3               |                   |                   | < 3               | < 3               | 3                 | < 3               | < 3               | < 3               | 4                 | < 3               |                   |                   | < 3               |
| Calcium                | mg/L        | -         | 59.6              |                   |                   | 52.5              | 53                | 71                | 75.1              | 42.6              | 45.7              | 66.9              | 40.4              |                   |                   | 109               |
| Chloride               | mg/L        | -         | 11.9              |                   |                   | 7.1               | 7.5               | 12.3              | 14.1              | 6.3               | 6.7               | 11.5              | 4.6               |                   |                   | 69                |
| COD                    | mg/L        | -         | 39                |                   |                   | 71                | 70                | 59                | 52                | 74                | 42                | 55                | 53                |                   |                   | 147               |
| Colour                 | colour unit | -         | 102               |                   |                   | 102               | 103               | 109               | 89                | 146               | 120               | 135               | 142               |                   |                   | 188               |
| Specific Conductivity  | umhos/cm    | -         | 292               |                   |                   | 271               | 280               | 349               | 389               | 243               | 257               | 344               | 235               |                   |                   | 1200              |
| DOC                    | mg/L        | -         | 16.9              |                   |                   | 21.4              | 20.8              | 24.6              | 21.6              | 20.3              | 21.8              | 27.3              | 15                |                   |                   | 59.3              |
| Fluoride               | mg/L        | -         | < 0.1             |                   |                   | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             |                   |                   | 0.2               |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005           |                   |                   | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.005           |                   |                   | < 0.005           |
| Iron                   | mg/L        | 0.3       | 0.185             |                   |                   | 0.723             | 0.706             | 0.216             | 0.244             | 0.243             | 0.122             | 1.1               | 0.139             |                   |                   | 0.551             |
| Magnesium              | mg/L        | -         | 3.43              |                   |                   | 3.26              | 3.31              | 4.17              | 4.81              | 2.96              | 3.05              | 3.92              | 2.5               |                   |                   | 28.6              |
| Manganese              | mg/L        | -         | 0.044             |                   |                   | 0.895             | 0.901             | 0.246             | 0.229             | 0.153             | 0.026             | 0.262             | 0.02              |                   |                   | 0.203             |
| Nitrate                | mg/L        | -         | 0.05              |                   |                   | < 0.05            | < 0.05            | 0.07              | < 0.05            | 0.12              | < 0.05            | < 0.05            | < 0.05            |                   |                   | 0.2               |
| Nitrite                | mg/L        | -         | < 0.05            |                   |                   | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            | < 0.05            |                   |                   | 0.3               |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 7.9               |                   |                   | 7.92              | 7.92              | 8.02              | 7.48              | 7.1               | 7.75              | 7.75              | 7.37              |                   |                   | 8.04              |
| Phenols                | mg/L        | 0.001     | < 0.002           |                   |                   | < 0.002           | < 0.002           | < 0.002           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   |                   | < 0.001           |
| Total Phosphorus       | mg/L        | 0.03      | 0.05              |                   |                   | 0.16              | 0.09              | 0.04              | 0.03              | 0.03              | 0.02              | 0.06              | 0.01              |                   |                   | 0.16              |
| Potassium              | mg/L        | -         | 1.7               |                   |                   | 1.6               | 1.6               | 1.9               | 3.4               | 1.7               | 1.8               | 1.5               | 1.7               |                   |                   | 75.7              |
| Sodium                 | mg/L        | -         | 6.3               |                   |                   | 4.6               | 4.9               | 5.8               | 6.1               | 3.8               | 4.3               | 5.6               | 3.3               |                   |                   | 58                |
| Sulphate               | mg/L        | -         | 5                 |                   |                   | 2                 | 3                 | < 1               | < 1               | 2                 | 2                 | 1                 | < 1               |                   |                   | 44                |
| Dissolved Solids       | mg/L        | -         | 156               |                   |                   | 150               | 153               | 193               | 208               | 124               | 142               | 193               | 117               |                   |                   | 677               |
| Tot Kjel N             | mg/L        | -         | 0.5               |                   |                   | 1.2               | 1.3               | 0.9               | 0.8               | 0.6               | 3.9               | 1.6               | 1                 |                   |                   | 7.6               |
| Ammonia (NH3-N)        | mg/L        | -         | 0.03              |                   |                   | 0.04              | 0.02              | 0.03              | 0.04              | 0.02              | 3.08              | 0.7               | 0.81              |                   |                   | 0.811             |
| Total Suspended Solids | mg/L        | -         | 28                |                   |                   | 18                | 24                | 18                | 22                | 4                 | 13                | 62                | < 3               |                   |                   | 24                |
| Turbidity              | ntu         | -         | 46.7              |                   |                   | 15.7              | 30.3              | 3.7               | 5.7               | 11.2              | 1                 | 6.1               | 1.4               |                   |                   | 11.6              |
| Hardness (CaCO3)       | mg/L        | -         | 163               |                   |                   | 145               | 147               | 185               | 209               | 119               | 127               | 183               | 118               |                   |                   | 390               |
| Unionized Ammonia      | mg/L        | 0.02      | < 0.01            |                   |                   | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | 0.0600            | < 0.01            | 0.02              |                   |                   | 0.019             |
| Aluminum               | mg/L        | 0.075     | 0.03              |                   |                   | 0.01              | 0.04              | 0.04              | 0.06              | 0.02              | 0.02              | 0.04              | 0.03              |                   |                   | 0.29              |
| Antimony               | mg/L        | 0.02      | < 0.0001          |                   |                   | 0.0003            | 0.0004            | 0.0003            | 0.0006            | 0.0004            | 0.0003            | 0.0002            | 0.0005            |                   |                   | 0.0008            |
| Arsenic                | mg/L        | 0.005     | 0.0004            |                   |                   | 0.0006            | 0.0006            | 0.0012            | 0.0006            | 0.0003            | 0.0003            | 0.0009            | 0.0003            |                   |                   | 0.0019            |
| Barium                 | mg/L        | -         | 0.019             |                   |                   | 0.022             | 0.023             | 0.027             | 0.021             | 0.012             | 0.012             | 0.029             | 0.011             |                   |                   | 0.098             |
| Beryllium              | mg/L        | 1.1       | < 0.002           |                   |                   | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           |                   |                   | < 0.002           |
| Boron                  | mg/L        | 0.2       | 0.01              |                   |                   | 0.006             | 0.007             | 0.01              | 0.009             | < 0.005           | 0.007             | 0.006             | < 0.005           |                   |                   | 0.978             |
|                        |             |           |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | <                 |                   |                   |                   |
| Cadmium                | mg/L        | 0.0005    | < 0.000015        |                   |                   | 0.000021          | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        | 0.000015          |                   |                   | 0.00004           |
| Chromium (total)       | mg/L        | 0.001     | 0.001             |                   |                   | < 0.001           | 0.001             | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | 0.001             |                   |                   | 0.003             |
| Chromium (VI)          | mg/L        | 0.001     |                   |                   |                   |                   |                   |                   |                   | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   |                   |                   |
| Cobalt                 | mg/L        | 0.0009    | 0.0002            |                   |                   | 0.0007            | 0.0006            | 0.0002            | 0.0002            | 0.0002            | < 0.0001          | 0.0003            | 0.0001            |                   |                   | 0.0054            |
| Copper                 | mg/L        | 0.005     | 0.0009            |                   |                   | 0.0006            | 0.0005            | 0.0002            | 0.0002            | 0.0004            | 0.0004            | 0.0006            | 0.0003            |                   |                   | 0.005             |
| Lead                   | mg/L        | 0.005     | 0.00013           |                   |                   | 0.00061           | 0.00055           | 0.00008           | 0.00011           | 0.00021           | 0.0001            | 0.00096           | 0.00005           |                   |                   | 0.00034           |
| Mercury                | mg/L        | 0.0002    | < 0.00002         |                   |                   | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |                   |                   | < 0.00002         |
| Molybdenum             | mg/L        | 0.04      | 0.0002            |                   |                   | 0.0002            | 0.0002            | 0.0002            | < 0.0001          | 0.0001            | < 0.0001          | < 0.0001          | < 0.0001          |                   |                   | 0.0049            |
| Nickel                 | mg/L        | 0.025     | < 0.01            |                   |                   | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            |                   |                   | < 0.01            |
| Selenium               | mg/L        | 0.1       | < 0.001           |                   |                   | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   |                   | < 0.001           |
| Silver                 | mg/L        | 0.0001    | < 0.0001          |                   |                   | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          |                   |                   | < 0.00002         |
| Strontium              | mg/L        | -         | 0.121             |                   |                   | 0.11              | 0.121             | 0.171             | 0.168             | 0.095             | 0.098             | 0.165             | 0.089             |                   |                   | --                |
| Thallium               | mg/L        | 0.0003    | < 0.00005         |                   |                   | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         |                   |                   | < 0.00005         |
| Vanadium               | mg/L        | 0.006     | 0.0002            |                   |                   | 0.0005            | 0.0004            | 0.0001            | < 0.0001          | 0.0002            | 0.0001            | 0.0002            | 0.0001            |                   |                   | < 0.005           |
| Zinc                   | mg/L        | 0.02      | 0.015             |                   |                   | 0.023             | 0.024             | 0.012             | 0.012             | < 0.005           | < 0.005           | 0.01              | < 0.005           |                   |                   | 0.035             |
| Field pH               | pH unit     | -         | 7.3               |                   |                   | 7.46              | 6.96              | 6.98              | 8.29              | 8.48              | 8.15              | 7.15              | 8.15              |                   |                   | 7.7               |
| Field Temp             | deg C       | -         | 9.2               |                   |                   | 6.6               | 10.3              | 21.7              | 6.1               | 6.6               | 6.5               | 23.3              | 11.3              |                   |                   | 22.5              |
| Field Conductivity     | us/cm       | -         | 274.4             |                   |                   | 350               | 229               | 334               | 370               | 215               | 233               | 250               | 205               |                   |                   | 1230              |
| Dissolved Oxygen       | mg/L        | -         | 6.38              |                   |                   | 11.09             | 5.01              | 1.69              | 5.11              | 6.5               | 4.69              | 3.21              | 8.3               |                   |                   | 7.63              |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      |
|------------------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                        |             |           | 24-Apr-14 | 16-Oct-14 | 17-Apr-15 | 29-Apr-16 | 24-Aug-16 | 04-Oct-16 | 24-Apr-18 | 12-Apr-19 | 22-Oct-19 | 27-Apr-20 | 20-Jul-20 | 20-Oct-20 | 20-Apr-21 | 19-Jul-21 |
| Total Alkalinity       | mg/L        | -         | 539       | 364       | 288       | Dry       | Dry       | Dry       | 478       | 334       | Dry       | Dry       | Dry       | Dry       | Dry       | Dry       |
| BOD                    | mg/L        | -         | 3         | 27        | 16        |           |           |           | < 3       | 16        |           |           |           |           |           |           |
| Calcium                | mg/L        | -         | 173       | 153       | 103       |           |           |           | 144       | 116       |           |           |           |           |           |           |
| Chloride               | mg/L        | -         | 83.4      | 104       | 21        |           |           |           | 20.3      | 16.2      |           |           |           |           |           |           |
| COD                    | mg/L        | -         | 135       | 1200      | 153       |           |           |           | 79        | 168       |           |           |           |           |           |           |
| Colour                 | colour unit | -         | 115       | 170       | 156       |           |           |           | 80        | 63        |           |           |           |           |           |           |
| Specific Conductivity  | umhos/cm    | -         | 1280      | 1210      | 615       |           |           |           | 935       | 751       |           |           |           |           |           |           |
| DOC                    | mg/L        | -         | 44.8      | 62.5      | 28.2      |           |           |           | 19.9      | 28.4      |           |           |           |           |           |           |
| Fluoride               | mg/L        | -         | <0.1      | <0.1      | < 0.1     |           |           |           | < 0.1     | < 0.1     |           |           |           |           |           |           |
| Cyanide (free)         | mg/L        | 0.005     | <0.005    | <0.005    | < 0.005   |           |           |           | < 0.005   | < 0.005   |           |           |           |           |           |           |
| Iron                   | mg/L        | 0.3       | 0.587     | 0.351     | 0.892     |           |           |           | 1.68      | 2.19      |           |           |           |           |           |           |
| Magnesium              | mg/L        | -         | 23.1      | 18.5      | 12.9      |           |           |           | 21.3      | 17.2      |           |           |           |           |           |           |
| Manganese              | mg/L        | -         | 1.3       | 1.62      | 0.563     |           |           |           | 0.945     | 0.884     |           |           |           |           |           |           |
| Nitrate                | mg/L        | -         | 0.1       | 0.5       | < 0.1     |           |           |           | < 0.05    | < 0.05    |           |           |           |           |           |           |
| Nitrite                | mg/L        | -         | <0.1      | <0.1      | < 0.1     |           |           |           | < 0.05    | < 0.05    |           |           |           |           |           |           |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 8.05      | 7.75      | 7.92      |           |           |           | 7.85      | 7.94      |           |           |           |           |           |           |
| Phenols                | mg/L        | 0.001     | < 0.001   | < 0.001   | < 0.001   |           |           |           | < 0.001   | < 0.002   |           |           |           |           |           |           |
| Total Phosphorus       | mg/L        | 0.03      | 0.4       | 0.6       | 0.9       |           |           |           | 0.45      | 0.76      |           |           |           |           |           |           |
| Potassium              | mg/L        | -         | 48.3      | 66.3      | 31.8      |           |           |           | 24.5      | 28.5      |           |           |           |           |           |           |
| Sodium                 | mg/L        | -         | 55.6      | 55.7      | 23.6      |           |           |           | 24.1      | 26        |           |           |           |           |           |           |
| Sulphate               | mg/L        | -         | 33        | 93        | 1         |           |           |           | 3         | 20        |           |           |           |           |           |           |
| Dissolved Solids       | mg/L        | -         | 747       | 714       | 368       |           |           |           | 539       | 429       |           |           |           |           |           |           |
| Tot Kjeh N             | mg/L        | -         | 5.9       | 5.9       | 6.3       |           |           |           | 6.3       | 6.4       |           |           |           |           |           |           |
| Ammonia (NH3-N)        | mg/L        | -         | 3.61      | 0.23      | 0.31      |           |           |           | 4.41      | 1.3       |           |           |           |           |           |           |
| Total Suspended Solids | mg/L        | -         | 43        | 680       | 68        |           |           |           | 46        | 395       |           |           |           |           |           |           |
| Turbidity              | ntu         | -         | 3.8       | 181       | 9.9       |           |           |           | 26.1      | 71.4      |           |           |           |           |           |           |
| Hardness (CaCO3)       | mg/L        | -         | 529       | 459       | 310       |           |           |           | 448       | 330       |           |           |           |           |           |           |
| Unionized Ammonia      | mg/L        | 0.02      | 0.045     | 0.006     | 0.004     |           |           |           | 0.062     | < 0.01    |           |           |           |           |           |           |
| Aluminum               | mg/L        | 0.075     | 0.07      | 0.18      | 0.19      |           |           |           | 0.07      | 0.06      |           |           |           |           |           |           |
| Antimony               | mg/L        | 0.02      | 0.0002    | 0.0003    | 0.0005    |           |           |           | 0.0001    | 0.0002    |           |           |           |           |           |           |
| Arsenic                | mg/L        | 0.005     | 0.0011    | 0.0015    | 0.0019    |           |           |           | 0.0013    | 0.0013    |           |           |           |           |           |           |
| Barium                 | mg/L        | -         | 0.065     | 0.082     | 0.047     |           |           |           | 0.073     | 0.076     |           |           |           |           |           |           |
| Beryllium              | mg/L        | 1.1       | <0.002    | <0.002    | < 0.002   |           |           |           | < 0.002   | < 0.002   |           |           |           |           |           |           |
| Boron                  | mg/L        | 0.2       | 0.139     | 0.252     | 0.137     |           |           |           | 0.277     | 0.269     |           |           |           |           |           |           |
| Cadmium                | mg/L        | 0.0005    | 0.00012   | 0.00017   | 0.00022   |           |           |           | 0.000072  | 0.000086  |           |           |           |           |           |           |
| Chromium (total)       | mg/L        | 0.001     | <0.0002   | 0.0006    | 0.0005    |           |           |           | < 0.001   | 0.001     |           |           |           |           |           |           |
| Chromium (VI)          | mg/L        | 0.001     |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Cobalt                 | mg/L        | 0.0009    | <0.005    | <0.005    | < 0.005   |           |           |           | 0.0014    | 0.0017    |           |           |           |           |           |           |
| Copper                 | mg/L        | 0.005     | 0.0016    | 0.0085    | 0.0066    |           |           |           | 0.0107    | 0.0027    |           |           |           |           |           |           |
| Lead                   | mg/L        | 0.005     | 0.00052   | 0.00248   | 0.00275   |           |           |           | 0.00223   | 0.00216   |           |           |           |           |           |           |
| Mercury                | mg/L        | 0.0002    | <0.00002  | <0.00002  | < 0.00002 |           |           |           | < 0.00002 | 0.00003   |           |           |           |           |           |           |
| Molybdenum             | mg/L        | 0.04      | 0.0002    | 0.0012    | 0.0005    |           |           |           | 0.0006    | 0.0014    |           |           |           |           |           |           |
| Nickel                 | mg/L        | 0.025     | <0.01     | <0.01     | < 0.01    |           |           |           | < 0.01    | < 0.01    |           |           |           |           |           |           |
| Selenium               | mg/L        | 0.1       | 0.002     | 0.002     | < 0.001   |           |           |           | < 0.001   | < 0.001   |           |           |           |           |           |           |
| Silver                 | mg/L        | 0.0001    | <0.00002  | 0.00007   | 0.00022   |           |           |           | < 0.00002 | < 0.0001  |           |           |           |           |           |           |
| Strontium              | mg/L        | -         | --        | 0.497     | 0.34      |           |           |           | 0.466     | 0.365     |           |           |           |           |           |           |
| Thallium               | mg/L        | 0.0003    | <0.00005  | <0.00005  | 0.0001    |           |           |           | < 0.00005 | < 0.00005 |           |           |           |           |           |           |
| Vanadium               | mg/L        | 0.006     | <0.0001   | 0.0006    | 0.0006    |           |           |           | 0.0004    | 0.0011    |           |           |           |           |           |           |
| Zinc                   | mg/L        | 0.02      | 0.02      | 0.088     | 0.038     |           |           |           | 0.029     | 0.033     |           |           |           |           |           |           |
| Field pH               | pH unit     | -         | 8.06      | 8.1       | 7.91      |           |           |           | 8.08      | 7.3       |           |           |           |           |           |           |
| Field Temp             | deg C       | -         | 3.5       | 12.5      | 7.5       |           |           |           | 4.4       | 2.9       |           |           |           |           |           |           |
| Field Conductivity     | us/cm       | -         | 1400      | 1120      | 550       |           |           |           | 865       | 780       |           |           |           |           |           |           |
| Dissolved Oxygen       | mg/L        | -         | 1.91      | 1.35      | 4.15      |           |           |           | 5.56      | 13.4      |           |           |           |           |           |           |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| General Parameters     |             |           | 10m       | 10m       | 10m       | 10m       | 10m       | 10m       | 10m       | 10m       | 15m       | 20m       | 20m       | 20m        | 30m       | 30m       | 30m  |
|------------------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|------|
|                        |             |           | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW 15      | SW15      | SW15      | SW15 |
| Parameters             | Units       | PWQO      | 28-Oct-21 | 21-Apr-22 | 20-Jul-22 | 24-Oct-22 | 20-Apr-23 | 30-Aug-23 | 12-Oct-23 | 24-Apr-18 | 02-May-17 | 24-Apr-18 | 24-Apr-19 | 02-May-17  | 21-Jun-17 | 17-Apr-15 |      |
| Total Alkalinity       | mg/L        | -         | Dry       | Dry       | Dry       | Dry       | Dry       | Dry       | Dry       | 23        | 355       | 287       | 295       | 331        | 392       | 472       |      |
| BOD                    | mg/L        | -         |           |           |           |           |           |           |           | < 3       | 10        | < 3       | 16        | 4          | 32        | 6         |      |
| Calcium                | mg/L        | -         |           |           |           |           |           |           |           | 10.9      | 113       | 117       | 97.7      | 93.4       | 114       | 158       |      |
| Chloride               | mg/L        | -         |           |           |           |           |           |           |           | 1.6       | 23.4      | 15.5      | 10.7      | 22.1       | 16.6      | 72.2      |      |
| COD                    | mg/L        | -         |           |           |           |           |           |           |           | 51        | 91        | 686       | 221       | 107        | 147       | 99        |      |
| Colour                 | colour unit | -         |           |           |           |           |           |           |           | 65        | 116       | 49        | 85        | 120        | 185       | 74        |      |
| Specific Conductivity  | umhos/cm    | -         |           |           |           |           |           |           |           | 48        | 850       | 568       | 645       | 774        | 797       | 1110      |      |
| DOC                    | mg/L        | -         |           |           |           |           |           |           |           | 10.9      | 24.3      | 18.7      | 22.3      | 21.4       | 50.4      | 25        |      |
| Fluoride               | mg/L        | -         |           |           |           |           |           |           |           | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1      | < 0.1     | 0.1       |      |
| Cyanide (free)         | mg/L        | 0.005     |           |           |           |           |           |           |           | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    | < 0.005   | < 0.005   |      |
| Iron                   | mg/L        | 0.3       |           |           |           |           |           |           |           | 0.22      | 0.299     | 3.47      | 1.3       | 0.135      | 4.41      | 0.331     |      |
| Magnesium              | mg/L        | -         |           |           |           |           |           |           |           | 1.98      | 17.5      | 9.42      | 14.1      | 14         | 12.4      | 18.8      |      |
| Manganese              | mg/L        | -         |           |           |           |           |           |           |           | 0.085     | 0.121     | 0.763     | 0.387     | 0.031      | 0.331     | 0.578     |      |
| Nitrate                | mg/L        | -         |           |           |           |           |           |           |           | 0.05      | < 0.1     | 0.32      | 0.23      | < 0.1      | 0.07      | 0.1       |      |
| Nitrite                | mg/L        | -         |           |           |           |           |           |           |           | < 0.05    | < 0.1     | < 0.05    | < 0.05    | < 0.1      | < 0.05    | < 0.1     |      |
| pH Lab                 | pH unit     | 6.5 - 8.5 |           |           |           |           |           |           |           | 6.95      | 8.17      | 7.84      | 8.12      | 8.24       | 7.84      | 8.03      |      |
| Phenols                | mg/L        | 0.001     |           |           |           |           |           |           |           | 0.006     | 0.002     | < 0.001   | < 0.002   | 0.002      | 0.011     | < 0.001   |      |
| Total Phosphorus       | mg/L        | 0.03      |           |           |           |           |           |           |           | 0.38      | 0.1       | 1.55      | 0.66      | 0.1        | 0.8       | 0.3       |      |
| Potassium              | mg/L        | -         |           |           |           |           |           |           |           | 2.4       | 33.4      | 10.4      | 22.6      | 32.4       | 27.1      | 46.8      |      |
| Sodium                 | mg/L        | -         |           |           |           |           |           |           |           | 1.3       | 30.4      | 15.7      | 15.2      | 29.6       | 30.5      | 54.2      |      |
| Sulphate               | mg/L        | -         |           |           |           |           |           |           |           | < 1       | 34        | 2         | 13        | 23         | 2         | 27        |      |
| Dissolved Solids       | mg/L        | -         |           |           |           |           |           |           |           | 33        | 464       | 348       | 350       | 414        | 443       | 663       |      |
| Tot Kjel N             | mg/L        | -         |           |           |           |           |           |           |           | 2.2       | 2.3       | 19        | 5.4       | 1.5        | 8.6       | 2.8       |      |
| Ammonia (NH3-N)        | mg/L        | -         |           |           |           |           |           |           |           | 0.38      | 0.04      | 1.77      | 0.59      | 0.03       | 0.07      | 0.46      |      |
| Total Suspended Solids | mg/L        | -         |           |           |           |           |           |           |           | 24        | 60        | 410       | 340       | 30         | 340       | 42        |      |
| Turbidity              | ntu         | -         |           |           |           |           |           |           |           | 10.2      | 20.4      | 990       | 42.3      | 3.9        | 110       | 10.8      |      |
| Hardness (CaCO3)       | mg/L        | -         |           |           |           |           |           |           |           | 35        | 353       | 331       | 302       | 320        | 371       | 472       |      |
| Unionized Ammonia      | mg/L        | 0.02      |           |           |           |           |           |           |           | 0.004     | --        | 0.004     | < 0.01    | --         | 0.0004    | 0.003     |      |
| Aluminum               | mg/L        | 0.075     |           |           |           |           |           |           |           | 0.08      | 0.05      | 1.48      | 0.06      | 0.05       | 0.06      | 0.09      |      |
| Antimony               | mg/L        | 0.02      |           |           |           |           |           |           |           | < 0.0001  | 0.0003    | 0.0002    | 0.0003    | 0.0003     | 0.0004    | 0.0004    |      |
| Arsenic                | mg/L        | 0.005     |           |           |           |           |           |           |           | < 0.0001  | 0.0015    | 0.0015    | 0.0013    | 0.0012     | 0.0027    | 0.0011    |      |
| Barium                 | mg/L        | -         |           |           |           |           |           |           |           | 0.016     | 0.053     | 0.064     | 0.048     | 0.035      | 0.074     | 0.057     |      |
| Beryllium              | mg/L        | 1.1       |           |           |           |           |           |           |           | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    | < 0.002   | < 0.002   |      |
| Boron                  | mg/L        | 0.2       |           |           |           |           |           |           |           | 0.02      | 0.273     | 0.13      | 0.259     | 0.195      | 0.102     | 0.141     |      |
| Cadmium                | mg/L        | 0.0005    |           |           |           |           |           |           |           | 0.000043  | 0.000024  | 0.000216  | 0.000126  | < 0.000014 | 0.000138  | 0.00027   |      |
| Chromium (total)       | mg/L        | 0.001     |           |           |           |           |           |           |           | 0.001     | < 0.001   | 0.002     | < 0.001   | < 0.001    | < 0.001   | 0.0006    |      |
| Chromium (VI)          | mg/L        | 0.001     |           |           |           |           |           |           |           |           |           |           |           |            |           |           |      |
| Cobalt                 | mg/L        | 0.0009    |           |           |           |           |           |           |           | 0.0002    | 0.0009    | 0.0016    | 0.001     | 0.0005     | 0.0013    | < 0.005   |      |
| Copper                 | mg/L        | 0.005     |           |           |           |           |           |           |           | 0.0058    | 0.0016    | 0.0134    | 0.0034    | 0.001      | 0.0045    | 0.006     |      |
| Lead                   | mg/L        | 0.005     |           |           |           |           |           |           |           | 0.00102   | 0.00021   | 0.00907   | 0.0031    | 0.00004    | 0.00296   | 0.00193   |      |
| Mercury                | mg/L        | 0.0002    |           |           |           |           |           |           |           | < 0.00002 | 0.00003   | 0.00012   | 0.00002   | 0.00003    | < 0.00002 | < 0.00002 |      |
| Molybdenum             | mg/L        | 0.04      |           |           |           |           |           |           |           | 0.0001    | 0.0017    | 0.0004    | 0.0014    | 0.0015     | 0.0009    | 0.0002    |      |
| Nickel                 | mg/L        | 0.025     |           |           |           |           |           |           |           | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     | < 0.01    | < 0.01    |      |
| Selenium               | mg/L        | 0.1       |           |           |           |           |           |           |           | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001    | < 0.001   | < 0.001   |      |
| Silver                 | mg/L        | 0.0001    |           |           |           |           |           |           |           | < 0.00002 | < 0.00002 | 0.00003   | < 0.0001  | < 0.00002  | < 0.00002 | 0.00013   |      |
| Strontium              | mg/L        | -         |           |           |           |           |           |           |           | 0.046     | 0.389     | 0.317     | 0.329     | 0.303      | 0.351     | 0.466     |      |
| Thallium               | mg/L        | 0.0003    |           |           |           |           |           |           |           | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005  | < 0.00005 | 0.00016   |      |
| Vanadium               | mg/L        | 0.006     |           |           |           |           |           |           |           | 0.0002    | 0.0004    | 0.0026    | 0.0012    | 0.0003     | 0.002     | 0.0004    |      |
| Zinc                   | mg/L        | 0.02      |           |           |           |           |           |           |           | 0.04      | 0.042     | 0.061     | 0.041     | < 0.005    | 0.065     | 0.021     |      |
| Field pH               | pH unit     | -         |           |           |           |           |           |           |           | 8.03      | --        | 7.24      | 7.57      | --         | 7.22      | 7.7       |      |
| Field Temp             | deg C       | -         |           |           |           |           |           |           |           | 2.3       | --        | 5         | 4.5       | --         | 18.1      | 6.1       |      |
| Field Conductivity     | us/cm       | -         |           |           |           |           |           |           |           | 48.1      | --        | 684.6     | 558       | --         | 643       | 1230      |      |
| Dissolved Oxygen       | mg/L        | -         |           |           |           |           |           |           |           | 3.87      | --        | 0.71      | 10.3      | --         | 1.9       | 3.89      |      |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

|                        |             |           | 30m       | 30m       | 30m       | 30m       | 30m       | 30m       | 30m       | 30m       | 30m       | 30m       | 30m       | 30m        | 30m       | 30m       |
|------------------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|
| Parameters             | Units       | PWQO      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15      | SW15       | SW15      | SW15      |
|                        |             |           | 26-Apr-16 | 24-Apr-18 | 12-Apr-19 | 24-Apr-19 | 22-Oct-19 | 27-Apr-20 | 20-Jul-20 | 20-Oct-20 | 20-Apr-21 | 19-Jul-21 | 28-Oct-21 | 21-Apr-22  | 20-Jul-22 | 24-Oct-22 |
| Total Alkalinity       | mg/L        | -         | 373       | 346       | 308       | 250       | Dry       | Dry       | Dry       | Dry       | Dry       | Dry       | Dry       | 304        | Dry       | Dry       |
| BOD                    | mg/L        | -         | 12        | < 3       | 10        | < 3       |           |           |           |           |           |           |           | 13         |           |           |
| Calcium                | mg/L        | -         | 114       | 122       | 95.3      | 75.8      |           |           |           |           |           |           |           | 98.5       |           |           |
| Chloride               | mg/L        | -         | 39.3      | 16.3      | 11.1      | 10        |           |           |           |           |           |           |           | 6.4        |           |           |
| COD                    | mg/L        | -         | 248       | 223       | 111       | 164       |           |           |           |           |           |           |           | 94         |           |           |
| Colour                 | colour unit | -         | 110       | 70        | 97        | 67        |           |           |           |           |           |           |           | 127        |           |           |
| Specific Conductivity  | umhos/cm    | -         | 842       | 706       | 626       | 505       |           |           |           |           |           |           |           | 625        |           |           |
| DOC                    | mg/L        | -         | 36.2      | 22.9      | 28        | 26        |           |           |           |           |           |           |           | 34.1       |           |           |
| Fluoride               | mg/L        | -         | < 0.1     | < 0.1     | < 0.1     | < 0.1     |           |           |           |           |           |           |           | < 0.1      |           |           |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005   | < 0.005   | < 0.005   | < 0.005   |           |           |           |           |           |           |           | < 0.005    |           |           |
| Iron                   | mg/L        | 0.3       | 0.522     | 1.42      | 0.326     | 1.03      |           |           |           |           |           |           |           | 0.394      |           |           |
| Magnesium              | mg/L        | -         | 15.8      | 13.8      | 12.3      | 9.1       |           |           |           |           |           |           |           | 13.9       |           |           |
| Manganese              | mg/L        | -         | 0.444     | 0.678     | 0.875     | 0.326     |           |           |           |           |           |           |           | 0.288      |           |           |
| Nitrate                | mg/L        | -         | 0.2       | 0.08      | < 0.05    | < 0.05    |           |           |           |           |           |           |           | 0.07       |           |           |
| Nitrite                | mg/L        | -         | < 0.1     | < 0.05    | < 0.05    | < 0.05    |           |           |           |           |           |           |           | < 0.05     |           |           |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 7.85      | 7.77      | 7.88      | 8.01      |           |           |           |           |           |           |           | 8.08       |           |           |
| Phenols                | mg/L        | 0.001     | 0.014     | 0.013     | < 0.002   | < 0.002   |           |           |           |           |           |           |           | < 0.001    |           |           |
| Total Phosphorus       | mg/L        | 0.03      | 0.4       | 1.07      | 0.5       | 0.49      |           |           |           |           |           |           |           | 0.7        |           |           |
| Potassium              | mg/L        | -         | 37.8      | 17.7      | 22.5      | 20.1      |           |           |           |           |           |           |           | 18.8       |           |           |
| Sodium                 | mg/L        | -         | 34.1      | 23.8      | 18.4      | 16.8      |           |           |           |           |           |           |           | 11.6       |           |           |
| Sulphate               | mg/L        | -         | 17        | 2         | 9         | 9         |           |           |           |           |           |           |           | < 1        |           |           |
| Dissolved Solids       | mg/L        | -         | 483       | 403       | 356       | 287       |           |           |           |           |           |           |           | 333        |           |           |
| Tot Kjeh N             | mg/L        | -         | 10.8      | 13.2      | 3.8       | 3.5       |           |           |           |           |           |           |           | 3.2        |           |           |
| Ammonia (NH3-N)        | mg/L        | -         | 0.15      | 0.7       | 1.15      | 0.06      |           |           |           |           |           |           |           | 0.09       |           |           |
| Total Suspended Solids | mg/L        | -         | 480       | 980       | 150       | 110       |           |           |           |           |           |           |           | 188        |           |           |
| Turbidity              | ntu         | -         | 142       | 346       | 36.7      | 111       |           |           |           |           |           |           |           | 28.4       |           |           |
| Hardness (CaCO3)       | mg/L        | -         | 350       | 362       | 283       | 227       |           |           |           |           |           |           |           | 303        |           |           |
| Unionized Ammonia      | mg/L        | 0.02      | 0.005     | 0.012     | < 0.01    | < 0.01    |           |           |           |           |           |           |           | < 0.01     |           |           |
| Aluminum               | mg/L        | 0.075     | 0.12      | 0.08      | 0.06      | 0.06      |           |           |           |           |           |           |           | 0.03       |           |           |
| Antimony               | mg/L        | 0.02      | 0.0002    | 0.0001    | 0.0002    | 0.0002    |           |           |           |           |           |           |           | 0.0004     |           |           |
| Arsenic                | mg/L        | 0.005     | 0.0011    | 0.0007    | 0.001     | 0.0012    |           |           |           |           |           |           |           | 0.0011     |           |           |
| Barium                 | mg/L        | -         | 0.053     | 0.067     | 0.056     | 0.039     |           |           |           |           |           |           |           | 0.037      |           |           |
| Beryllium              | mg/L        | 1.1       | < 0.002   | < 0.002   | < 0.002   | < 0.002   |           |           |           |           |           |           |           | < 0.002    |           |           |
| Boron                  | mg/L        | 0.2       | 0.166     | 0.224     | 0.144     | 0.104     |           |           |           |           |           |           |           | 0.136      |           |           |
| Cadmium                | mg/L        | 0.0005    | 0.0001    | 0.000339  | 0.000046  | 0.000103  |           |           |           |           |           |           |           | < 0.000015 |           |           |
| Chromium (total)       | mg/L        | 0.001     | 0.0004    | 0.001     | < 0.001   | < 0.001   |           |           |           |           |           |           |           | < 0.001    |           |           |
| Chromium (VI)          | mg/L        | 0.001     |           |           |           |           |           |           |           |           |           |           |           | < 0.001    |           |           |
| Cobalt                 | mg/L        | 0.0009    | < 0.005   | 0.0007    | 0.0009    | 0.0009    |           |           |           |           |           |           |           | 0.0005     |           |           |
| Copper                 | mg/L        | 0.005     | 0.0034    | 0.0083    | 0.0017    | 0.0025    |           |           |           |           |           |           |           | 0.0008     |           |           |
| Lead                   | mg/L        | 0.005     | 0.00127   | 0.0106    | 0.00112   | 0.00317   |           |           |           |           |           |           |           | 0.00018    |           |           |
| Mercury                | mg/L        | 0.0002    | < 0.00002 | 0.00006   | 0.00003   | 0.00003   |           |           |           |           |           |           |           | < 0.00002  |           |           |
| Molybdenum             | mg/L        | 0.04      | 0.0006    | 0.0003    | 0.0006    | 0.0006    |           |           |           |           |           |           |           | 0.0009     |           |           |
| Nickel                 | mg/L        | 0.025     | < 0.01    | < 0.01    | < 0.01    | < 0.01    |           |           |           |           |           |           |           | < 0.01     |           |           |
| Selenium               | mg/L        | 0.1       | < 0.001   | < 0.001   | < 0.001   | < 0.001   |           |           |           |           |           |           |           | < 0.001    |           |           |
| Silver                 | mg/L        | 0.0001    | < 0.00002 | 0.00002   | < 0.0001  | < 0.0001  |           |           |           |           |           |           |           | < 0.0001   |           |           |
| Strontium              | mg/L        | -         | 0.381     | 0.369     | 0.248     | 0.207     |           |           |           |           |           |           |           | 0.308      |           |           |
| Thallium               | mg/L        | 0.0003    | < 0.00005 | < 0.00005 | < 0.00005 | < 0.00005 |           |           |           |           |           |           |           | < 0.00005  |           |           |
| Vanadium               | mg/L        | 0.006     | 0.0004    | 0.0012    | 0.0003    | 0.0018    |           |           |           |           |           |           |           | 0.0004     |           |           |
| Zinc                   | mg/L        | 0.02      | 0.028     | 0.07      | 0.017     | 0.053     |           |           |           |           |           |           |           | 0.006      |           |           |
| Field pH               | pH unit     | -         | 8.47      | 8.14      | 7.33      | 7.58      |           |           |           |           |           |           |           | 7.78       |           |           |
| Field Temp             | deg C       | -         | 4.1       | 5.1       | 1.8       | 4         |           |           |           |           |           |           |           | 6.7        |           |           |
| Field Conductivity     | us/cm       | -         | 620       | 637       | 630       | 446       |           |           |           |           |           |           |           | 515        |           |           |
| Dissolved Oxygen       | mg/L        | -         | 4.33      | 5.45      | 9.62      | 9.9       |           |           |           |           |           |           |           | 7.18       |           |           |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance



Surface Water Quality -  
General Parameters

| General Parameters     |             |           | 30m               | 30m               | 30m               | Filtered          |                   |                   |                   |                   | Filtered          |                   | Filtered          |                   |                   |                   |     |     |
|------------------------|-------------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-----|-----|
| Parameters             | Units       | PWQO      | SW15<br>20-Apr-23 | SW15<br>30-Aug-23 | SW15<br>12-Oct-23 | SW16<br>22-May-13 | SW16<br>24-Apr-14 | SW16<br>14-Jul-14 | SW16<br>16-Apr-15 | SW16<br>16-Apr-15 | SW16<br>29-Apr-16 | SW16<br>29-Apr-16 | SW16<br>18-Apr-17 | SW16<br>18-Apr-17 | SW16<br>24-Oct-17 | SW16<br>24-Apr-18 |     |     |
| Total Alkalinity       | mg/L        | -         | Dry               | Dry               | Dry               | 222               | 202               | 335               | 210               | --                | 210               | --                | 192               | --                | 275               | 162               |     |     |
| BOD                    | mg/L        | -         |                   |                   |                   | < 3               | <3                | <3                | < 2               | --                | < 3               | --                | < 3               | --                | < 3               | --                | < 3 | < 3 |
| Calcium                | mg/L        | -         |                   |                   |                   | 79.1              | 80.2              | 146               | 87.5              | 87.3              | 82.9              | 81.7              | 66.9              | 69                | 102               | 63.3              |     |     |
| Chloride               | mg/L        | -         |                   |                   |                   | 6.2               | 7.2               | 164               | 8.4               | --                | 7.3               | --                | 6.2               | --                | 10.9              | 5.5               |     |     |
| COD                    | mg/L        | -         |                   |                   |                   | 32                | 18                | 62                | 18                | --                | 19                | --                | 26                | --                | 45                | 17                |     |     |
| Colour                 | colour unit | -         |                   |                   |                   | 60                | 33                | 31                | 33                | --                | 30                | --                | 39                | --                | 43                | 22                |     |     |
| Specific Conductivity  | umhos/cm    | -         |                   |                   |                   | 452               | 418               | 1140              | 432               | --                | 431               | --                | 387               | --                | 571               | 343               |     |     |
| DOC                    | mg/L        | -         |                   |                   |                   | 22.5              | 9.6               | 8.6               | 11.2              | --                | 8.2               | --                | 10.6              | --                | 15.1              | 5.5               |     |     |
| Fluoride               | mg/L        | -         |                   |                   |                   | 0.2               | <0.1              | <0.1              | 0.1               | --                | 0.1               | --                | < 0.1             | --                | < 0.1             | < 0.1             |     |     |
| Cyanide (free)         | mg/L        | 0.005     |                   |                   |                   | < 0.005           | <0.005            | <0.005            | < 0.005           | --                | < 0.005           | --                | < 0.005           | --                | < 0.005           | < 0.005           |     |     |
| Iron                   | mg/L        | 0.3       |                   |                   |                   | 0.172             | 0.051             | 6.17              | 0.033             | 0.029             | 0.019             | 0.015             | 0.026             | 0.022             | 0.046             | 0.05              |     |     |
| Magnesium              | mg/L        | -         |                   |                   |                   | 4.31              | 4.25              | 7.73              | 4.76              | 4.77              | 4.66              | 4.5               | 3.65              | 3.7               | 6.16              | 3.52              |     |     |
| Manganese              | mg/L        | -         |                   |                   |                   | 0.06              | 0.016             | 2.75              | 0.01              | 0.008             | 0.005             | 0.004             | 0.005             | 0.005             | 0.013             | 0.011             |     |     |
| Nitrate                | mg/L        | -         |                   |                   |                   | 0.1               | 0.2               | 0.1               | 0.1               | --                | 0.1               | --                | 0.1               | --                | 0.15              | 0.21              |     |     |
| Nitrite                | mg/L        | -         |                   |                   |                   | < 0.1             | <0.1              | <0.1              | < 0.1             | --                | < 0.1             | --                | < 0.1             | --                | < 0.05            | < 0.05            |     |     |
| pH Lab                 | pH unit     | 6.5 - 8.5 |                   |                   |                   | 7.86              | 8.29              | 7.7               | 8.29              | --                | 8.13              | --                | 8.16              | --                | 8.08              | 8.21              |     |     |
| Phenols                | mg/L        | 0.001     |                   |                   |                   | < 0.001           | < 0.001           | < 0.001           | < 0.001           | --                | 0.006             | --                | 0.006             | --                | 0.006             | < 0.001           |     |     |
| Total Phosphorus       | mg/L        | 0.03      |                   |                   |                   | 0.03              | <0.1              | 0.1               | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | < 0.1             | 0.01              |     |     |
| Potassium              | mg/L        | -         |                   |                   |                   | 0.6               | 1.3               | 0.4               | 1.4               | 1.4               | 0.7               | 0.7               | 0.7               | 0.9               | 2.9               | 1.4               |     |     |
| Sodium                 | mg/L        | -         |                   |                   |                   | 4.5               | 4.6               | 96                | 4.8               | 4.8               | 4.8               | 4.7               | 3.3               | 3.5               | 5.5               | 3.4               |     |     |
| Sulphate               | mg/L        | -         |                   |                   |                   | 4                 | 5                 | <1                | 6                 | --                | 5                 | --                | 5                 | --                | 6                 | 3                 |     |     |
| Dissolved Solids       | mg/L        | -         |                   |                   |                   | 232               | 223               | 625               | 240               | --                | 232               | --                | 201               | --                | 298               | 185               |     |     |
| Tot Kjel N             | mg/L        | -         |                   |                   |                   | 1.3               | 0.5               | 1.9               | 0.8               | 1.6               | 0.5               | 0.5               | 0.6               | --                | 0.8               | 0.3               |     |     |
| Ammonia (NH3-N)        | mg/L        | -         |                   |                   |                   | 0.021             | 0.01              | 0.09              | < 0.01            | --                | 0.04              | 0.03              | 0.02              | --                | 0.04              | 0.04              |     |     |
| Total Suspended Solids | mg/L        | -         |                   |                   |                   | 6                 | 3                 | 238               | < 3               | --                | < 3               | --                | < 3               | --                | < 3               | 3                 |     |     |
| Turbidity              | ntu         | -         |                   |                   |                   | 2                 | 0.7               | 86.7              | 0.3               | --                | 0.3               | --                | 0.7               | --                | 1                 | 0.6               |     |     |
| Hardness (CaCO3)       | mg/L        | -         |                   |                   |                   | 215               | 218               | 397               | 238               | 238               | 226               | 223               | 219               | 188               | 305               | 173               |     |     |
| Unionized Ammonia      | mg/L        | 0.02      |                   |                   |                   | 0.0002            | 0.000             | 0.000             | <0.0002           | --                | 0.002             | 0.001             | 0.00006           | --                | 0.000298          | 0.002657          |     |     |
| Aluminum               | mg/L        | 0.075     |                   |                   |                   | 0.03              | 0.03              | 0.22              | 0.03              | 0.03              | 0.03              | 0.02              | 0.05              | 0.05              |                   | 0.05              |     |     |
| Antimony               | mg/L        | 0.02      |                   |                   |                   | 0.0002            | <0.0001           | 0.0002            | 0.0004            | 0.0002            | < 0.0001          | < 0.0001          | < 0.0001          | 0.0001            |                   | < 0.0001          |     |     |
| Arsenic                | mg/L        | 0.005     |                   |                   |                   | 0.0004            | 0.0002            | 0.0008            | 0.0001            | 0.0001            | 0.0002            | 0.0002            | 0.0002            | 0.0004            |                   | < 0.0001          |     |     |
| Barium                 | mg/L        | -         |                   |                   |                   | 0.027             | 0.021             | 0.107             | 0.026             | 0.027             | 0.022             | 0.022             | 0.021             | 0.059             |                   | 0.018             |     |     |
| Beryllium              | mg/L        | 1.1       |                   |                   |                   | < 0.002           | <0.002            | <0.002            | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           | < 0.002           |                   | < 0.002           |     |     |
| Boron                  | mg/L        | 0.2       |                   |                   |                   | < 0.005           | 0.008             | 0.012             | 0.01              | 0.01              | < 0.005           | < 0.005           | 0.01              | 0.018             |                   | 0.006             |     |     |
| Cadmium                | mg/L        | 0.0005    |                   |                   |                   | < 0.00002         | <0.00002          | 0.00003           | < 0.00002         | 0.00003           | < 0.00002         | < 0.00002         | < 0.000014        | < 0.000014        |                   | < 0.000014        |     |     |
| Chromium (total)       | mg/L        | 0.001     |                   |                   |                   | < 0.002           | 0.0004            | <0.0002           | < 0.0002          | < 0.0002          | < 0.0002          | < 0.0002          | < 0.001           | < 0.001           |                   | < 0.001           |     |     |
| Chromium (VI)          | mg/L        | 0.001     |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |     |     |
| Cobalt                 | mg/L        | 0.0009    |                   |                   |                   | 0.0001            | <0.005            | <0.005            | < 0.005           | < 0.005           | < 0.005           | < 0.005           | < 0.0001          | < 0.0001          |                   | < 0.0001          |     |     |
| Copper                 | mg/L        | 0.005     |                   |                   |                   | < 0.002           | 0.0006            | 0.0014            | 0.0006            | 0.0015            | 0.0006            | 0.0007            | 0.0012            | 0.0009            |                   | 0.0017            |     |     |
| Lead                   | mg/L        | 0.005     |                   |                   |                   | 0.00009           | 0.00011           | 0.00045           | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |                   | 0.00002           |     |     |
| Mercury                | mg/L        | 0.0002    |                   |                   |                   | < 0.00002         | <0.00002          | <0.00002          | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | --                | < 0.00002         |                   | < 0.00002         |     |     |
| Molybdenum             | mg/L        | 0.04      |                   |                   |                   | 0.0002            | <0.0001           | 0.0002            | < 0.0001          | < 0.0001          | 0.0001            | 0.0001            | 0.0001            | 0.0002            |                   | 0.0001            |     |     |
| Nickel                 | mg/L        | 0.025     |                   |                   |                   | < 0.01            | <0.01             | <0.01             | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            | < 0.01            |                   | < 0.01            |     |     |
| Selenium               | mg/L        | 0.1       |                   |                   |                   | < 0.001           | <0.001            | <0.001            | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   | < 0.001           |     |     |
| Silver                 | mg/L        | 0.0001    |                   |                   |                   | < 0.00002         | <0.00002          | <0.00002          | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |                   | < 0.00002         |     |     |
| Strontium              | mg/L        | -         |                   |                   |                   | --                | --                | 0.406             | 0.231             | 0.234             | 0.218             | 0.21              | 0.159             | 0.282             |                   | 0.149             |     |     |
| Thallium               | mg/L        | 0.0003    |                   |                   |                   | < 0.00005         | <0.00005          | <0.00005          | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         |                   | < 0.00005         |     |     |
| Vanadium               | mg/L        | 0.006     |                   |                   |                   | < 0.005           | 0.0001            | 0.0011            | 0.0004            | 0.0004            | 0.0003            | 0.0002            | 0.0003            | 0.0005            |                   | 0.0002            |     |     |
| Zinc                   | mg/L        | 0.02      |                   |                   |                   | < 0.005           | 0.012             | 0.063             | < 0.005           | 0.009             | < 0.005           | < 0.005           | < 0.005           | 0.188             |                   | < 0.005           |     |     |
| Field pH               | pH unit     | -         |                   |                   |                   | 7.6               | 8.46              | 6.98              | 7.93              | 7.93              | 8.47              | 8.47              | 7.32              | 7.32              | 7.52              | 8.5               |     |     |
| Field Temp             | deg C       | -         |                   |                   |                   | 13.6              | 6                 | 16.6              | 15.3              | 15.3              | 7.5               | 7.5               | 7.2               | 7.2               | 12.5              | 12.4              |     |     |
| Field Conductivity     | us/cm       | -         |                   |                   |                   | 470               | 510               | 888               | 480               | 480               | 355               | 355               | 318               | 318               | 318               | 355               |     |     |
| Dissolved Oxygen       | mg/L        | -         |                   |                   |                   | 7.91              | 7.2               | 3.36              | 10.18             | 10.18             | 11.2              | 11.2              | 13.12             | 13.12             | 4.45              | 5.56              |     |     |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| DUP                    |             |           |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|------------------------|-------------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Parameters             | Units       | PWQO      | SW16<br>12-Apr-19 | SW16<br>22-Oct-19 | SW16<br>23-Apr-20 | SW16<br>20-Jul-20 | SW16<br>20-Oct-20 | SW16<br>20-Apr-21 | SW16<br>19-Jul-21 | SW16<br>28-Oct-21 | SW16<br>21-Apr-22 | SW16<br>21-Apr-22 | SW16<br>20-Jul-22 | SW16<br>24-Oct-22 | SW16<br>20-Apr-23 | SW16<br>30-Aug-23 |
| Total Alkalinity       | mg/L        | -         | 163               | Dry               | 182               | Dry               | Dry               | 234               | Dry               | 272               | 223               | 219               | 339               | Dry               | 221               | Dry               |
| BOD                    | mg/L        | -         | < 3               |                   | < 3               |                   |                   | < 3               |                   | < 3               | < 3               | < 3               | < 3               |                   | < 3               |                   |
| Calcium                | mg/L        | -         | 70.4              |                   | 83.5              |                   |                   | 99.3              |                   | 130               | 86.1              | 76.4              | 120               |                   | 89.1              |                   |
| Chloride               | mg/L        | -         | 7.2               |                   | 12.2              |                   |                   | 12.8              |                   | 18.1              | 18.1              | 18.3              | 14.3              |                   | 13                |                   |
| COD                    | mg/L        | -         | 18                |                   | 20                |                   |                   | 21                |                   | 9                 | 14                | 16                | < 5               |                   | 15                |                   |
| Colour                 | colour unit | -         | 26                |                   | 31                |                   |                   | 32                |                   | 16                | 27                | 27                | 24                |                   | 36                |                   |
| Specific Conductivity  | umhos/cm    | -         | 364               |                   | 408               |                   |                   | 519               |                   | 658               | 497               | 504               | 678               |                   | 500               |                   |
| DOC                    | mg/L        | -         | 7.2               |                   | 8.5               |                   |                   | 10.2              |                   | 6.2               | 9.4               | 9.3               | 8.3               |                   | 4.5               |                   |
| Fluoride               | mg/L        | -         | < 0.1             |                   | < 0.1             |                   |                   | < 0.1             |                   | < 0.1             | < 0.1             | < 0.1             | < 0.1             |                   | < 0.1             |                   |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005           |                   | < 0.005           |                   |                   | < 0.005           |                   | < 0.005           | < 0.005           | < 0.005           | < 0.005           |                   | < 0.005           |                   |
| Iron                   | mg/L        | 0.3       | 0.04              |                   | 0.031             |                   |                   | 0.061             |                   | 0.043             | 0.058             | 0.066             | 0.17              |                   | 0.043             |                   |
| Magnesium              | mg/L        | -         | 3.81              |                   | 4.58              |                   |                   | 6.21              |                   | 8.57              | 5.74              | 4.95              | 11.2              |                   | 5.36              |                   |
| Manganese              | mg/L        | -         | 0.004             |                   | 0.015             |                   |                   | 0.015             |                   | 0.017             | 0.007             | 0.009             | 0.24              |                   | 0.011             |                   |
| Nitrate                | mg/L        | -         | 0.24              |                   | 0.28              |                   |                   | 3.5               |                   | 7.07              | 1.52              | 1.48              | 0.22              |                   | 1.87              |                   |
| Nitrite                | mg/L        | -         | < 0.05            |                   | < 0.05            |                   |                   | < 0.05            |                   | < 0.05            | < 0.05            | < 0.05            | < 0.05            |                   | < 0.05            |                   |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 8.08              |                   | 8.05              |                   |                   | 8.17              |                   | 7.88              | 8.09              | 8.11              | 8.08              |                   | 8.11              |                   |
| Phenols                | mg/L        | 0.001     | < 0.002           |                   | < 0.002           |                   |                   | < 0.002           |                   | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   | < 0.001           |                   |
| Total Phosphorus       | mg/L        | 0.03      | 0.02              |                   | 0.01              |                   |                   | <b>0.05</b>       |                   | 0.02              | 0.02              | 0.02              | <b>0.06</b>       |                   | 0.01              |                   |
| Potassium              | mg/L        | -         | 1.2               |                   | 1                 |                   |                   | 1.4               |                   | 1.3               | 1.9               | 1.6               | 0.6               |                   | 1.5               |                   |
| Sodium                 | mg/L        | -         | 3.9               |                   | 5                 |                   |                   | 5.7               |                   | 5.7               | 5.6               | 4.8               | 19.7              |                   | 5                 |                   |
| Sulphate               | mg/L        | -         | 5                 |                   | 6                 |                   |                   | 10                |                   | 18                | 8                 | 8                 | 18                |                   | 9                 |                   |
| Dissolved Solids       | mg/L        | -         | 190               |                   | 222               |                   |                   | 278               |                   | 345               | 260               | 245               | 390               |                   | 255               |                   |
| Tot Kjel N             | mg/L        | -         | 0.5               |                   | 0.5               |                   |                   | 0.6               |                   | 0.7               | 0.7               | 0.6               | 0.9               |                   | 2                 |                   |
| Ammonia (NH3-N)        | mg/L        | -         | 0.04              |                   | 0.01              |                   |                   | 0.02              |                   | 0.04              | 0.12              | 0.02              | 0.22              |                   | 1.8               |                   |
| Total Suspended Solids | mg/L        | -         | < 3               |                   | < 3               |                   |                   | < 3               |                   | < 3               | < 3               | < 3               | 14                |                   | < 3               |                   |
| Turbidity              | ntu         | -         | 0.7               |                   | 0.8               |                   |                   | 1.2               |                   | 0.6               | 0.9               | 1.2               | 3.9               |                   | 0.6               |                   |
| Hardness (CaCO3)       | mg/L        | -         | 195               |                   | 224               |                   |                   | 274               |                   | 369               | 239               | 211               | 346               |                   | 255               |                   |
| Unionized Ammonia      | mg/L        | 0.02      | < 0.01            | Dry               | < 0.01            | Dry               | Dry               | < 0.01            | Dry               | < 0.01            | < 0.01            | < 0.01            | < 0.01            | Dry               | <b>0.03</b>       | Dry               |
| Aluminum               | mg/L        | 0.075     | 0.05              |                   | 0.05              |                   |                   | 0.03              |                   | 0.07              | 0.03              | 0.03              | 0.06              |                   | 0.03              |                   |
| Antimony               | mg/L        | 0.02      | 0.0004            |                   | 0.0003            |                   |                   | 0.0003            |                   | < 0.0001          | 0.0003            | 0.0003            | 0.0004            |                   | 0.0004            |                   |
| Arsenic                | mg/L        | 0.005     | 0.0001            |                   | 0.0002            |                   |                   | 0.0002            |                   | 0.0001            | 0.0002            | 0.0002            | 0.0002            |                   | 0.0002            |                   |
| Barium                 | mg/L        | -         | 0.021             |                   | 0.025             |                   |                   | 0.029             |                   | 0.048             | 0.027             | 0.024             | 0.054             |                   | 0.029             |                   |
| Beryllium              | mg/L        | 1.1       | < 0.002           |                   | < 0.002           |                   |                   | < 0.002           |                   | < 0.002           | < 0.002           | < 0.002           | < 0.002           |                   | < 0.002           |                   |
| Boron                  | mg/L        | 0.2       | 0.008             |                   | < 0.005           |                   |                   | 0.007             |                   | 0.013             | 0.007             | < 0.005           | 0.008             |                   | 0.007             |                   |
|                        |             |           |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   | <                 |                   |
| Cadmium                | mg/L        | 0.0005    | < 0.000015        |                   | < 0.000015        |                   |                   | < 0.000015        |                   | < 0.000015        | < 0.000015        | < 0.000015        | < 0.000015        |                   | 0.000015          |                   |
| Chromium (total)       | mg/L        | 0.001     | < 0.001           |                   | < 0.001           |                   |                   | < 0.001           |                   | 0.001             | < 0.001           | < 0.001           | < 0.001           |                   | 0.001             |                   |
| Chromium (VI)          | mg/L        | 0.001     |                   |                   |                   |                   |                   |                   |                   |                   | < 0.001           | < 0.001           | < 0.001           |                   | < 0.001           |                   |
| Cobalt                 | mg/L        | 0.0009    | 0.0002            |                   | < 0.0001          |                   |                   | < 0.0001          |                   | < 0.0001          | 0.0001            | 0.0001            | 0.0003            |                   | 0.0001            |                   |
| Copper                 | mg/L        | 0.005     | 0.0008            |                   | 0.0007            |                   |                   | 0.0006            |                   | 0.0006            | 0.0008            | 0.0009            | 0.0007            |                   | 0.0006            |                   |
| Lead                   | mg/L        | 0.005     | 0.00006           |                   | 0.00002           |                   |                   | < 0.00002         |                   | 0.00002           | 0.00004           | 0.00006           | 0.00008           |                   | 0.00004           |                   |
| Mercury                | mg/L        | 0.0002    | < 0.00002         |                   | < 0.00002         |                   |                   | < 0.00002         |                   | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |                   | < 0.00002         |                   |
| Molybdenum             | mg/L        | 0.04      | 0.0002            |                   | 0.0001            |                   |                   | 0.0001            |                   | < 0.0001          | 0.0001            | 0.0001            | 0.0001            |                   | 0.0001            |                   |
| Nickel                 | mg/L        | 0.025     | < 0.01            |                   | < 0.01            |                   |                   | < 0.01            |                   | < 0.01            | < 0.01            | < 0.01            | < 0.01            |                   | < 0.01            |                   |
| Selenium               | mg/L        | 0.1       | < 0.001           |                   | < 0.001           |                   |                   | < 0.001           |                   | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   | < 0.001           |                   |
| Silver                 | mg/L        | 0.0001    | < 0.0001          |                   | < 0.0001          |                   |                   | < 0.0001          |                   | < 0.0001          | < 0.0001          | < 0.0001          | < 0.0001          |                   | < 0.0001          |                   |
| Strontium              | mg/L        | -         | 0.161             |                   | 0.195             |                   |                   | 0.231             |                   | 0.296             | 0.226             | 0.195             | 0.291             |                   | 0.222             |                   |
| Thallium               | mg/L        | 0.0003    | < 0.00005         |                   | < 0.00005         |                   |                   | < 0.00005         |                   | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         |                   | < 0.00005         |                   |
| Vanadium               | mg/L        | 0.006     | 0.0003            |                   | 0.0003            |                   |                   | 0.0003            |                   | 0.0004            | 0.0002            | 0.0003            | 0.0004            |                   | 0.0003            |                   |
| Zinc                   | mg/L        | 0.02      | 0.01              |                   | < 0.005           |                   |                   | 0.011             |                   | 0.01              | < 0.005           | < 0.005           | 0.018             |                   | 0.011             |                   |
| Field pH               | pH unit     | -         | 7.27              |                   | 7.87              |                   |                   | 7.23              |                   | 7.83              | 8.14              | 8.14              | 7.58              |                   | 7.75              |                   |
| Field Temp             | deg C       | -         | 5.9               |                   | 6                 |                   |                   | 6.2               |                   | 8.7               | 7.9               | 7.9               | 21.1              |                   | 11.2              |                   |
| Field Conductivity     | us/cm       | -         | 500               |                   | 430               |                   |                   | 610               |                   | 600               | 415               | 415               | 525               |                   | 400               |                   |
| Dissolved Oxygen       | mg/L        | -         | 13.64             |                   | 11.94             |                   |                   | 20.06             |                   | 7.98              | 9.84              | 9.84              | 6.55              |                   | 8.01              |                   |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | SW16<br>12-Oct-23 | SW17<br>20-Jul-17 | SW17<br>23-Oct-17 | SW17<br>24-Apr-18 | SW17<br>24-Apr-19 | SW17<br>22-Oct-19 | SW17<br>23-Apr-20 | SW17<br>20-Jul-20 | SW17<br>20-Oct-20 | SW17<br>20-Apr-21 | SW17<br>19-Jul-21 | SW17<br>28-Oct-21 | SW17<br>21-Apr-22 | SW17<br>20-Jul-22 |
|------------------------|-------------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total Alkalinity       | mg/L        | -         | 291               | 166               | 177               | 95                | 88                | Dry               | Dry               | Dry               | Dry               | Dry               | 188               | Dry               | Dry               | Dry               |
| BOD                    | mg/L        | -         | <3                | < 3               | 4                 | < 3               | < 3               |                   |                   |                   |                   |                   | < 6               |                   |                   |                   |
| Calcium                | mg/L        | -         | 112               | 79                | 66.1              | 40.3              | 38.1              |                   |                   |                   |                   |                   | 74.8              |                   |                   |                   |
| Chloride               | mg/L        | -         | 23.8              | 7.1               | 9.6               | 4                 | 5.3               |                   |                   |                   |                   |                   | 12.9              |                   |                   |                   |
| COD                    | mg/L        | -         | 16                | 155               | 65                | 46                | 42                |                   |                   |                   |                   |                   | 58                |                   |                   |                   |
| Colour                 | colour unit | -         | 19                | 145               | 88                | 135               | 132               |                   |                   |                   |                   |                   | 110               |                   |                   |                   |
| Specific Conductivity  | umhos/cm    | -         | 675               | 349               | 382               | 192               | 201               |                   |                   |                   |                   |                   | 383               |                   |                   |                   |
| DOC                    | mg/L        | -         | 8.9               | 24                | 21.4              | 9.8               | 19.4              |                   |                   |                   |                   |                   | 24.1              |                   |                   |                   |
| Fluoride               | mg/L        | -         | <0.1              | < 0.1             | < 0.1             | < 0.1             | < 0.1             |                   |                   |                   |                   |                   | < 0.1             |                   |                   |                   |
| Cyanide (free)         | mg/L        | 0.005     | <0.005            | < 0.005           | < 0.005           | < 0.005           | < 0.005           |                   |                   |                   |                   |                   | < 0.005           |                   |                   |                   |
| Iron                   | mg/L        | 0.3       | 0.064             | <b>3.86</b>       | 0.139             | <b>0.388</b>      | 0.298             |                   |                   |                   |                   |                   | <b>0.549</b>      |                   |                   |                   |
| Magnesium              | mg/L        | -         | 8.08              | 5.35              | 4.88              | 3.22              | 2.27              |                   |                   |                   |                   |                   | 4.29              |                   |                   |                   |
| Manganese              | mg/L        | -         | 0.021             | 2.05              | 0.052             | 0.077             | 0.146             |                   |                   |                   |                   |                   | 0.54              |                   |                   |                   |
| Nitrate                | mg/L        | -         | 2.19              | < 0.05            | < 0.05            | < 0.05            | 0.11              |                   |                   |                   |                   |                   | 0.07              |                   |                   |                   |
| Nitrite                | mg/L        | -         | 0.05              | < 0.05            | < 0.05            | < 0.05            | < 0.05            |                   |                   |                   |                   |                   | < 0.05            |                   |                   |                   |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 8.08              | 8.26              | 8.04              | 7.88              | 7.77              |                   |                   |                   |                   |                   | 8.04              |                   |                   |                   |
| Phenols                | mg/L        | 0.001     | <0.001            | <b>0.009</b>      | <b>0.006</b>      | <0.001            | < 0.002           |                   |                   |                   |                   |                   | < 0.002           |                   |                   |                   |
| Total Phosphorus       | mg/L        | 0.03      | <0.1              | <b>0.3</b>        | < 0.1             | <b>0.06</b>       | <b>0.04</b>       |                   |                   |                   |                   |                   | <b>0.05</b>       |                   |                   |                   |
| Potassium              | mg/L        | -         | 2.8               | 2                 | 3.2               | 1.4               | 2                 |                   |                   |                   |                   |                   | 2                 |                   |                   |                   |
| Sodium                 | mg/L        | -         | 13.4              | 6                 | 6.6               | 3.4               | 3.7               |                   |                   |                   |                   |                   | 5.6               |                   |                   |                   |
| Sulphate               | mg/L        | -         | 33                | 2                 | 1                 | 2                 | 1                 |                   |                   |                   |                   |                   | < 1               |                   |                   |                   |
| Dissolved Solids       | mg/L        | -         | 377               | 191               | 198               | 109               | 106               |                   |                   |                   |                   |                   | 213               |                   |                   |                   |
| Tot Kjeh N             | mg/L        | -         | 0.5               | 1.1               | 0.8               | 0.7               | 0.7               |                   |                   |                   |                   |                   | 0.9               |                   |                   |                   |
| Ammonia (NH3-N)        | mg/L        | -         | 0.06              | 0.07              | 0.03              | 0.03              | 0.09              |                   |                   |                   |                   |                   | 0.05              |                   |                   |                   |
| Total Suspended Solids | mg/L        | -         | 8                 | 10                | 12                | 10                | 7                 |                   |                   |                   |                   |                   | 47                |                   |                   |                   |
| Turbidity              | ntu         | -         | 1.4               | 3.8               | 2.6               | 4.5               | 1.4               |                   |                   |                   |                   |                   | 22.7              |                   |                   |                   |
| Hardness (CaCO3)       | mg/L        | -         | 312               | 219               | 188               | 114               | 99                |                   |                   |                   |                   |                   | 205               |                   |                   |                   |
| Unionized Ammonia      | mg/L        | 0.02      | <0.01             | 0.0012            | 0.0001            | 0.0029            | < 0.01            |                   |                   |                   |                   |                   | < 0.01            |                   |                   |                   |
| Aluminum               | mg/L        | 0.075     | <b>0.09</b>       | 0.05              | 0.04              | 0.04              | 0.04              |                   |                   |                   |                   |                   | 0.05              |                   |                   |                   |
| Antimony               | mg/L        | 0.02      | <0.0001           | 0.0002            | 0.0001            | 0.0003            | 0.0002            |                   |                   |                   |                   |                   | 0.0004            |                   |                   |                   |
| Arsenic                | mg/L        | 0.005     | 0.0002            | 0.0033            | 0.0007            | 0.0004            | 0.0005            |                   |                   |                   |                   |                   | 0.0016            |                   |                   |                   |
| Barium                 | mg/L        | -         | 0.043             | 0.06              | 0.037             | 0.024             | 0.015             |                   |                   |                   |                   |                   | 0.033             |                   |                   |                   |
| Beryllium              | mg/L        | 1.1       | <0.0001           | < 0.002           | < 0.002           | < 0.002           | < 0.002           |                   |                   |                   |                   |                   | < 0.002           |                   |                   |                   |
| Boron                  | mg/L        | 0.2       | 0.014             | 0.013             | 0.012             | < 0.005           | < 0.005           |                   |                   |                   |                   |                   | 0.011             |                   |                   |                   |
| Cadmium                | mg/L        | 0.0005    | <0.000015         | 0.000165          | < 0.000014        | < 0.000014        | < 0.000015        |                   |                   |                   |                   |                   | < 0.000015        |                   |                   |                   |
| Chromium (total)       | mg/L        | 0.001     | <0.001            | <b>0.002</b>      | < 0.001           | < 0.001           | 0.001             |                   |                   |                   |                   |                   | < 0.001           |                   |                   |                   |
| Chromium (VI)          | mg/L        | 0.001     | <0.001            |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Cobalt                 | mg/L        | 0.0009    | 0.0003            | <b>0.0035</b>     | < 0.0001          | 0.0002            | 0.0002            |                   |                   |                   |                   |                   | 0.0008            |                   |                   |                   |
| Copper                 | mg/L        | 0.005     | 0.0014            | <b>0.0119</b>     | 0.0005            | 0.0008            | 0.0013            |                   |                   |                   |                   |                   | 0.001             |                   |                   |                   |
| Lead                   | mg/L        | 0.005     | 0.00008           | 0.00004           | 0.00021           | 0.00071           | 0.00019           |                   |                   |                   |                   |                   | 0.00031           |                   |                   |                   |
| Mercury                | mg/L        | 0.0002    | <0.00002          | < 0.00002         | < 0.00002         | < 0.00002         | < 0.00002         |                   |                   |                   |                   |                   | < 0.00002         |                   |                   |                   |
| Molybdenum             | mg/L        | 0.04      | 0.0001            | 0.0004            | 0.0002            | 0.0001            | 0.0002            |                   |                   |                   |                   |                   | 0.0005            |                   |                   |                   |
| Nickel                 | mg/L        | 0.025     | 0.0008            | < 0.01            | < 0.01            | < 0.01            | < 0.01            |                   |                   |                   |                   |                   | < 0.01            |                   |                   |                   |
| Selenium               | mg/L        | 0.1       | <0.001            | < 0.001           | < 0.001           | < 0.001           | < 0.001           |                   |                   |                   |                   |                   | < 0.001           |                   |                   |                   |
| Silver                 | mg/L        | 0.0001    | <0.0001           | < 0.00002         | < 0.00002         | < 0.00002         | < 0.0001          |                   |                   |                   |                   |                   | < 0.0001          |                   |                   |                   |
| Strontium              | mg/L        | -         | 0.305             | 0.207             | 0.169             | 0.103             | 0.079             |                   |                   |                   |                   |                   | 0.196             |                   |                   |                   |
| Thallium               | mg/L        | 0.0003    | <0.00005          | < 0.00005         | < 0.00005         | < 0.00005         | < 0.00005         |                   |                   |                   |                   |                   | < 0.00005         |                   |                   |                   |
| Vanadium               | mg/L        | 0.006     | 0.0005            | 0.0025            | 0.0003            | 0.0005            | 0.0004            |                   |                   |                   |                   |                   | 0.0006            |                   |                   |                   |
| Zinc                   | mg/L        | 0.02      | 0.006             | <b>0.034</b>      | <b>0.021</b>      | <b>0.021</b>      | 0.011             |                   |                   |                   |                   |                   | 0.019             |                   |                   |                   |
| Field pH               | pH unit     | -         | 8.1               | 7.7               | 7.12              | 8.9               |                   |                   |                   |                   |                   |                   | 6.98              |                   |                   |                   |
| Field Temp             | deg C       | -         | 9.6               | 18.4              | 13.5              | 5.7               |                   |                   |                   |                   |                   |                   | 21.8              |                   |                   |                   |
| Field Conductivity     | us/cm       | -         | 673               | 770               | 345               | 205               |                   |                   |                   |                   |                   |                   | 365               |                   |                   |                   |
| Dissolved Oxygen       | mg/L        | -         | 3.35              | 1.79              | 3.57              | 5.45              |                   |                   |                   |                   |                   |                   | 2.19              |                   |                   |                   |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | SW17      | SW17      | SW17      | SW17         |
|------------------------|-------------|-----------|-----------|-----------|-----------|--------------|
|                        |             |           | 24-Oct-22 | 20-Apr-23 | 30-Aug-23 | 12-Oct-23    |
| Total Alkalinity       | mg/L        | -         | Dry       | Dry       | Dry       | 209          |
| BOD                    | mg/L        | -         |           |           |           | <3           |
| Calcium                | mg/L        | -         |           |           |           | 75.2         |
| Chloride               | mg/L        | -         |           |           |           | 15           |
| COD                    | mg/L        | -         |           |           |           | 71           |
| Colour                 | colour unit | -         |           |           |           | 89           |
| Specific Conductivity  | umhos/cm    | -         |           |           |           | 433          |
| DOC                    | mg/L        | -         |           |           |           | 25.8         |
| Fluoride               | mg/L        | -         |           |           |           | <0.1         |
| Cyanide (free)         | mg/L        | 0.005     |           |           |           | <0.005       |
| Iron                   | mg/L        | 0.3       |           |           |           | <b>0.552</b> |
| Magnesium              | mg/L        | -         |           |           |           | 4.58         |
| Manganese              | mg/L        | -         |           |           |           | 0.12         |
| Nitrate                | mg/L        | -         |           |           |           | <0.05        |
| Nitrite                | mg/L        | -         |           |           |           | <0.05        |
| pH Lab                 | pH unit     | 6.5 - 8.5 |           |           |           | 7.91         |
| Phenols                | mg/L        | 0.001     |           |           |           | <0.001       |
| Total Phosphorus       | mg/L        | 0.03      |           |           |           | <0.1         |
| Potassium              | mg/L        | -         |           |           |           | 5.5          |
| Sodium                 | mg/L        | -         |           |           |           | 5            |
| Sulphate               | mg/L        | -         |           |           |           | 1            |
| Dissolved Solids       | mg/L        | -         |           |           |           | 233          |
| Tot Kjeh N             | mg/L        | -         |           |           |           | 1.3          |
| Ammonia (NH3-N)        | mg/L        | -         |           |           |           | 0.34         |
| Total Suspended Solids | mg/L        | -         |           |           |           | 15           |
| Turbidity              | ntu         | -         |           |           |           | 11.2         |
| Hardness (CaCO3)       | mg/L        | -         |           |           |           | 207          |
| Unionized Ammonia      | mg/L        | 0.02      |           |           |           | <0.01        |
| Aluminum               | mg/L        | 0.075     |           |           |           | 0.06         |
| Antimony               | mg/L        | 0.02      |           |           |           | 0.0001       |
| Arsenic                | mg/L        | 0.005     |           |           |           | 0.0007       |
| Barium                 | mg/L        | -         |           |           |           | 0.026        |
| Beryllium              | mg/L        | 1.1       |           |           |           | <0.0001      |
| Boron                  | mg/L        | 0.2       |           |           |           | 0.008        |
| Cadmium                | mg/L        | 0.0005    |           |           |           | <0.000015    |
| Chromium (total)       | mg/L        | 0.001     |           |           |           | <0.001       |
| Chromium (VI)          | mg/L        | 0.001     |           |           |           | <0.001       |
| Cobalt                 | mg/L        | 0.0009    |           |           |           | 0.0004       |
| Copper                 | mg/L        | 0.005     |           |           |           | 0.0012       |
| Lead                   | mg/L        | 0.005     |           |           |           | 0.00034      |
| Mercury                | mg/L        | 0.0002    |           |           |           | <0.00002     |
| Molybdenum             | mg/L        | 0.04      |           |           |           | 0.0001       |
| Nickel                 | mg/L        | 0.025     |           |           |           | 0.0012       |
| Selenium               | mg/L        | 0.1       |           |           |           | <0.001       |
| Silver                 | mg/L        | 0.0001    |           |           |           | <0.0001      |
| Strontium              | mg/L        | -         |           |           |           | 0.171        |
| Thallium               | mg/L        | 0.0003    |           |           |           | <0.00005     |
| Vanadium               | mg/L        | 0.006     |           |           |           | 0.0004       |
| Zinc                   | mg/L        | 0.02      |           |           |           | 0.006        |
| Field pH               | pH unit     | -         |           |           |           | 7.39         |
| Field Temp             | deg C       | -         |           |           |           | 7.9          |
| Field Conductivity     | us/cm       | -         |           |           |           | 403          |
| Dissolved Oxygen       | mg/L        | -         |           |           |           | 2.74         |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | 10m              | 10m              | 10m              | 15m              | 15m              | 15m              | 15m              | 15m              | 30m              | 30m              | 20m              | 30m              | 30m               | 30m               |
|------------------------|-------------|-----------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|-------------------|
|                        |             |           | WP2<br>24-Apr-19 | WP2<br>11-May-20 | WP2<br>28-Apr-22 | WP2<br>21-May-15 | WP2<br>02-May-17 | WP2<br>21-Jun-17 | WP2<br>24-Apr-18 | WP2<br>26-Apr-21 | WP2<br>21-May-15 | WP2<br>02-May-17 | WP2<br>21-Jun-17 | WP2<br>24-Apr-18 | WP 2<br>24-Apr-19 | WP 2<br>11-May-20 |
| Total Alkalinity       | mg/L        | -         | 211              | 161              | 177              | 186              | 127              | 173              | 145              | 169              | 158              | 120              | 165              | 93               | 84                | 110               |
| BOD                    | mg/L        | -         | < 3              | < 3              | < 3              | 47               | < 3              | < 3              | < 3              | 14               | < 3              | < 3              | 4                | < 3              | < 3               | < 3               |
| Calcium                | mg/L        | -         | 74.5             | 67.6             | 62.8             | 77               | 47.9             | 68.7             | 52.5             | 69.6             | 62.4             | 44.9             | 60.9             | 37.7             | 34.3              | 45.4              |
| Chloride               | mg/L        | -         | 12               | 10.9             | 9.5              | 8.1              | 7                | 7.8              | 7.8              | 9                | 7                | 6.7              | 6.8              | 4                | 4.2               | 8.1               |
| COD                    | mg/L        | -         | 53               | 45               | 59               | 390              | 42               | 59               | 57               | 183              | 76               | 48               | 119              | 34               | 55                | 46                |
| Colour                 | colour unit | -         | 54               | 71               | 82               | 90               | 102              | 115              | 66               | 73               | 92               | 100              | 115              | 90               | 101               | 73                |
| Specific Conductivity  | umhos/cm    | -         | 459              | 363              | 361              | 390              | 275              | 367              | 293              | 349              | 331              | 260              | 344              | 190              | 191               | 261               |
| DOC                    | mg/L        | -         | 19.3             | 17.3             | 19.8             | 18.4             | 15.5             | 21               | 12               | 23.3             | 21.4             | 15.1             | 21.4             | 12               | 18.2              | 17.5              |
| Fluoride               | mg/L        | -         | < 0.1            | < 0.1            | < 0.1            | 0.1              | < 0.1            | < 0.1            | < 0.1            | < 0.1            | 0.1              | < 0.1            | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005          | < 0.005           | < 0.005           |
| Iron                   | mg/L        | 0.3       | <b>1.84</b>      | 0.251            | <b>1.64</b>      | <b>1.43</b>      | 0.055            | <b>0.45</b>      | <b>1.07</b>      | <b>4.41</b>      | <b>0.45</b>      | 0.022            | 0.184            | 0.107            | 0.193             | 0.036             |
| Magnesium              | mg/L        | -         | 4.96             | 3.79             | 4.05             | 4.86             | 2.95             | 4.53             | 4.14             | 4.47             | 3.97             | 2.82             | 4.07             | 3.32             | 2.08              | 2.67              |
| Manganese              | mg/L        | -         | 0.17             | 0.034            | 0.525            | 0.182            | 0.005            | 0.07             | 0.115            | 0.492            | 0.082            | 0.004            | 0.103            | 0.031            | 0.03              | 0.015             |
| Nitrate                | mg/L        | -         | < 0.05           | 0.32             | < 0.05           | < 0.1            | < 0.1            | < 0.05           | 0.13             | 0.08             | < 0.1            | < 0.1            | < 0.05           | < 0.05           | < 0.05            | 0.1               |
| Nitrite                | mg/L        | -         | < 0.05           | < 0.05           | < 0.05           | < 0.1            | < 0.1            | < 0.05           | < 0.05           | < 0.05           | < 0.1            | < 0.1            | < 0.05           | < 0.05           | < 0.05            | < 0.05            |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 7.66             | 7.61             | 7.88             | 7.6              | 7.9              | 7.73             | 7.7              | 7.97             | 7.73             | 7.96             | 7.7              | 7.67             | 7.34              | 7.63              |
| Phenols                | mg/L        | 0.001     | < 0.002          | < 0.002          | < 0.001          | < 0.001          | <b>0.002</b>     | <b>0.011</b>     | < 0.001          | < 0.002          | < 0.001          | <b>0.003</b>     | <b>0.004</b>     | < 0.001          | < 0.002           | < 0.002           |
| Total Phosphorus       | mg/L        | 0.03      | <b>0.11</b>      | <b>0.08</b>      | <b>0.07</b>      | <b>0.5</b>       | < 0.1            | < 0.1            | <b>0.19</b>      | <b>0.52</b>      | <b>0.2</b>       | < 0.1            | < 0.1            | 0.03             | <b>0.08</b>       | <b>0.11</b>       |
| Potassium              | mg/L        | -         | 4.3              | 2                | 2.7              | 2.5              | 1.4              | 1.7              | 2.6              | 2.2              | 1.1              | 1.2              | 1.4              | 1.5              | 1.9               | 0.8               |
| Sodium                 | mg/L        | -         | 10.2             | 7.3              | 7                | 7.6              | 4.1              | 6.6              | 6                | 6.4              | 5.7              | 3.8              | 5.4              | 3.7              | 2.9               | 4.3               |
| Sulphate               | mg/L        | -         | < 1              | 3                | 2                | < 1              | 3                | < 1              | 2                | 2                | < 1              | 3                | < 1              | 1                | < 1               | 3                 |
| Dissolved Solids       | mg/L        | -         | 236              | 192              | 197              | 214              | 143              | 194              | 163              | 200              | 176              | 135              | 178              | 107              | 97                | 133               |
| Tot Kjel N             | mg/L        | -         | 1.6              | 1.4              | 1.2              | 2.6              | 0.6              | 0.8              | 2.1              | 2.3              | 3.5              | 0.6              | 1.2              | 0.5              | 0.9               | 1.5               |
| Ammonia (NH3-N)        | mg/L        | -         | 0.55             | 0.07             | 0.8              | 0.07             | < 0.01           | 0.03             | 0.31             | 0.06             | 0.06             | < 0.01           | 0.01             | 0.02             | 0.07              | 0.03              |
| Total Suspended Solids | mg/L        | -         | 8                | 68               | 52               | 410              | < 3              | 12               | 4                | 260              | 82               | 3                | 70               | 12               | 9                 | 85                |
| Turbidity              | ntu         | -         | 4.4              | 10.5             | 10.8             | 73.8             | 0.6              | 5.2              | 35.4             | 193              | 10.8             | 0.7              | 32.4             | 2.7              | 6.8               | 6.2               |
| Hardness (CaCO3)       | mg/L        | -         | 220              | 185              | 174              | 212              | 140              | 197              | 148              | 187              | 172              | 131              | 188              | 108              | 94                | 124               |
| Unionized Ammonia      | mg/L        | 0.02      | < 0.01           | < 0.01           | 0.0100           | 0.0003           | --               | 0.0001           | 0.0015           | < 0.01           | 0.0001           | --               | 0.00004          | 0.0001           | < 0.01            | < 0.01            |
| Aluminum               | mg/L        | 0.075     | 0.04             | 0.05             | 0.02             | <b>0.25</b>      | 0.02             | 0.06             | <b>0.09</b>      | 0.06             | <b>0.08</b>      | 0.02             | 0.06             | 0.05             | 0.05              | 0.03              |
| Antimony               | mg/L        | 0.02      | < 0.0001         | < 0.0001         | 0.0003           | 0.0002           | < 0.0001         | 0.0001           | < 0.0001         | 0.0003           | 0.0001           | < 0.0001         | < 0.0001         | < 0.0001         | < 0.0001          | < 0.0001          |
| Arsenic                | mg/L        | 0.005     | 0.001            | 0.0005           | 0.0006           | 0.0008           | 0.0005           | 0.001            | 0.0007           | 0.0012           | 0.0004           | 0.0005           | 0.001            | 0.0004           | 0.0006            | 0.0004            |
| Barium                 | mg/L        | -         | 0.028            | 0.021            | 0.027            | 0.034            | 0.014            | 0.033            | 0.028            | 0.04             | 0.026            | 0.013            | 0.027            | 0.021            | 0.011             | 0.013             |
| Beryllium              | mg/L        | 1.1       | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002          | < 0.002           | < 0.002           |
| Boron                  | mg/L        | 0.2       | 0.051            | < 0.005          | 0.019            | < 0.005          | < 0.005          | 0.015            | 0.013            | 0.015            | < 0.005          | < 0.005          | 0.008            | < 0.005          | 0.012             | < 0.005           |
| Cadmium                | mg/L        | 0.0005    | < 0.000015       | < 0.000015       | < 0.000015       | 0.00014          | < 0.000014       | 0.000046         | 0.000041         | 0.000045         | 0.00005          | < 0.000014       | < 0.000014       | 0.000044         | 0.00002           | < 0.000015        |
| Chromium (total)       | mg/L        | 0.001     | 0.001            | < 0.001          | < 0.001          | 0.0006           | < 0.001          | < 0.001          | < 0.001          | <b>0.002</b>     | <b>0.0011</b>    | < 0.001          | < 0.001          | < 0.001          | 0.001             | < 0.001           |
| Chromium (VI)          | mg/L        | 0.001     |                  |                  | < 0.001          |                  |                  |                  |                  |                  |                  |                  |                  |                  |                   |                   |
| Cobalt                 | mg/L        | 0.0009    | 0.0007           | 0.0001           | <b>0.0012</b>    | < 0.005          | < 0.0001         | 0.0002           | 0.0003           | <b>0.0015</b>    | < 0.005          | < 0.0001         | 0.0001           | 0.0004           | 0.0002            | < 0.0001          |
| Copper                 | mg/L        | 0.005     | 0.0011           | 0.0008           | 0.0011           | <b>0.0063</b>    | 0.0003           | 0.0028           | <b>0.0062</b>    | 0.0027           | 0.0015           | 0.0002           | 0.0003           | <b>0.0082</b>    | 0.001             | 0.0006            |
| Lead                   | mg/L        | 0.005     | 0.00018          | 0.00028          | 0.00049          | 0.0036           | 0.00003          | 0.00133          | 0.00121          | 0.00193          | 0.00099          | 0.00003          | 0.00012          | 0.00099          | 0.00045           | 0.00022           |
| Mercury                | mg/L        | 0.0002    | < 0.00002        | < 0.00002        | < 0.00002        | 0.00003          | 0.00005          | < 0.00002        | < 0.00002        | 0.00003          | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002         | < 0.00002         |
| Molybdenum             | mg/L        | 0.04      | 0.0003           | 0.0002           | < 0.0001         | < 0.0001         | 0.0002           | 0.0002           | 0.0002           | 0.0002           | < 0.0001         | 0.0001           | 0.0002           | 0.0001           | 0.0002            | 0.0002            |
| Nickel                 | mg/L        | 0.025     | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01           | < 0.01            | < 0.01            |
| Selenium               | mg/L        | 0.1       | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001          | < 0.001           | < 0.001           |
| Silver                 | mg/L        | 0.0001    | < 0.0001         | < 0.0001         | < 0.0001         | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.0001         | < 0.00002        | < 0.00002        | < 0.00002        | < 0.00002        | < 0.0001          | < 0.0001          |
| Strontium              | mg/L        | -         | 0.183            | 0.136            | 0.132            | 0.174            | 0.106            | 0.176            | 0.136            | 0.148            | 0.143            | 0.1              | 0.154            | 0.102            | 0.071             | 0.092             |
| Thallium               | mg/L        | 0.0003    | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005        | < 0.00005         | < 0.00005         |
| Vanadium               | mg/L        | 0.006     | 0.0003           | 0.0003           | 0.0007           | 0.0006           | < 0.0001         | 0.0004           | 0.0004           | 0.0027           | 0.0001           | < 0.0001         | 0.0002           | 0.0002           | 0.0002            | < 0.0001          |
| Zinc                   | mg/L        | 0.02      | 0.016            | 0.012            | 0.006            | <b>0.053</b>     | < 0.005          | <b>0.029</b>     | <b>0.024</b>     | <b>0.04</b>      | 0.015            | < 0.005          | <b>0.025</b>     | <b>0.021</b>     | 0.012             | 0.006             |
| Field pH               | pH unit     | -         | 8.01             | 7.23             | 8.23             | 7.38             | --               | 7.18             | 7.74             | 6.89             | 6.96             | --               | 7.23             | 7.73             | 8.13              | 7.27              |
| Field Temp             | deg C       | -         | 2.3              | 5.5              | 3.3              | 10.8             | --               | 16.1             | 1.1              | 3.4              | 10.8             | --               | 16               | -0.2             | 1.5               | 5.2               |
| Field Conductivity     | us/cm       | -         | 468              | 356              | 317              | 274.8            | --               | 296              | 377.2            | 319              | 235.2            | --               | 279              | 230.2            | 175               | 218               |
| Dissolved Oxygen       | mg/L        | -         | 4.5              | 1.23             | 4.55             | 1.5              | --               | 1.47             | 2.61             | 7.4              | 1.24             | --               | 1.83             | 5.95             | 3.36              | 6.61              |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance



Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | 30m            | 30m           | 10m          | 10m          | 10m        | 15m          | 15m          | 15m          | 15m        | 15m          | 20m          | 25m          | 25m          |
|------------------------|-------------|-----------|----------------|---------------|--------------|--------------|------------|--------------|--------------|--------------|------------|--------------|--------------|--------------|--------------|
|                        |             |           | WP 2           | WP 2          | WP3          | WP 3         | WP 3       | WP3          | WP3          | WP3          | WP3        | WP3          | WP3          | WP3          | WP3          |
|                        |             |           | 26-Apr-21      | 28-Apr-22     | 02-May-17    | 24-Apr-19    | 28-Apr-22  | 21-May-15    | 21-Jun-17    | 24-Apr-18    | 27-Apr-20  | 26-Apr-21    | 21-Jun-17    | 21-May-15    | 02-May-17    |
| Total Alkalinity       | mg/L        | -         | 134            | 123           | 161          | 183          | 188        | 165          | 155          | 117          | 180        | 297          | 153          | 141          | 111          |
| BOD                    | mg/L        | -         | 7              | < 3           | < 3          | < 3          | < 3        | 30           | < 3          | < 3          | < 3        | 5            | < 3          | 3            | < 3          |
| Calcium                | mg/L        | -         | 61.4           | 42.9          | 58.9         | 72.3         | 66.5       | 68.5         | 58.6         | 47.4         | 81.4       | 110          | 56.6         | 55.4         | 42.7         |
| Chloride               | mg/L        | -         | 7.9            | 6.7           | 8.4          | 10.5         | 10.3       | 8.7          | 5.5          | 5.6          | 14.2       | 23.9         | 6.8          | 9.1          | 6.9          |
| COD                    | mg/L        | -         | 238            | 39            | 40           | 52           | 40         | 890          | 79           | 37           | 36         | 99           | 79           | 51           | 48           |
| Colour                 | colour unit | -         | 81             | 84            | 97           | 60           | 67         | 88           | 145          | 75           | 60         | 59           | 155          | 230          | 105          |
| Specific Conductivity  | umhos/cm    | -         | 281            | 255           | 350          | 410          | 381        | 353          | 320          | 236          | 424        | 633          | 324          | 309          | 245          |
| DOC                    | mg/L        | -         | 20.4           | 18.8          | 11.8         | 5.2          | 18.3       | 23.1         | 23           | 11.5         | 14.8       | 20           | 28.6         | 24           | 16.6         |
| Fluoride               | mg/L        | -         | < 0.1          | < 0.1         | < 0.1        | < 0.1        | < 0.1      | 0.1          | 0.1          | < 0.1        | < 0.1      | < 0.1        | < 0.1        | 0.1          | < 0.1        |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005        | < 0.005       | < 0.005      | < 0.005      | < 0.005    | < 0.005      | < 0.005      | < 0.005      | < 0.005    | < 0.005      | < 0.005      | < 0.005      | < 0.005      |
| Iron                   | mg/L        | 0.3       | <b>1.8</b>     | 0.029         | <b>0.519</b> | <b>0.708</b> | 0.072      | <b>1.01</b>  | 0.132        | 0.274        | 0.07       | <b>0.69</b>  | 0.141        | <b>0.745</b> | 0.038        |
| Magnesium              | mg/L        | -         | 3.62           | 2.91          | 3.72         | 4.77         | 4.41       | 4.51         | 3.94         | 4.08         | 4.82       | 7.93         | 3.42         | 3.76         | 2.65         |
| Manganese              | mg/L        | -         | 1.27           | 0.009         | 0.017        | 0.054        | 0.004      | 0.055        | 0.012        | 0.047        | 0.015      | 0.099        | 0.011        | 0.067        | 0.008        |
| Nitrate                | mg/L        | -         | < 0.05         | < 0.05        | 0.2          | 0.08         | 0.2        | < 0.1        | < 0.05       | < 0.05       | 0.28       | 0.66         | < 0.05       | < 0.1        | < 0.1        |
| Nitrite                | mg/L        | -         | < 0.05         | < 0.05        | < 0.1        | < 0.05       | < 0.05     | < 0.1        | < 0.05       | < 0.05       | < 0.05     | < 0.05       | < 0.05       | < 0.1        | < 0.1        |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 7.89           | 7.78          | 8.06         | 7.97         | 8          | 7.78         | 7.87         | 7.76         | 7.9        | 8.14         | 7.78         | 7.72         | 7.9          |
| Phenols                | mg/L        | 0.001     | < 0.002        | < 0.001       | <b>0.005</b> | < 0.002      | < 0.001    | < 0.001      | <b>0.006</b> | < 0.001      | < 0.002    | < 0.002      | <b>0.006</b> | < 0.001      | <b>0.005</b> |
| Total Phosphorus       | mg/L        | 0.03      | <b>0.47</b>    | < 0.01        | < 0.1        | <b>0.1</b>   | 0.01       | <b>0.4</b>   | < 0.1        | <b>0.04</b>  | 0.02       | <b>0.12</b>  | < 0.1        | <b>0.1</b>   | < 0.1        |
| Potassium              | mg/L        | -         | 1.7            | 1.5           | 2.3          | 5            | 3.3        | 2.7          | 0.9          | 2.3          | 3.8        | 8.1          | 0.7          | 1.8          | 0.9          |
| Sodium                 | mg/L        | -         | 5.1            | 4.2           | 6.6          | 9.7          | 8.6        | 7.3          | 5.1          | 5.6          | 11.2       | 22.4         | 4.6          | 5.5          | 3.7          |
| Sulphate               | mg/L        | -         | 2              | 1             | 5            | 1            | 1          | < 1          | < 1          | 1            | 8          | 4            | < 1          | < 1          | 3            |
| Dissolved Solids       | mg/L        | -         | 165            | 134           | 183          | 211          | 208        | 192          | 167          | 137          | 231        | 355          | 164          | 161          | 127          |
| Tot Kjel N             | mg/L        | -         | 6.4            | 3             | 0.7          | 2.1          | 0.6        | 3.1          | 0.8          | 0.8          | 0.6        | 2.1          | 1            | 1.8          | 1            |
| Ammonia (NH3-N)        | mg/L        | -         | 0.04           | 1.99          | 0.1          | 1.12         | 0.15       | 0.07         | < 0.01       | 0.36         | 0.03       | 0.07         | 0.02         | 0.07         | < 0.01       |
| Total Suspended Solids | mg/L        | -         | 190            | < 3           | 8            | < 3          | 3          | 200          | < 3          | 3            | 7          | 110          | < 3          | 32           | < 3          |
| Turbidity              | ntu         | -         | 156            | 1.4           | 15.6         | 2            | 1.3        | 68.9         | 0.9          | 1.7          | 6.1        | 67.2         | 0.5          | 3.5          | 0.4          |
| Hardness (CaCO3)       | mg/L        | -         | 153            | 119           | 169          | 200          | 184        | 190          | 178          | 135          | 223        | 308          | 181          | 154          | 126          |
| Unionized Ammonia      | mg/L        | 0.02      | < 0.01         | <b>0.0400</b> | --           | < 0.01       | < 0.01     | 0.0004       | --           | 0.0012       | < 0.01     | < 0.01       | 0.0002       | 0.0003       | --           |
| Aluminum               | mg/L        | 0.075     | 0.04           | 0.02          | 0.05         | 0.05         | 0.02       | <b>0.15</b>  | 0.04         | 0.05         | 0.05       | 0.07         | 0.05         | 0.05         | 0.03         |
| Antimony               | mg/L        | 0.02      | 0.0005         | 0.0001        | < 0.0001     | 0.0001       | 0.0003     | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001   | 0.0003       | < 0.0001     | < 0.0001     | 0.0004       |
| Arsenic                | mg/L        | 0.005     | 0.0011         | 0.0003        | 0.0006       | 0.0007       | 0.0003     | 0.0005       | 0.0011       | 0.0005       | 0.0004     | 0.0006       | 0.0015       | 0.0005       | 0.0005       |
| Barium                 | mg/L        | -         | 0.039          | 0.011         | 0.026        | 0.027        | 0.019      | 0.033        | 0.026        | 0.026        | 0.025      | 0.039        | 0.02         | 0.027        | 0.013        |
| Beryllium              | mg/L        | 1.1       | < 0.002        | < 0.002       | < 0.002      | < 0.002      | < 0.002    | < 0.002      | < 0.002      | < 0.002      | < 0.002    | < 0.002      | < 0.002      | < 0.002      | < 0.002      |
| Boron                  | mg/L        | 0.2       | 0.011          | 0.006         | 0.026        | 0.053        | 0.026      | < 0.005      | 0.009        | 0.012        | 0.067      | 0.104        | 0.006        | < 0.005      | < 0.005      |
| Cadmium                | mg/L        | 0.0005    | 0.000196       | < 0.000015    | < 0.000014   | < 0.000015   | < 0.000015 | 0.00002      | < 0.000014   | < 0.000015   | < 0.000015 | 0.000036     | < 0.000014   | 0.00003      | < 0.000014   |
| Chromium (total)       | mg/L        | 0.001     | <b>0.002</b>   | < 0.001       | 0.001        | < 0.001      | < 0.001    | 0.0003       | < 0.001      | < 0.001      | 0.001      | 0.001        | < 0.001      | 0.0002       | < 0.001      |
| Chromium (VI)          | mg/L        | 0.001     |                | < 0.001       |              |              | < 0.001    |              |              |              |            |              |              |              |              |
| Cobalt                 | mg/L        | 0.0009    | <b>0.0015</b>  | < 0.0001      | 0.0002       | 0.0005       | 0.0002     | < 0.005      | < 0.0001     | 0.0004       | 0.0003     | 0.0006       | < 0.0001     | < 0.005      | < 0.0001     |
| Copper                 | mg/L        | 0.005     | 0.0035         | 0.0002        | 0.0009       | 0.0012       | 0.0006     | 0.0012       | 0.0002       | 0.0003       | 0.0009     | 0.0011       | < 0.0001     | 0.0009       | 0.0002       |
| Lead                   | mg/L        | 0.005     | <b>0.00835</b> | 0.00006       | 0.00039      | 0.00034      | 0.00004    | 0.00088      | 0.00004      | 0.0001       | 0.0001     | 0.00118      | 0.00004      | 0.00096      | 0.00003      |
| Mercury                | mg/L        | 0.0002    | 0.00003        | < 0.00002     | 0.00003      | < 0.00002    | < 0.00002  | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002  | < 0.00002    | < 0.00002    | < 0.00002    | 0.00003      |
| Molybdenum             | mg/L        | 0.04      | 0.0004         | < 0.0001      | 0.0003       | 0.0003       | 0.0001     | < 0.0001     | 0.0001       | 0.0001       | 0.0003     | 0.0002       | 0.0002       | < 0.0001     | 0.0002       |
| Nickel                 | mg/L        | 0.025     | < 0.01         | < 0.01        | < 0.01       | < 0.01       | < 0.01     | < 0.01       | < 0.01       | < 0.01       | < 0.01     | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Selenium               | mg/L        | 0.1       | < 0.001        | < 0.001       | < 0.001      | < 0.001      | < 0.001    | < 0.001      | < 0.001      | < 0.001      | < 0.001    | < 0.002      | < 0.001      | < 0.001      | < 0.001      |
| Silver                 | mg/L        | 0.0001    | < 0.0001       | < 0.0001      | < 0.00002    | < 0.0001     | < 0.0001   | < 0.00002    | < 0.00002    | < 0.00002    | < 0.0001   | < 0.0001     | < 0.00002    | < 0.00002    | < 0.00002    |
| Strontium              | mg/L        | -         | 0.135          | 0.091         | 0.137        | 0.172        | 0.149      | 0.164        | 0.152        | 0.127        | 0.177      | 0.278        | 0.141        | 0.133        | 0.095        |
| Thallium               | mg/L        | 0.0003    | < 0.00005      | < 0.00005     | < 0.00005    | < 0.00005    | < 0.00005  | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005  | < 0.0001     | < 0.00005    | < 0.00005    | < 0.00005    |
| Vanadium               | mg/L        | 0.006     | 0.0012         | < 0.0001      | 0.0008       | 0.0003       | 0.0001     | 0.0002       | 0.0002       | 0.0002       | 0.0002     | 0.0006       | 0.0002       | < 0.0001     | < 0.0001     |
| Zinc                   | mg/L        | 0.02      | <b>0.058</b>   | < 0.005       | 0.007        | 0.019        | < 0.005    | <b>0.021</b> | <b>0.031</b> | <b>0.028</b> | 0.007      | <b>0.024</b> | 0.007        | 0.014        | 0.005        |
| Field pH               | pH unit     | -         | 7.14           | 8.2           | --           | 7.75         | 7.98       | 7.39         | 7.44         | 7.61         | 7.56       | 7.29         | 7.47         | 7.23         | --           |
| Field Temp             | deg C       | -         | 3.3            | 4.3           | --           | 1.7          | 5.9        | 11.9         | 16.8         | 0            | 8.7        | 5.9          | 16.7         | 11.6         | --           |
| Field Conductivity     | us/cm       | -         | 250            | 232           | --           | 470          | 369        | 261          | 264          | 272.2        | 491        | 456          | 264          | 255.6        | --           |
| Dissolved Oxygen       | mg/L        | -         | 7.1            | 3.85          | --           | 6.36         | 5.66       | 1.54         | 0.7          | 72.1         | 8          | 7.9          | 1.82         | 1.06         | --           |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

| Parameters             | Units       | PWQO      | 25m        | 30m        | 30m        | 30m       | 30m        | 10m       | 20m        | 20m       | 25m       | 25m       | 25m       | 30m       | 30m       | 30m        |
|------------------------|-------------|-----------|------------|------------|------------|-----------|------------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
|                        |             |           | WP 3       | WP3        | WP3        | WP3       | WP3        | WP4       | WP4        | WP4       | WP4       | WP4       | WP4       | WP4       | WP4       | WP4        |
|                        |             |           | 24-Apr-19  | 24-Apr-18  | 27-Apr-20  | 26-Apr-21 | 28-Apr-22  | 26-Oct-17 | 02-May-17  | 24-Apr-18 | 21-May-15 | 24-Apr-18 | 28-Apr-22 | 17-Apr-15 | 29-Apr-16 | 02-May-17  |
| Total Alkalinity       | mg/L        | -         | 80         | 92         | 111        | 152       | 121        | 1130      | 311        | 151       | 352       | 346       | 409       | 306       | 307       | 227        |
| BOD                    | mg/L        | -         | < 3        | < 3        | < 3        | < 3       | < 3        | 8         | < 3        | < 3       | 123       | < 3       | 9         | < 2       | < 3       | 3          |
| Calcium                | mg/L        | -         | 32.8       | 37.3       | 53.3       | 62.1      | 42         | 245       | 101        | 45.2      | 208       | 97.2      | 138       | 119       | 107       | 74         |
| Chloride               | mg/L        | -         | 4.2        | 4.3        | 9          | 9.6       | 6.7        | 215       | 19.1       | 5         | 31        | 14.8      | 15.9      | 30.6      | 30.4      | 13         |
| COD                    | mg/L        | -         | 49         | 40         | 37         | 42        | 44         | 279       | 48         | 60        | < 5       | 88        | 314       | 76        | 66        | 55         |
| Colour                 | colour unit | -         | 89         | 104        | 70         | 66        | 76         | 65        | 61         | 80        | 135       | 70        | 53        | 56        | 56        | 76         |
| Specific Conductivity  | umhos/cm    | -         | 181        | 191        | 264        | 322       | 251        | 3040      | 683        | 303       | 765       | 673       | 775       | 663       | 675       | 500        |
| DOC                    | mg/L        | -         | 18         | 12         | 14.8       | 18.5      | 18.5       | 30.7      | 14.6       | 15.4      | 30.9      | 9.2       | 26        | 21.3      | 17.8      | 13         |
| Fluoride               | mg/L        | -         | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.1      | < 0.1     | 0.2        | < 0.1     | 0.1       | < 0.1     | < 0.1     | 0.1       | < 0.1     | < 0.1      |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005    | < 0.005    | < 0.005    | < 0.005   | < 0.005    | < 0.005   | < 0.005    | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005   | < 0.005    |
| Iron                   | mg/L        | 0.3       | 0.105      | 0.104      | 0.058      | 0.533     | 0.053      | 0.005     | 0.434      | 0.146     | 14.7      | 0.244     | 17.4      | 0.906     | 0.502     | 0.281      |
| Magnesium              | mg/L        | -         | 2.11       | 3.04       | 3.21       | 3.72      | 2.75       | 47        | 8.83       | 6.31      | 11.9      | 12.4      | 11.6      | 9.29      | 8.76      | 5.56       |
| Manganese              | mg/L        | -         | 0.008      | 0.032      | 0.012      | 0.066     | 0.011      | 0.106     | 0.066      | 0.165     | 1.74      | 0.668     | 0.516     | 0.421     | 0.317     | 0.056      |
| Nitrate                | mg/L        | -         | < 0.05     | < 0.05     | 0.09       | 0.08      | < 0.05     | < 0.05    | 1.1        | < 0.05    | < 0.1     | 0.07      | < 0.05    | 0.1       | 0.2       | 0.4        |
| Nitrite                | mg/L        | -         | < 0.05     | < 0.05     | < 0.05     | < 0.05    | < 0.05     | < 0.05    | 0.3        | < 0.05    | < 0.1     | < 0.05    | < 0.05    | < 0.1     | < 0.1     | < 0.1      |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 7.75       | 7.64       | 7.66       | 8.02      | 7.82       | 7.66      | 8.12       | 7.8       | 7.55      | 7.84      | 7.89      | 8.02      | 7.95      | 8.18       |
| Phenols                | mg/L        | 0.001     | < 0.002    | < 0.001    | < 0.002    | < 0.002   | < 0.001    | 0.01      | 0.006      | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | 0.008     | 0.006      |
| Total Phosphorus       | mg/L        | 0.03      | 0.05       | 0.03       | 0.01       | 0.04      | 0.02       | < 0.1     | < 0.1      | 0.58      | 2.5       | 0.33      | 0.76      | 0.3       | < 0.1     | < 0.1      |
| Potassium              | mg/L        | -         | 1.7        | 1.5        | 1.5        | 1.9       | 1.5        | 139       | 11.5       | 10.8      | 11.7      | 18.3      | 11.6      | 11.5      | 10        | 6.8        |
| Sodium                 | mg/L        | -         | 2.9        | 3.3        | 5.2        | 6.3       | 4.1        | 164       | 24.9       | 6         | 24.3      | 21.7      | 22.2      | 25.8      | 25.7      | 15.7       |
| Sulphate               | mg/L        | -         | < 1        | 2          | 5          | 2         | 1          | 20        | 6          | < 1       | < 1       | 2         | < 1       | < 1       | 4         | 6          |
| Dissolved Solids       | mg/L        | -         | 92         | 106        | 141        | 177       | 131        | 1592      | 367        | 165       | 515       | 376       | 467       | 384       | 372       | 261        |
| Tot Kjel N             | mg/L        | -         | 0.8        | 0.4        | 0.5        | 0.7       | 0.8        | 82.2      | 3          | 4.1       | 19.1      | 2.8       | 8.7       | 6.2       | 1.8       | 1.6        |
| Ammonia (NH3-N)        | mg/L        | -         | 0.08       | 0.02       | 0.02       | 0.03      | 0.16       | 66.6      | 2.12       | 0.67      | 0.76      | 0.47      | 2.99      | 1.46      | 0.27      | 0.45       |
| Total Suspended Solids | mg/L        | -         | < 3        | 4          | 6          | 6         | 3          | 90        | 22         | 88        | 8900      | 150       | 340       | 20        | 108       | 10         |
| Turbidity              | ntu         | -         | 0.8        | 0.8        | 0.8        | 20.2      | 0.3        | 83.1      | 10.9       | 78.8      | 2960      | 97.7      | 143       | 5         | 7.5       | 7.8        |
| Hardness (CaCO3)       | mg/L        | -         | 91         | 106        | 146        | 170       | 116        | 806       | 291        | 139       | 568       | 294       | 394       | 336       | 305       | 224        |
| Unionized Ammonia      | mg/L        | 0.02      | < 0.01     | 0.00008    | < 0.01     | < 0.01    | < 0.01     | 0.116     | --         | < 0.01    | 0.003     | < 0.01    | 0.02      | 0.010     | 0.008     | --         |
| Aluminum               | mg/L        | 0.075     | 0.03       | 0.05       | 0.03       | 0.05      | 0.02       | 0.1       | 0.04       | 0.07      | 0.19      | 0.08      | 0.04      | 3.7       | 0.1       | 0.03       |
| Antimony               | mg/L        | 0.02      | 0.0003     | < 0.0001   | < 0.0001   | 0.0003    | 0.0003     | 0.0002    | 0.0002     | < 0.0001  | 0.0005    | 0.0001    | 0.0004    | < 0.0001  | 0.0002    | 0.0004     |
| Arsenic                | mg/L        | 0.005     | 0.0005     | 0.0004     | 0.0004     | 0.0005    | 0.0003     | 0.0011    | 0.0006     | 0.0009    | 0.0013    | 0.001     | 0.002     | 0.0031    | 0.0007    | 0.0006     |
| Barium                 | mg/L        | -         | 0.011      | 0.018      | 0.016      | 0.021     | 0.012      | 0.734     | 0.049      | 0.025     | 0.05      | 0.043     | 0.08      | 0.185     | 0.045     | 0.027      |
| Beryllium              | mg/L        | 1.1       | < 0.002    | < 0.002    | < 0.002    | < 0.002   | < 0.002    | < 0.002   | < 0.002    | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002   | < 0.002    |
| Boron                  | mg/L        | 0.2       | 0.009      | < 0.005    | 0.015      | 0.015     | 0.005      | 0.596     | 0.176      | 0.122     | 0.097     | 0.185     | 0.191     | 0.145     | 0.077     | 0.095      |
| Cadmium                | mg/L        | 0.0005    | < 0.000015 | < 0.000015 | < 0.000015 | 0.000074  | < 0.000015 | 0.000032  | < 0.000014 | 0.000052  | 0.00027   | 0.00006   | 0.000095  | 0.00059   | 0.00017   | < 0.000014 |
| Chromium (total)       | mg/L        | 0.001     | < 0.001    | < 0.001    | < 0.001    | 0.001     | < 0.001    | 0.001     | < 0.001    | 0.002     | 0.0007    | 0.001     | < 0.001   | 0.003     | 0.0005    | < 0.001    |
| Chromium (VI)          | mg/L        | 0.001     |            |            |            |           | < 0.001    |           |            |           |           |           | < 0.001   |           |           |            |
| Cobalt                 | mg/L        | 0.0009    | 0.0001     | < 0.0001   | 0.0001     | 0.0002    | < 0.0001   | < 0.005   | 0.0007     | 0.0002    | < 0.005   | 0.0006    | 0.0014    | 0.006     | < 0.005   | 0.0004     |
| Copper                 | mg/L        | 0.005     | 0.0002     | 0.0002     | 0.0007     | 0.0007    | 0.0002     | 0.0016    | 0.0012     | 0.01      | 0.0068    | 0.0081    | 0.0019    | 0.0087    | 0.0038    | 0.001      |
| Lead                   | mg/L        | 0.005     | 0.0001     | 0.00012    | 0.00013    | 0.00251   | 0.00011    | 0.00131   | 0.00024    | 0.00274   | 0.00351   | 0.00235   | 0.00277   | 0.021     | 0.00089   | 0.0003     |
| Mercury                | mg/L        | 0.0002    | < 0.00002  | < 0.00002  | < 0.00002  | < 0.00002 | < 0.00002  | < 0.00002 | < 0.00002  | < 0.00002 | < 0.00002 | < 0.00002 | 0.00002   | 0.00018   | < 0.00002 | 0.00005    |
| Molybdenum             | mg/L        | 0.04      | 0.0002     | < 0.0001   | 0.0002     | 0.0002    | < 0.0001   | < 0.0001  | 0.0005     | 0.0005    | 0.0002    | 0.0004    | 0.0001    | < 0.0001  | 0.0003    | 0.0004     |
| Nickel                 | mg/L        | 0.025     | < 0.01     | < 0.01     | < 0.01     | < 0.01    | < 0.01     | < 0.01    | < 0.01     | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01    | < 0.01     |
| Selenium               | mg/L        | 0.1       | < 0.001    | < 0.001    | < 0.001    | < 0.001   | < 0.001    | 0.001     | < 0.001    | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001   | < 0.001    |
| Silver                 | mg/L        | 0.0001    | < 0.0001   | < 0.00002  | < 0.0001   | < 0.0001  | < 0.0001   | 0.00002   | < 0.00002  | < 0.00002 | 0.00012   | < 0.00002 | < 0.0001  | 0.00003   | 0.00004   | < 0.00002  |
| Strontium              | mg/L        | -         | 0.071      | 0.094      | 0.109      | 0.138     | 0.09       | 0.615     | 0.297      | 0.15      | 0.367     | 0.296     | 0.398     | 0.518     | 0.315     | 0.205      |
| Thallium               | mg/L        | 0.0003    | < 0.00005  | < 0.00005  | < 0.00005  | < 0.00005 | < 0.00005  | < 0.00005 | < 0.00005  | < 0.00005 | 0.00011   | < 0.00005 | < 0.00005 | 0.00006   | 0.00006   | < 0.00005  |
| Vanadium               | mg/L        | 0.006     | 0.0001     | 0.0002     | 0.0001     | 0.0003    | < 0.0001   | 0.0034    | 0.0004     | 0.0002    | 0.0006    | 0.0002    | 0.0009    | 0.0045    | 0.0004    | 0.0003     |
| Zinc                   | mg/L        | 0.02      | 0.013      | 0.021      | 0.008      | 0.023     | < 0.005    | 4.93      | < 0.005    | 0.028     | 0.03      | 0.03      | 0.03      | 0.412     | 0.022     | 0.007      |
| Field pH               | pH unit     | -         | 8          | 7.71       | 7.45       | 6.84      | 8          | 6.89      | --         | 7.63      | 7.21      | 7.06      | 7.61      | 7.75      | 8.4       | --         |
| Field Temp             | deg C       | -         | 1.6        | -0.3       | 9.1        | 5.6       | 6.2        | 12.4      | --         | 6.2       | 15        | 3.8       | 7.6       | 4.3       | 5.1       | --         |
| Field Conductivity     | us/cm       | -         | 164        | 199.5      | 253        | 294       | 226        | 1304      | --         | 268.6     | 509       | 783.7     | 626       | 720       | 530       | --         |
| Dissolved Oxygen       | mg/L        | -         | 4          | 6.49       | 5.33       | 0.97      | 3.11       | --        | --         | 3.93      | 5.5       | 0.39      | 3.29      | --        | 7.01      | --         |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

|                        |             |           | 30m              | 30m              | 30m              | 30m              | 30m              | 30m              | 30m              | 30m              | 30m              | 30m              | 30m              | 30m              | 30m              | 30m       | 30m              |
|------------------------|-------------|-----------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------|------------------|
| Parameters             | Units       | PWQO      | WP4<br>24-Apr-18 | WP4<br>12-Apr-19 | WP4<br>24-Apr-19 | WP4<br>22-Oct-19 | WP4<br>23-Apr-20 | WP4<br>20-Jul-20 | WP4<br>20-Oct-20 | WP4<br>20-Apr-21 | WP4<br>27-Oct-21 | WP4<br>21-Apr-22 | WP4<br>28-Apr-22 | WP4<br>20-Jul-22 | WP4<br>24-Oct-22 | WP4<br>23 | WP4<br>30-Aug-23 |
| Total Alkalinity       | mg/L        | -         | 143              | 126              | 126              | Dry              | 195              | Dry              | Dry              | 356              | Dry              | 308              | 417              | Dry              | Dry              | Dry       | Dry              |
| BOD                    | mg/L        | -         | < 3              | < 3              | < 3              |                  | 5                |                  |                  | 12               |                  | 12               | 13               |                  |                  |           |                  |
| Calcium                | mg/L        | -         | 53.2             | 51               | 48.2             |                  | 93.8             |                  |                  | 293              |                  | 96.7             | 129              |                  |                  |           |                  |
| Chloride               | mg/L        | -         | 8.7              | 8.2              | 6.7              |                  | 19.6             |                  |                  | 24.9             |                  | 16.6             | 16.5             |                  |                  |           |                  |
| COD                    | mg/L        | -         | 56               | 41               | 41               |                  | 121              |                  |                  | 285              |                  | 117              | 177              |                  |                  |           |                  |
| Colour                 | colour unit | -         | 60               | 56               | 53               |                  | 49               |                  |                  | 67               |                  | 59               | 53               |                  |                  |           |                  |
| Specific Conductivity  | umhos/cm    | -         | 295              | 289              | 282              |                  | 478              |                  |                  | 765              |                  | 656              | 787              |                  |                  |           |                  |
| DOC                    | mg/L        | -         | 10.4             | 13.2             | 15.6             |                  | 14.8             |                  |                  | 25.4             |                  | 30.2             | 24.6             |                  |                  |           |                  |
| Fluoride               | mg/L        | -         | < 0.1            | < 0.1            | < 0.1            |                  | < 0.1            |                  |                  | < 0.1            |                  | < 0.1            | < 0.1            |                  |                  |           |                  |
| Cyanide (free)         | mg/L        | 0.005     | < 0.005          | < 0.005          | < 0.005          |                  | < 0.005          |                  |                  | < 0.005          |                  | < 0.005          | < 0.005          |                  |                  |           |                  |
| Iron                   | mg/L        | 0.3       | <b>0.844</b>     | 0.188            | 0.18             | Dry              | <b>1.45</b>      | Dry              | Dry              | <b>18.7</b>      | Dry              | <b>4.16</b>      | <b>5.21</b>      | Dry              | Dry              | Dry       | Dry              |
| Magnesium              | mg/L        | -         | 4.37             | 3.32             | 3.06             |                  | 7.33             |                  |                  | 13.6             |                  | 8.44             | 10.7             |                  |                  |           |                  |
| Manganese              | mg/L        | -         | 0.126            | 0.068            | 0.011            |                  | 0.46             |                  |                  | 5.36             |                  | 2.87             | 2.05             |                  |                  |           |                  |
| Nitrate                | mg/L        | -         | 0.06             | < 0.05           | 0.1              |                  | 0.63             |                  |                  | < 0.05           |                  | 0.12             | < 0.05           |                  |                  |           |                  |
| Nitrite                | mg/L        | -         | < 0.05           | < 0.05           | < 0.05           |                  | < 0.05           |                  |                  | < 0.05           |                  | < 0.05           | < 0.05           |                  |                  |           |                  |
| pH Lab                 | pH unit     | 6.5 - 8.5 | 7.83             | 7.72             | 7.93             |                  | 7.77             |                  |                  | 7.97             |                  | 7.94             | 7.93             |                  |                  |           |                  |
| Phenols                | mg/L        | 0.001     | < 0.001          | < 0.002          | < 0.002          |                  | < 0.002          |                  |                  | < 0.002          |                  | < 0.001          | < 0.001          |                  |                  |           |                  |
| Total Phosphorus       | mg/L        | 0.03      | <b>0.2</b>       | <b>0.09</b>      | <b>0.06</b>      |                  | <b>0.2</b>       |                  |                  | <b>0.67</b>      |                  | <b>0.45</b>      | <b>0.5</b>       |                  |                  |           |                  |
| Potassium              | mg/L        | -         | 3.3              | 3.2              | 2.9              |                  | 6.2              |                  |                  | 13.3             |                  | 10.6             | 11.5             |                  |                  |           |                  |
| Sodium                 | mg/L        | -         | 8                | 6.7              | 5.5              |                  | 17.4             |                  |                  | 28.5             |                  | 17.6             | 21.5             |                  |                  |           |                  |
| Sulphate               | mg/L        | -         | < 1              | 1                | < 1              |                  | 13               |                  |                  | 12               |                  | < 1              | < 1              |                  |                  |           |                  |
| Dissolved Solids       | mg/L        | -         | 166              | 150              | 144              |                  | 276              |                  |                  | 434              |                  | 343              | 450              |                  |                  |           |                  |
| Tot Kjeh N             | mg/L        | -         | 2.6              | 1.3              | 1                |                  | 2.1              |                  |                  | 6                |                  | 5.4              | 6.7              |                  |                  |           |                  |
| Ammonia (NH3-N)        | mg/L        | -         | 0.84             | 0.4              | 0.3              |                  | 0.06             |                  |                  | 0.1              |                  | 1.32             | 2.78             |                  |                  |           |                  |
| Total Suspended Solids | mg/L        | -         | 18               | 10               | 4                |                  | 120              |                  |                  | 130              |                  | 128              | 240              |                  |                  |           |                  |
| Turbidity              | ntu         | -         | 2.4              | 18.9             | 0.7              |                  | 184              |                  |                  | 243              |                  | 63.4             | 98.8             |                  |                  |           |                  |
| Hardness (CaCO3)       | mg/L        | -         | 151              | 140              | 133              | Dry              | 231              | Dry              | Dry              | 788              | Dry              | 277              | 366              | Dry              | Dry              | Dry       | Dry              |
| Unionized Ammonia      | mg/L        | 0.02      | 0.018            | < 0.01           | < 0.01           |                  | < 0.01           |                  |                  | < 0.01           |                  | < 0.01           | <b>0.030</b>     |                  |                  |           |                  |
| Aluminum               | mg/L        | 0.075     | 0.04             | 0.04             | 0.03             |                  | 0.05             |                  |                  | 0.02             |                  | 0.02             | 0.04             |                  |                  |           |                  |
| Antimony               | mg/L        | 0.02      | 0.0003           | 0.0003           | < 0.0001         |                  | 0.0003           |                  |                  | < 0.0005         |                  | 0.0004           | 0.0004           |                  |                  |           |                  |
| Arsenic                | mg/L        | 0.005     | 0.0005           | 0.0004           | 0.0005           |                  | 0.0007           |                  |                  | <b>0.0056</b>    |                  | 0.0016           | 0.0016           |                  |                  |           |                  |
| Barium                 | mg/L        | -         | 0.029            | 0.017            | 0.016            |                  | 0.053            |                  |                  | 0.279            |                  | 0.073            | 0.079            |                  |                  |           |                  |
| Beryllium              | mg/L        | 1.1       | < 0.002          | < 0.002          | < 0.002          |                  | < 0.002          |                  |                  | < 0.002          |                  | < 0.002          | < 0.002          |                  |                  |           |                  |
| Boron                  | mg/L        | 0.2       | 0.02             | 0.028            | 0.028            |                  | 0.094            |                  |                  | <b>0.302</b>     |                  | 0.12             | 0.15             |                  |                  |           |                  |
| Cadmium                | mg/L        | 0.0005    | 0.000018         | < 0.000015       | < 0.000015       |                  | 0.000067         |                  |                  | <b>0.00136</b>   |                  | 0.000017         | 0.000035         |                  |                  |           |                  |
| Chromium (total)       | mg/L        | 0.001     | < 0.001          | < 0.001          | < 0.001          |                  | 0.001            |                  |                  | <b>0.004</b>     |                  | < 0.001          | < 0.001          |                  |                  |           |                  |
| Chromium (VI)          | mg/L        | 0.001     |                  |                  |                  |                  |                  |                  |                  |                  |                  | < 0.001          | < 0.001          |                  |                  |           |                  |
| Cobalt                 | mg/L        | 0.0009    | 0.0003           | 0.0003           | 0.0002           |                  | 0.0007           |                  |                  | <b>0.0087</b>    |                  | <b>0.0031</b>    | <b>0.0023</b>    |                  |                  |           |                  |
| Copper                 | mg/L        | 0.005     | 0.0008           | 0.0004           | 0.0009           |                  | 0.0016           |                  |                  | <b>0.011</b>     |                  | 0.0012           | 0.0009           |                  |                  |           |                  |
| Lead                   | mg/L        | 0.005     | 0.00067          | 0.00032          | 0.00014          |                  | 0.00235          |                  |                  | <b>0.022</b>     |                  | 0.00074          | 0.0011           |                  |                  |           |                  |
| Mercury                | mg/L        | 0.0002    | < 0.00002        | < 0.00002        | < 0.00002        |                  | < 0.00002        |                  |                  | < 0.00002        |                  | < 0.00002        | < 0.00002        |                  |                  |           |                  |
| Molybdenum             | mg/L        | 0.04      | 0.0001           | 0.0002           | 0.0003           |                  | 0.0004           |                  |                  | < 0.0005         |                  | 0.0003           | 0.0002           |                  |                  |           |                  |
| Nickel                 | mg/L        | 0.025     | < 0.01           | < 0.01           | < 0.01           |                  | < 0.01           |                  |                  | < 0.01           |                  | < 0.01           | < 0.01           |                  |                  |           |                  |
| Selenium               | mg/L        | 0.1       | < 0.001          | < 0.001          | < 0.001          |                  | < 0.001          |                  |                  | < 0.005          |                  | < 0.001          | < 0.001          |                  |                  |           |                  |
| Silver                 | mg/L        | 0.0001    | < 0.00002        | < 0.0001         | < 0.0001         |                  | < 0.0001         |                  |                  | < 0.0001         |                  | < 0.0001         | < 0.0001         |                  |                  |           |                  |
| Strontium              | mg/L        | -         | 0.139            | 0.112            | 0.111            |                  | 0.24             |                  |                  | 0.699            |                  | 0.293            | 0.377            |                  |                  |           |                  |
| Thallium               | mg/L        | 0.0003    | < 0.00005        | < 0.00005        | < 0.00005        |                  | < 0.00005        |                  |                  | < 0.0003         |                  | < 0.00005        | < 0.00005        |                  |                  |           |                  |
| Vanadium               | mg/L        | 0.006     | 0.0003           | 0.0001           | 0.0002           |                  | 0.0006           |                  |                  | <b>0.0079</b>    |                  | 0.0005           | 0.0005           |                  |                  |           |                  |
| Zinc                   | mg/L        | 0.02      | 0.02             | 0.012            | 0.019            |                  | <b>0.043</b>     |                  |                  | <b>0.346</b>     |                  | 0.009            | 0.014            |                  |                  |           |                  |
| Field pH               | pH unit     | -         | 8.36             | 7.91             | 7.72             |                  | 7.61             |                  |                  | 6.9              |                  | 7.7              | 7.69             |                  |                  |           |                  |
| Field Temp             | deg C       | -         | 2                | 1.4              | 1.2              |                  | 1                |                  |                  | 5.3              |                  | 4.7              | 11.1             |                  |                  |           |                  |
| Field Conductivity     | us/cm       | -         | 316              | 300              | 332              |                  | 505              |                  |                  | 750              |                  | 555              | 616              |                  |                  |           |                  |
| Dissolved Oxygen       | mg/L        | -         | 4.26             | 13.2             | 7.58             |                  | 5.7              |                  |                  |                  |                  | 5.5              | 2.87             |                  |                  |           |                  |

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

Surface Water Quality -  
General Parameters

|                        |             |           | 30m   | 35m         |
|------------------------|-------------|-----------|-------|-------------|
| Parameters             | Units       | PWQO      | WP4   | WP 4        |
|                        |             |           | ##### | 24-Apr-19   |
| Total Alkalinity       | mg/L        | -         | Dry   | 100         |
| BOD                    | mg/L        | -         |       | < 3         |
| Calcium                | mg/L        | -         |       | 38.9        |
| Chloride               | mg/L        | -         |       | 5.2         |
| COD                    | mg/L        | -         |       | 50          |
| Colour                 | colour unit | -         |       | 70          |
| Specific Conductivity  | umhos/cm    | -         |       | 226         |
| DOC                    | mg/L        | -         |       | 15.5        |
| Fluoride               | mg/L        | -         |       | < 0.1       |
| Cyanide (free)         | mg/L        | 0.005     |       | < 0.005     |
| Iron                   | mg/L        | 0.3       |       | 0.14        |
| Magnesium              | mg/L        | -         |       | 2.48        |
| Manganese              | mg/L        | -         |       | 0.011       |
| Nitrate                | mg/L        | -         |       | 0.07        |
| Nitrite                | mg/L        | -         |       | < 0.05      |
| pH Lab                 | pH unit     | 6.5 - 8.5 |       | 7.86        |
| Phenols                | mg/L        | 0.001     |       | < 0.002     |
| Total Phosphorus       | mg/L        | 0.03      |       | <b>0.07</b> |
| Potassium              | mg/L        | -         |       | 2.2         |
| Sodium                 | mg/L        | -         |       | 4           |
| Sulphate               | mg/L        | -         |       | 1           |
| Dissolved Solids       | mg/L        | -         |       | 116         |
| Tot Kjel N             | mg/L        | -         |       | 0.9         |
| Ammonia (NH3-N)        | mg/L        | -         |       | 0.12        |
| Total Suspended Solids | mg/L        | -         |       | 7           |
| Turbidity              | ntu         | -         |       | 1.1         |
| Hardness (CaCO3)       | mg/L        | -         |       | 107         |
| Unionized Ammonia      | mg/L        | 0.02      |       | < 0.01      |
| Aluminum               | mg/L        | 0.075     |       | 0.03        |
| Antimony               | mg/L        | 0.02      |       | < 0.0001    |
| Arsenic                | mg/L        | 0.005     |       | 0.0005      |
| Barium                 | mg/L        | -         |       | 0.013       |
| Beryllium              | mg/L        | 1.1       |       | < 0.002     |
| Boron                  | mg/L        | 0.2       |       | 0.018       |
| Cadmium                | mg/L        | 0.0005    |       | 0.000019    |
| Chromium (total)       | mg/L        | 0.001     |       | < 0.001     |
| Chromium (VI)          | mg/L        | 0.001     |       |             |
| Cobalt                 | mg/L        | 0.0009    |       | 0.0002      |
| Copper                 | mg/L        | 0.005     |       | 0.001       |
| Lead                   | mg/L        | 0.005     |       | 0.00024     |
| Mercury                | mg/L        | 0.0002    |       | < 0.00002   |
| Molybdenum             | mg/L        | 0.04      |       | 0.0002      |
| Nickel                 | mg/L        | 0.025     |       | < 0.01      |
| Selenium               | mg/L        | 0.1       |       | < 0.001     |
| Silver                 | mg/L        | 0.0001    |       | < 0.0001    |
| Strontium              | mg/L        | -         |       | 0.089       |
| Thallium               | mg/L        | 0.0003    |       | < 0.00005   |
| Vanadium               | mg/L        | 0.006     |       | 0.0002      |
| Zinc                   | mg/L        | 0.02      |       | 0.018       |
| Field pH               | pH unit     | -         |       | 7.88        |
| Field Temp             | deg C       | -         |       | 1.4         |
| Field Conductivity     | us/cm       | -         |       | 210         |
| Dissolved Oxygen       | mg/L        | -         |       | 7.6         |

PWQO - Provincial Water Quality Objectives  
Bold and highlighted indicates exceedance

Ground Water Chemistry Summary  
- VOC

| Parameters                | Units | ODWQS | MW7      | MW7         | MW7         | MW7         | MW7         | MW7         | MW7         | MW7         | MW7         | MW12        | MW12      |
|---------------------------|-------|-------|----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------|
|                           |       |       | 1-Oct-13 | 17-Apr-17   | 25-Apr-18   | 8-May-18    | 11-Apr-19   | 23-Apr-20   | 19-Apr-21   | 21-Apr-22   | 19-Apr-23   | 23-May-12   | 23-May-13 |
| Methyl Chloride           | µg/L  |       | --       | < 0.3       | < 0.3       | --          | < 2         | < 2         | < 5         | < 5         | < 5         | --          | --        |
| Vinyl Chloride            | µg/L  | 2     | < 0.5    | < 0.2       | < 0.2       | < 0.5       | < 0.2       | < 0.2       | < 0.2       | < 0.2       | < 0.2       | < 0.20      | < 0.5     |
| Bromomethane              | µg/L  |       | < 0.5    | < 0.3       | < 0.3       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.50      | < 0.5     |
| Chloroethane              | µg/L  |       | --       | < 0.1       | <b>22.8</b> | --          | <b>7</b>    | <b>19</b>   | <b>12</b>   |             |             | --          | --        |
| Trichloro-fluoromethane   | µg/L  |       | < 5      | < 0.1       | < 0.1       | < 5         | < 5         | < 5         | < 5         | < 5         | < 5         | < 0.20      | < 5       |
| 1,1-Dichloroethene        | µg/L  | 14    | < 0.5    | < 0.1       | < 0.1       | < 0.5       | < 0.5       | < 0.5       | < 0.5       |             | < 0.5       | < 0.10      | < 0.5     |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2      |             | < 1         | < 2         | < 2         | < 2         | < 2         | < 2         | < 2         | < 0.20      | < 2       |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5    | < 0.1       | < 0.1       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.10      | < 0.5     |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5    | < 0.1       | < 0.1       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.10      | < 0.5     |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.5    | < 0.1       | < 0.1       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.10      | < 0.5     |
| Chloroform                | µg/L  |       | < 1      | < 0.3       | < 0.3       | < 1         | < 1         | < 1         | < 1         | < 1         | < 1         | < 0.10      | < 1       |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5    | < 0.1       | < 0.1       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.10      | < 0.5     |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2    | < 0.2       | < 0.2       | < 0.2       | < 0.2       | < 0.2       | < 0.2       | < 0.2       | < 0.2       | < 0.10      | < 0.2     |
| Benzene                   | µg/L  | 5     | < 0.5    | <b>3.6</b>  | <b>4.7</b>  | <b>4.5</b>  | <b>3</b>    | <b>5.4</b>  | <b>4</b>    | <b>3.6</b>  | <b>3.8</b>  | < 0.10      | < 0.5     |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5    | < 0.1       | < 0.1       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.20      | < 0.5     |
| 1,1-Dichloroethylene      | µg/L  | 5     | < 0.5    |             | < 0.1       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.10      | < 0.5     |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5    | < 0.1       | < 0.1       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.10      | < 0.5     |
| Bromodichloromethane      | µg/L  |       | < 2      | < 0.1       | < 0.1       | < 2         | < 2         | < 2         | < 2         | < 2         | < 2         | < 0.10      | < 2       |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5    | < 0.1       | < 0.1       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.20      | < 0.5     |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5    | < 0.1       | < 0.1       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.20      | < 0.5     |
| Toluene                   | µg/L  | 24    | < 0.5    | < 0.5       | <b>1.4</b>  | <b>0.7</b>  | < 0.5       | <b>0.5</b>  | <b>0.5</b>  | < 0.5       | < 0.5       | < 0.20      | < 0.5     |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5    | < 0.1       | < 0.1       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.20      | < 0.5     |
| Tetrachloroethene         | µg/L  | 80    | < 0.5    |             | < 0.2       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | <b>0.25</b> | < 0.5     |
| Dibromochloromethane      | µg/L  |       | < 2      | < 0.1       | < 0.1       | < 2         | < 2         | < 2         | < 2         | < 2         | < 2         | < 0.20      | < 2       |
| Chlorobenzene             | µg/L  |       | < 0.5    | <b>12.3</b> | <b>17.8</b> | < 0.5       | <b>11.9</b> | <b>18</b>   | <b>16.4</b> | <b>19.8</b> | <b>18</b>   | < 0.10      | < 0.5     |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5    | < 0.1       | < 0.1       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.20      | < 0.5     |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5    | <b>3.7</b>  | <b>3</b>    | <b>2.7</b>  | <b>1</b>    | <b>1</b>    | <b>0.5</b>  | < 0.5       | < 0.5       | < 0.10      | < 0.5     |
| Bromoform                 | µg/L  |       | < 5      | < 0.1       | < 0.1       | < 5         | < 5         | < 5         | < 5         | < 5         | < 5         | < 0.20      | < 5       |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5    | < 0.4       | < 0.4       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.20      | < 0.5     |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5    | < 0.1       | < 0.1       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.20      | < 0.5     |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5    | < 0.2       | < 0.2       | < 0.5       | <b>1.4</b>  | <b>1.6</b>  | <b>1.6</b>  | <b>2</b>    | <b>1.7</b>  | < 0.20      | < 0.5     |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5    | < 0.1       | <b>1.2</b>  | < 0.5       | <b>0.7</b>  | <b>0.7</b>  | <b>0.8</b>  | <b>0.8</b>  | <b>0.7</b>  | < 0.20      | < 0.5     |
| m/p-Xylene                | µg/L  |       | < 1      | <b>12.8</b> | <b>31</b>   | <b>36.8</b> | <b>19.5</b> | <b>24.6</b> | <b>25</b>   | <b>27.8</b> | <b>23.1</b> | < 0.10      | < 1       |
| o-Xylene                  | µg/L  |       | < 0.5    | <b>3.7</b>  | <b>4.5</b>  | <b>5.6</b>  | <b>3</b>    | <b>4.4</b>  | <b>3.7</b>  | <b>2.9</b>  | <b>2.7</b>  | < 0.10      | < 0.5     |
| Total Xylene              | µg/L  | 0.3   | < 1.1    | <b>16.5</b> | <b>35.5</b> | <b>42.3</b> | <b>22.5</b> | <b>28.9</b> | <b>28.7</b> | <b>30.7</b> | <b>25.8</b> | < 0.10      | < 1.1     |
| Styrene                   | µg/L  |       | < 0.5    | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.20      | < 0.5     |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5    | < 0.2       | < 0.2       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | < 0.5       | --          | < 0.5     |
| Acetone                   | µg/L  |       | < 30     | <b>21</b>   | <b>12</b>   | <b>40</b>   | < 30        | <b>60</b>   | <b>40</b>   | < 30        | < 30        | < 10        | < 30      |
| 1,2-Dibromoethane         | µg/L  |       | < 20     | < 0.1       | < 0.1       | < 0.2       | < 0.2       | < 0.2       | < 0.2       | < 0.2       | < 0.2       | < 5.0       | < 20      |
| Methyl ethyl ketone       | µg/L  |       | < 20     | <b>3</b>    | <b>4</b>    | < 20        | < 20        | < 20        | < 20        | < 20        | < 20        | < 5.0       | < 20      |
| Methyl Isobutyl Ketone    | µg/L  |       | --       | < 1         | < 1         | < 20        | < 20        | < 20        | < 20        | < 20        | < 20        | --          | --        |
| Dichloromethane           | µg/L  | 50    | < 0.2    |             | < 0.3       | < 5         | < 5         | < 5         | < 2         |             |             | < 0.20      | < 0.2     |
| Trichloroethylene         | µg/L  | 5     |          |             |             |             |             |             |             | < 0.5       | < 0.5       |             |           |

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| Parameters                | Units | ODWQS | MW12      | MW12      | MW12      | MW12      | MW12      | MW12      | MW12      | MW12      | MW12      | MW12      | MW12      | MW12      |
|---------------------------|-------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                           |       |       | 17-Apr-17 | 23-Oct-17 | 25-Apr-18 | 15-Oct-18 | 11-Apr-19 | 21-Oct-19 | 22-Apr-20 | 19-Oct-20 | 19-Apr-21 | 27-Oct-21 | 20-Apr-22 | 20-Apr-22 |
| Methyl Chloride           | µg/L  |       | < 0.3     | < 0.3     | < 0.3     | < 0.06    | < 2       | < 2       | < 2       | < 2       | < 5       | < 5       | < 5       | < 5       |
| Vinyl Chloride            | µg/L  | 2     | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Bromomethane              | µg/L  |       | < 0.3     | < 0.3     | < 0.3     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Chloroethane              | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.08    | < 3       | < 3       | < 3       | < 3       | < 3       | < 3       |           |           |
| Trichloro-fluomethane     | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       |
| 1,1-Dichloroethene        | µg/L  | 14    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |           |           |
| Methyl tert-Butyl Ether   | µg/L  |       |           |           | < 1       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Chloroform                | µg/L  |       | < 0.3     | < 0.3     | < 0.3     | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Benzene                   | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1-Dichloroethylene      | µg/L  | 5     |           |           | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloropropane       | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Bromodichloromethane      | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| T1,3-Dichloropropene      | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Toluene                   | µg/L  | 24    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Tetrachloroethene         | µg/L  | 80    |           |           | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Dibromochloromethane      | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Chlorobenzene             | µg/L  |       | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Bromoform                 | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.4     | < 0.4     | < 0.4     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| m/p-Xylene                | µg/L  |       | < 0.4     | < 0.4     | < 0.4     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     |
| o-Xylene                  | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Total Xylene              | µg/L  | 0.3   | < 0.4     | < 0.4     | < 0.4     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     |
| Styrene                   | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Acetone                   | µg/L  |       | < 2       | < 2       | < 2       | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      |
| 1,2-Dibromoethane         | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Methyl ethyl ketone       | µg/L  |       | < 1       | < 1       | < 1       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      |
| Methyl Isobutyl Ketone    | µg/L  |       | < 1       | < 1       | < 1       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      |
| Dichloromethane           | µg/L  | 50    | --        | --        | < 0.3     | < 0.3     | < 5       | < 5       | < 5       | < 5       | < 2       | < 2       |           |           |
| Trichloroethylene         | µg/L  | 5     |           |           |           |           |           |           |           |           |           |           | < 0.5     | < 0.5     |

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Ground Water Chemistry Summary  
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| DUP                       |       |       |                   |                   |                   |                   |                   |                   |                   |                  |                  |                   |                   |
|---------------------------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|------------------|-------------------|-------------------|
| Parameters                | Units | ODWQS | MW12<br>26-Oct-22 | MW12<br>19-Apr-23 | MW12<br>19-Apr-23 | MW12<br>12-Oct-23 | MW14<br>23-May-12 | MW14<br>23-May-13 | MW14<br>15-Apr-15 | MW14<br>7-Oct-15 | MW14<br>3-Oct-16 | MW14<br>17-Apr-17 | MW14<br>23-Oct-17 |
| Methyl Chloride           | µg/L  |       | < 5               | < 5               | < 5               | < 5               | --                | --                | < 0.3             | < 0.3            | < 0.3            | < 0.3             | < 0.3             |
| Vinyl Chloride            | µg/L  | 2     | < 0.2             | < 0.2             | < 0.2             | < 0.2             | < 0.20            | < 0.5             |                   |                  | < 0.2            | < 0.2             | < 0.2             |
| Bromomethane              | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.50            | < 0.5             | < 0.3             | < 0.3            | < 0.3            | < 0.3             | < 0.3             |
| Chloroethane              | µg/L  |       |                   |                   |                   |                   | --                | --                | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| Trichloro-fluoromethane   | µg/L  |       | < 5               | < 5               | < 5               | < 5               | < 0.20            | < 5               | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| 1,1-Dichloroethene        | µg/L  | 14    |                   | < 0.5             | < 0.5             |                   | < 0.10            | < 0.5             | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2               | < 2               | < 2               | < 2               | < 0.20            | < 2               | < 1               | < 1              | < 1              |                   |                   |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.10            | < 0.5             | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.10            | < 0.5             | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.10            | < 0.5             | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| Chloroform                | µg/L  |       | < 1               | < 1               | < 1               | < 1               | < 0.10            | < 1               | < 0.3             | < 0.3            | < 0.3            | < 0.3             | < 0.3             |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.10            | < 0.5             | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2             | < 0.2             | < 0.2             | < 0.2             | < 0.10            | < 0.2             | < 0.2             | < 0.2            | < 0.2            | < 0.2             | < 0.2             |
| Benzene                   | µg/L  | 5     | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.10            | < 0.5             | < 0.5             | < 0.5            | < 0.5            | < 0.5             | < 0.5             |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.20            | < 0.5             | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| 1,1-Dichloroethylene      | µg/L  | 5     | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.10            | < 0.5             | < 0.1             | < 0.1            | --               |                   |                   |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.10            | < 0.5             | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| Bromodichloromethane      | µg/L  |       | < 2               | < 2               | < 2               | < 2               | < 0.10            | < 2               | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.20            | < 0.5             | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.20            | < 0.5             | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| Toluene                   | µg/L  | 24    | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.20            | < 0.5             | < 0.5             | < 0.5            | < 0.5            | < 0.5             | < 0.5             |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.20            | < 0.5             | < 0.4             | < 0.4            | < 0.1            | < 0.1             | < 0.1             |
| Tetrachloroethene         | µg/L  | 80    | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.10            | < 0.5             | < 0.2             | < 0.2            | --               | --                | --                |
| Dibromochloromethane      | µg/L  |       | < 2               | < 2               | < 2               | < 2               | < 0.20            | < 2               | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| Chlorobenzene             | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.10            | < 0.5             | < 0.2             | < 0.2            | < 0.2            | < 0.2             | < 0.2             |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.20            | < 0.5             | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.10            | < 0.5             | < 0.5             | < 0.5            | < 0.5            | < 0.5             | < 0.5             |
| Bromoform                 | µg/L  |       | < 5               | < 5               | < 5               | < 5               | < 0.20            | < 5               | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.20            | < 0.5             | < 0.1             | < 0.1            | < 0.4            | < 0.4             | < 0.4             |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.20            | < 0.5             | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.20            | < 0.5             | < 0.2             | < 0.2            | < 0.2            | < 0.2             | < 0.2             |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.20            | < 0.5             | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| m/p-Xylene                | µg/L  |       | < 1.0             | < 1.0             | < 1.0             | < 1.0             | 0.12              | < 1               | < 0.4             | < 0.4            | < 0.4            | < 0.4             | < 0.4             |
| o-Xylene                  | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.10            | < 0.5             | < 0.1             | < 0.1            | < 0.1            | < 0.1             | < 0.1             |
| Total Xylene              | µg/L  | 0.3   | < 1.1             | < 1.1             | < 1.1             | < 1.1             | 0.12              | < 1.1             | < 0.4             | < 0.4            | < 0.4            | < 0.4             | < 0.4             |
| Styrene                   | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.20            | < 0.5             | < 0.5             | < 0.5            | < 0.5            | < 0.5             | < 0.5             |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5             | < 0.5             | < 0.5             | < 0.5             | --                | < 0.5             | < 0.2             | < 0.2            | < 0.2            | < 0.2             | < 0.2             |
| Acetone                   | µg/L  |       | < 30              | < 30              | < 30              | < 30              | < 10              | < 30              | < 2               | < 2              | < 2              | < 2               | < 2               |
| 1,2-Dibromoethane         | µg/L  |       | < 0.2             | < 0.2             | < 0.2             | < 0.2             | < 5.0             | < 20              | --                | --               | < 0.1            | < 0.1             | < 0.1             |
| Methyl ethyl ketone       | µg/L  |       | < 20              | < 20              | < 20              | < 20              | < 5.0             | < 20              | --                | --               | < 1              | < 1               | < 1               |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20              | < 20              | < 20              | < 20              | --                | --                | --                | --               | < 1              | < 1               | < 1               |
| Dichloromethane           | µg/L  | 50    |                   |                   |                   |                   | < 0.20            | < 0.2             | --                | --               | --               | --                | --                |
| Trichloroethylene         | µg/L  | 5     | < 0.5             | < 0.5             | < 0.5             | < 0.5             |                   |                   |                   |                  |                  |                   |                   |

ODWQS - Ontario Drinking Water Quality Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection

Ground Water Chemistry Summary  
- VOC

| Parameters                  | Units | ODWQS | MW14      | MW14      | MW14      | MW14      | MW14      | MW14      | MW14      | MW14      | MW14      | MW14      | MW14      | MW14      |
|-----------------------------|-------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                             |       |       | 25-Apr-18 | 15-Oct-18 | 11-Apr-19 | 21-Oct-19 | 22-Apr-20 | 19-Oct-20 | 19-Apr-21 | 27-Oct-21 | 20-Apr-22 | 26-Oct-22 | 19-Apr-23 | 12-Oct-23 |
| Methyl Chloride             | µg/L  |       | < 0.3     | < 0.06    | < 2       | < 2       | < 2       | < 2       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       |
| Vinyl Chloride              | µg/L  | 2     | < 0.2     | < 0.5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Bromomethane                | µg/L  |       | < 0.3     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Chloroethane                | µg/L  |       | < 0.1     | < 0.08    | < 3       | < 3       | < 3       | < 3       | < 3       | < 3       |           |           |           |           |
| Trichloro-fluoromethane     | µg/L  |       | < 0.1     | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       |
| 1,1-Dichloroethene          | µg/L  | 14    | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |           |           | < 0.5     |           |
| Methyl tert-Butyl Ether     | µg/L  |       | < 1       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Chloroform                  | µg/L  |       | < 0.3     | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Benzene                     | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1-Dichloroethylene        | µg/L  | 5     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloropropane         | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Bromodichloromethane        | µg/L  |       | < 0.1     | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| T1,3-Dichloropropene        | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Toluene                     | µg/L  | 24    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Tetrachloroethene           | µg/L  | 80    | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Dibromochloromethane        | µg/L  |       | < 0.1     | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Chlorobenzene               | µg/L  |       | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Bromoform                   | µg/L  |       | < 0.1     | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.4     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| m/p-Xylene                  | µg/L  |       | < 0.4     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     |
| o-Xylene                    | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Total Xylene                | µg/L  | 0.3   | < 0.4     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     |
| Styrene                     | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Acetone                     | µg/L  |       | < 2       | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      |
| 1,2-Dibromoethane           | µg/L  |       | < 0.1     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Methyl ethyl ketone         | µg/L  |       | < 1       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      |
| Methyl Isobutyl Ketone      | µg/L  |       | < 1       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      |
| Dichloromethane             | µg/L  | 50    | < 0.3     | < 0.3     | < 5       | < 5       | < 5       | < 5       | < 2       | < 2       |           |           |           |           |
| Trichloroethylene           | µg/L  | 5     |           |           |           |           |           |           |           |           | < 0.5     | < 0.5     | < 0.5     | < 0.5     |

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Ground Water Chemistry Summary  
- VOC

| Parameters                  | Units | ODWQS | MW15      | MW15      | MW15      | MW15      | MW15     | MW15     | MW15      | MW15      | MW15      | MW15      | MW15      |
|-----------------------------|-------|-------|-----------|-----------|-----------|-----------|----------|----------|-----------|-----------|-----------|-----------|-----------|
|                             |       |       | 23-May-12 | 23-May-13 | 23-Apr-14 | 15-Apr-15 | 7-Oct-15 | 3-Oct-16 | 17-Apr-17 | 23-Oct-17 | 25-Apr-18 | 15-Oct-18 | 11-Apr-19 |
| Methyl Chloride             | µg/L  |       | --        | --        | --        | < 0.3     | < 0.3    | < 0.3    | < 0.3     | < 0.3     | < 0.3     | < 0.06    | < 2       |
| Vinyl Chloride              | µg/L  | 2     | < 0.20    | < 0.5     | <0.5      |           |          | < 0.2    | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.2     |
| Bromomethane                | µg/L  |       | < 0.50    | < 0.5     | <0.5      | < 0.3     | < 0.3    | < 0.3    | < 0.3     | < 0.3     | < 0.3     | < 0.5     | < 0.5     |
| Chloroethane                | µg/L  |       | --        | --        | --        | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.08    | < 3       |
| Trichloro-fluoromethane     | µg/L  |       | < 0.20    | < 5       | <5        | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 5       | < 5       |
| 1,1-Dichloroethene          | µg/L  | 14    | < 0.10    | < 0.5     | --        | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| Methyl tert-Butyl Ether     | µg/L  |       | < 0.20    | < 2       | <2        | < 1       | < 1      | < 1      |           |           | < 1       | < 2       | < 2       |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.10    | < 0.5     | <0.5      | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.10    | < 0.5     | <0.5      | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.10    | < 0.5     | <0.5      | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| Chloroform                  | µg/L  |       | < 0.10    | < 1       | <1        | < 0.3     | < 0.3    | < 0.3    | < 0.3     | < 0.3     | < 0.3     | < 1       | < 1       |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.10    | < 0.5     | <0.5      | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.10    | < 0.2     | <0.2      | < 0.2     | < 0.2    | < 0.2    | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Benzene                     | µg/L  | 5     | < 0.10    | < 0.5     | <0.5      | < 0.5     | < 0.5    | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.20    | < 0.5     | <0.5      | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| 1,1-Dichloroethylene        | µg/L  | 5     | < 0.10    | < 0.5     | <0.5      | < 0.1     | < 0.1    | --       |           |           | < 0.1     | < 0.5     | < 0.5     |
| 1,2-Dichloropropane         | µg/L  |       | < 0.10    | < 0.5     | <0.5      | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| Bromodichloromethane        | µg/L  |       | < 0.10    | < 2       | <2        | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 2       | < 2       |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.20    | < 0.5     | <0.5      | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| T1,3-Dichloropropene        | µg/L  |       | < 0.20    | < 0.5     | <0.5      | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| Toluene                     | µg/L  | 24    | < 0.20    | < 0.5     | <0.5      | < 0.5     | < 0.5    | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.20    | < 0.5     | <0.5      | < 0.4     | < 0.4    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| Tetrachloroethene           | µg/L  | 80    | < 0.10    | < 0.5     | <0.5      | < 0.2     | < 0.2    | --       |           |           | < 0.2     | < 0.5     | < 0.5     |
| Dibromochloromethane        | µg/L  |       | < 0.20    | < 2       | <2        | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 2       | < 2       |
| Chlorobenzene               | µg/L  |       | < 0.10    | < 0.5     | <0.5      | < 0.2     | < 0.2    | < 0.2    | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.5     |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.20    | < 0.5     | <0.5      | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| Ethylbenzene                | µg/L  | 2.4   | < 0.10    | < 0.5     | <0.5      | < 0.5     | < 0.5    | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Bromoform                   | µg/L  |       | < 0.20    | < 5       | <5        | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 5       | < 5       |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.20    | < 0.5     | <0.5      | < 0.1     | < 0.1    | < 0.4    | < 0.4     | < 0.4     | < 0.4     | < 0.5     | < 0.5     |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.20    | < 0.5     | <0.5      | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.20    | < 0.5     | <0.5      | < 0.2     | < 0.2    | < 0.2    | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.5     |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.20    | < 0.5     | <0.5      | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| m/p-Xylene                  | µg/L  |       | < 0.10    | < 1       | <1.0      | < 0.4     | < 0.4    | < 0.4    | < 0.4     | < 0.4     | < 0.4     | < 1.0     | < 1.0     |
| o-Xylene                    | µg/L  |       | < 0.10    | < 0.5     | <0.5      | < 0.1     | < 0.1    | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     |
| Total Xylene                | µg/L  | 0.3   | < 0.10    | < 1.1     | <1.1      | < 0.4     | < 0.4    | < 0.4    | < 0.4     | < 0.4     | < 0.4     | < 1.1     | < 1.1     |
| Styrene                     | µg/L  |       | < 0.20    | < 0.5     | <0.5      | < 0.5     | < 0.5    | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2,4 Trichlorobenzene      | µg/L  |       | --        | < 0.5     | <0.5      | < 0.2     | < 0.2    | < 0.2    | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.5     |
| Acetone                     | µg/L  |       | < 10      | < 30      | <30       | < 2       | < 2      | < 2      | < 2       | < 2       | < 2       | < 30      | < 30      |
| 1,2-Dibromoethane           | µg/L  |       | < 5.0     | < 20      | <0.2      | --        | --       | < 0.1    | < 0.1     | < 0.1     | < 0.1     | < 0.2     | < 0.2     |
| Methyl ethyl ketone         | µg/L  |       | < 5.0     | < 20      | < 20      | --        | --       | < 1      | < 1       | < 1       | < 1       | < 20      | < 20      |
| Methyl Isobutyl Ketone      | µg/L  |       | --        | --        | < 20      | --        | --       | < 1      | < 1       | < 1       | < 1       | < 20      | < 20      |
| Dichloromethane             | µg/L  | 50    | < 0.20    | < 0.2     | <0.5      | --        | --       | --       | --        | --        | < 0.3     | < 0.3     | < 5       |
| Trichloroethylene           | µg/L  | 5     |           |           |           |           |          |          |           |           |           |           |           |

ODWQS - Ontario Drinking Water Quality Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection

Ground Water Chemistry Summary  
- VOC

| Parameters                | Units | ODWQS | MW15      | MW15      | MW15      | MW15      | MW15      | MW15      | MW15      | MW15      | MW15      | MW15A       | MW15A     |
|---------------------------|-------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|-----------|
|                           |       |       | 21-Oct-19 | 22-Apr-20 | 19-Oct-20 | 19-Apr-21 | 27-Oct-21 | 20-Apr-22 | 26-Oct-22 | 19-Apr-23 | 12-Oct-23 | 23-May-12   | 23-May-13 |
| Methyl Chloride           | µg/L  |       | < 2       | < 2       | < 2       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | --          | --        |
| Vinyl Chloride            | µg/L  | 2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.50      | < 0.5     |
| Bromomethane              | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 1.3       | < 0.5     |
| Chloroethane              | µg/L  |       | < 3       | < 3       | < 3       | < 3       | < 3       |           |           |           |           | --          | --        |
| Trichloro-fluoromethane   | µg/L  |       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 0.50      | < 5       |
| 1,1-Dichloroethene        | µg/L  | 14    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |           |           | < 0.5     |           | < 0.25      | < 0.5     |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 0.50      | < 2       |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.25      | < 0.5     |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.25      | < 0.5     |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | <b>0.96</b> | < 0.5     |
| Chloroform                | µg/L  |       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 0.25      | < 1       |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.25      | < 0.5     |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.25      | < 0.2     |
| Benzene                   | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.25      | < 0.5     |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.50      | < 0.5     |
| 1,1-Dichloroethylene      | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.25      | < 0.5     |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.25      | < 0.5     |
| Bromodichloromethane      | µg/L  |       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 0.25      | < 2       |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.50      | < 0.5     |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.50      | < 0.5     |
| Toluene                   | µg/L  | 24    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.50      | < 0.5     |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.50      | < 0.5     |
| Tetrachloroethene         | µg/L  | 80    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.25      | < 0.5     |
| Dibromochloromethane      | µg/L  |       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 0.50      | < 2       |
| Chlorobenzene             | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.25      | < 0.5     |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.50      | < 0.5     |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.25      | < 0.5     |
| Bromoform                 | µg/L  |       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 0.50      | < 5       |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.50      | < 0.5     |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.50      | < 0.5     |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.50      | < 0.5     |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.50      | < 0.5     |
| m/p-Xylene                | µg/L  |       | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 0.25      | < 1       |
| o-Xylene                  | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.25      | < 0.5     |
| Total Xylene              | µg/L  | 0.3   | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 0.25      | < 1.1     |
| Styrene                   | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.50      | < 0.5     |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | --          | < 0.5     |
| Acetone                   | µg/L  |       | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 25        | < 30      |
| 1,2-Dibromoethane         | µg/L  |       | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 13        | < 20      |
| Methyl ethyl ketone       | µg/L  |       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 13        | < 20      |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | --          | --        |
| Dichloromethane           | µg/L  | 50    | < 5       | < 5       | < 5       | < 2       | < 2       |           |           |           |           | < 0.50      | < 0.2     |
| Trichloroethylene         | µg/L  | 5     |           |           |           |           |           | < 0.5     | < 0.5     | < 0.5     | < 0.5     |             |           |

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Ground Water Chemistry Summary  
- VOC

| Parameters                | Units | ODWQS | MW15A      | MW15A     | MW15A    | MW15A      | MW15A      | MW15A      | MW15A     | MW15A     | MW15A     | MW15A      | MW15A      | MW15A      |
|---------------------------|-------|-------|------------|-----------|----------|------------|------------|------------|-----------|-----------|-----------|------------|------------|------------|
|                           |       |       | 23-Apr-14  | 15-Apr-15 | 7-Oct-15 | 3-Oct-16   | 17-Apr-17  | 23-Oct-17  | 25-Apr-18 | 15-Oct-18 | 11-Apr-19 | 21-Oct-19  | 22-Apr-20  | 19-Oct-20  |
| Methyl Chloride           | µg/L  |       | --         | < 0.3     | < 0.3    | < 0.3      | < 0.3      | < 0.3      | < 0.3     | < 0.06    | < 2       | < 2        | < 2        | < 2        |
| Vinyl Chloride            | µg/L  | 2     | <0.5       | --        | --       | < 0.2      | <b>0.4</b> | <b>0.2</b> | < 0.2     | < 0.5     | < 0.2     | < 0.2      | < 0.2      | < 0.2      |
| Bromomethane              | µg/L  |       | <0.5       | < 0.3     | < 0.3    | < 0.3      | < 0.3      | < 0.3      | < 0.3     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| Chloroethane              | µg/L  |       | --         | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.08    | < 3       | < 3        | < 3        | < 3        |
| Trichloro-fluoromethane   | µg/L  |       | <5         | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 5       | < 5       | < 5        | < 5        | < 5        |
| 1,1-Dichloroethene        | µg/L  | 14    | --         | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| Methyl tert-Butyl Ether   | µg/L  |       | <2         | < 1       | < 1      | < 1        |            |            | < 1       | < 2       | < 2       | < 2        | < 2        | < 2        |
| Trans 1,2-Dichloroethene  | µg/L  |       | <0.5       | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| 1,1-Dichloro-ethane       | µg/L  |       | <0.5       | < 0.1     | < 0.1    | <b>0.5</b> | < 0.1      | < 0.1      | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| Cis 1,2-Dichloroethene    | µg/L  |       | <b>0.7</b> | 0.8       | 0.6      | <b>0.5</b> | <b>0.4</b> | <b>0.6</b> | < 0.1     | < 0.5     | < 0.5     | <b>0.6</b> | <b>0.7</b> | <b>0.6</b> |
| Chloroform                | µg/L  |       | <1         | < 0.3     | < 0.3    | < 0.3      | < 0.3      | < 0.3      | < 0.3     | < 1       | < 1       | < 1        | < 1        | < 1        |
| 1,1,1-Trichloroethane     | µg/L  |       | <0.5       | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| Carbon Tetrachloride      | µg/L  | 5     | <0.2       | < 0.2     | < 0.2    | < 0.2      | < 0.2      | < 0.2      | < 0.2     | < 0.2     | < 0.2     | < 0.2      | < 0.2      | < 0.2      |
| Benzene                   | µg/L  | 5     | <0.5       | < 0.5     | < 0.5    | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| 1,2-Dichloroethane        | µg/L  | 5     | <0.5       | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| 1,1-Dichloroethylene      | µg/L  | 5     | <0.5       | < 0.1     | < 0.1    | --         |            |            | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| 1,2-Dichloropropane       | µg/L  |       | <0.5       | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| Bromodichloromethane      | µg/L  |       | <2         | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 2       | < 2       | < 2        | < 2        | < 2        |
| Cis 1,3-Dichloropropene   | µg/L  |       | <0.5       | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| T1,3-Dichloropropene      | µg/L  |       | <0.5       | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| Toluene                   | µg/L  | 24    | <0.5       | < 0.5     | 0.8      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| 1,1,2-Trichloroethane     | µg/L  |       | <0.5       | < 0.4     | < 0.4    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| Tetrachloroethene         | µg/L  | 80    | <0.5       | < 0.2     | < 0.2    | --         | --         | --         | < 0.2     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| Dibromochloromethane      | µg/L  |       | <2         | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 2       | < 2       | < 2        | < 2        | < 2        |
| Chlorobenzene             | µg/L  |       | <0.5       | < 0.2     | < 0.2    | < 0.2      | < 0.2      | < 0.2      | < 0.2     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | <0.5       | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| Ethylbenzene              | µg/L  | 2.4   | <0.5       | < 0.5     | < 0.5    | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| Bromoform                 | µg/L  |       | <5         | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 5       | < 5       | < 5        | < 5        | < 5        |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | <0.5       | < 0.1     | < 0.1    | < 0.4      | < 0.4      | < 0.4      | < 0.4     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| 1,3-Dichlorobenzene       | µg/L  |       | <0.5       | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| 1,4-Dichlorobenzene       | µg/L  | 5     | <0.5       | < 0.2     | < 0.2    | < 0.2      | < 0.2      | < 0.2      | < 0.2     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| 1,2-Dichlorobenzene       | µg/L  | 200   | <0.5       | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| m/p-Xylene                | µg/L  |       | <1.0       | < 0.4     | < 0.4    | < 0.4      | < 0.4      | < 0.4      | < 0.4     | < 1.0     | < 1.0     | < 1.0      | < 1.0      | < 1.0      |
| o-Xylene                  | µg/L  |       | <0.5       | < 0.1     | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| Total Xylene              | µg/L  | 0.3   | <1.1       | < 0.4     | < 0.4    | < 0.4      | < 0.4      | < 0.4      | < 0.4     | < 1.1     | < 1.1     | < 1.1      | < 1.1      | < 1.1      |
| Styrene                   | µg/L  |       | <0.5       | < 0.5     | < 0.5    | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| 1,2,4 Trichlorobenzene    | µg/L  |       | <0.5       | < 0.2     | < 0.2    | < 0.2      | < 0.2      | < 0.2      | < 0.2     | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      |
| Acetone                   | µg/L  |       | <30        | < 2       | < 2      | < 2        | < 2        | < 2        | < 2       | < 30      | < 30      | < 30       | < 30       | < 30       |
| 1,2-Dibromoethane         | µg/L  |       | <0.2       | --        | --       | < 0.1      | < 0.1      | < 0.1      | < 0.1     | < 0.2     | < 0.2     | < 0.2      | < 0.2      | < 0.2      |
| Methyl ethyl ketone       | µg/L  |       | < 20       | --        | --       | < 1        | < 1        | < 1        | < 1       | < 20      | < 20      | < 20       | < 20       | < 20       |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20       | --        | --       | < 1        | < 1        | < 1        | < 1       | < 20      | < 20      | < 20       | < 20       | < 20       |
| Dichloromethane           | µg/L  | 50    | <0.5       | --        | --       | --         | --         | --         | < 0.3     | < 0.3     | < 5       | < 5        | < 5        | < 5        |
| Trichloroethylene         | µg/L  | 5     |            |           |          |            |            |            |           |           |           |            |            |            |

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Ground Water Chemistry Summary  
- VOC

| Parameters                | Units | ODWQS | MW15A     | MW15A     | MW15A     | MW15A      | MW15A     | MW15A     | MW15B       | MW15B     | MW15B     | MW15B     | MW15B    |
|---------------------------|-------|-------|-----------|-----------|-----------|------------|-----------|-----------|-------------|-----------|-----------|-----------|----------|
|                           |       |       | 19-Apr-21 | 27-Oct-21 | 20-Apr-22 | 26-Oct-22  | 19-Apr-23 | 12-Oct-23 | 23-May-12   | 23-May-13 | 23-Apr-14 | 15-Apr-15 | 7-Oct-15 |
| Methyl Chloride           | µg/L  |       | < 5       | < 5       | < 5       | < 5        | < 5       | < 5       | --          | --        | --        | < 0.3     | < 0.3    |
| Vinyl Chloride            | µg/L  | 2     | < 0.2     | < 0.2     | < 0.2     | < 0.2      | < 0.2     | < 0.2     | < 0.20      | < 0.5     | <0.5      |           |          |
| Bromomethane              | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.50      | < 0.5     | <0.5      | < 0.3     | < 0.3    |
| Chloroethane              | µg/L  |       | < 3       | < 3       |           |            |           |           | --          | --        | --        | < 0.1     | < 0.1    |
| Trichloro-fluoromethane   | µg/L  |       | < 5       | < 5       | < 5       | < 5        | < 5       | < 5       | < 0.20      | < 5       | <5        | < 0.1     | < 0.1    |
| 1,1-Dichloroethene        | µg/L  | 14    | < 0.5     | < 0.5     |           |            | < 0.5     |           | < 0.10      | < 0.5     | --        | < 0.1     | < 0.1    |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2       | < 2       | < 2       | < 2        | < 2       | < 2       | < 0.20      | < 2       | <2        | < 1       | < 1      |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.10      | < 0.5     | <0.5      | < 0.1     | < 0.1    |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.10      | < 0.5     | <0.5      | < 0.1     | < 0.1    |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | <b>0.6</b> | < 0.5     | < 0.5     | <b>0.14</b> | < 0.5     | <0.5      | 0.2       | < 0.1    |
| Chloroform                | µg/L  |       | < 1       | < 1       | < 1       | < 1        | < 1       | < 1       | < 0.10      | < 1       | <1        | < 0.3     | < 0.3    |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.10      | < 0.5     | <0.5      | < 0.1     | < 0.1    |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2     | < 0.2     | < 0.2     | < 0.2      | < 0.2     | < 0.2     | < 0.10      | < 0.2     | <0.2      | < 0.2     | < 0.2    |
| Benzene                   | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.10      | < 0.5     | <0.5      | < 0.5     | < 0.5    |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.20      | < 0.5     | <0.5      | < 0.1     | < 0.1    |
| 1,1-Dichloroethylene      | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.10      | < 0.5     | <0.5      | < 0.1     | < 0.1    |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.10      | < 0.5     | <0.5      | < 0.1     | < 0.1    |
| Bromodichloromethane      | µg/L  |       | < 2       | < 2       | < 2       | < 2        | < 2       | < 2       | < 0.10      | < 2       | <2        | < 0.1     | < 0.1    |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.20      | < 0.5     | <0.5      | < 0.1     | < 0.1    |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.20      | < 0.5     | <0.5      | < 0.1     | < 0.1    |
| Toluene                   | µg/L  | 24    | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.20      | < 0.5     | <0.5      | < 0.5     | < 0.5    |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.20      | < 0.5     | <0.5      | < 0.4     | < 0.4    |
| Tetrachloroethene         | µg/L  | 80    | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.10      | < 0.5     | <0.5      | < 0.2     | < 0.2    |
| Dibromochloromethane      | µg/L  |       | < 2       | < 2       | < 2       | < 2        | < 2       | < 2       | < 0.20      | < 2       | <2        | < 0.1     | < 0.1    |
| Chlorobenzene             | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.10      | < 0.5     | <0.5      | < 0.2     | < 0.2    |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.20      | < 0.5     | <0.5      | < 0.1     | < 0.1    |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.10      | < 0.5     | <0.5      | < 0.5     | < 0.5    |
| Bromoform                 | µg/L  |       | < 5       | < 5       | < 5       | < 5        | < 5       | < 5       | < 0.20      | < 5       | <5        | < 0.1     | < 0.1    |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.20      | < 0.5     | <0.5      | < 0.1     | < 0.1    |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.20      | < 0.5     | <0.5      | < 0.1     | < 0.1    |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.20      | < 0.5     | <0.5      | < 0.2     | < 0.2    |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.20      | < 0.5     | <0.5      | < 0.1     | < 0.1    |
| m/p-Xylene                | µg/L  |       | < 1.0     | < 1.0     | < 1.0     | < 1.0      | < 1.0     | < 1.0     | < 0.10      | < 1       | <1.0      | < 0.4     | < 0.4    |
| o-Xylene                  | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.10      | < 0.5     | <0.5      | < 0.1     | < 0.1    |
| Total Xylene              | µg/L  | 0.3   | < 1.1     | < 1.1     | < 1.1     | < 1.1      | < 1.1     | < 1.1     | < 0.10      | < 1.1     | <1.1      | < 0.4     | < 0.4    |
| Styrene                   | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.20      | < 0.5     | <0.5      | < 0.5     | < 0.5    |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | --          | < 0.5     | <0.5      | < 0.2     | < 0.2    |
| Acetone                   | µg/L  |       | < 30      | < 30      | < 30      | < 30       | < 30      | < 30      | < 10        | < 30      | <30       | < 2       | < 2      |
| 1,2-Dibromoethane         | µg/L  |       | < 0.2     | < 0.2     | < 0.2     | < 0.2      | < 0.2     | < 0.2     | < 5.0       | < 20      | <0.2      | --        | --       |
| Methyl ethyl ketone       | µg/L  |       | < 20      | < 20      | < 20      | < 20       | < 20      | < 20      | < 5.0       | < 20      | < 20      | --        | --       |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20      | < 20      | < 20      | < 20       | < 20      | < 20      | --          | --        | < 20      | --        | --       |
| Dichloromethane           | µg/L  | 50    | < 2       | < 2       |           |            |           |           | < 0.20      | < 0.2     | <0.5      | --        | --       |
| Trichloroethylene         | µg/L  | 5     |           |           | < 0.5     | < 0.5      | < 0.5     | < 0.5     |             |           |           |           |          |

ODWQS - Ontario Drinking Water Quality Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection

Ground Water Chemistry Summary  
- VOC

| Parameters                | Units | ODWQS | MW15B    | MW15B      | MW15B     | MW15B    | MW15B     | MW15B     | MW15B     | MW15B     | MW15B     | MW15B     | MW15B     | MW15B     |
|---------------------------|-------|-------|----------|------------|-----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                           |       |       | 3-Oct-16 | 17-Apr-17  | 23-Oct-17 | 8-May-18 | 15-Oct-18 | 11-Apr-19 | 21-Oct-19 | 22-Apr-20 | 19-Oct-20 | 19-Apr-21 | 27-Oct-21 | 20-Apr-22 |
| Methyl Chloride           | µg/L  |       | < 0.3    | < 0.3      | < 0.3     |          | < 0.06    | < 2       | < 2       | < 2       | < 2       | < 5       | < 5       | < 5       |
| Vinyl Chloride            | µg/L  | 2     | < 0.2    | <b>0.3</b> | < 0.2     | < 0.5    | < 0.5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Bromomethane              | µg/L  |       | < 0.3    | < 0.3      | < 0.3     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Chloroethane              | µg/L  |       | < 0.1    | < 0.1      | < 0.1     |          | < 0.08    | < 3       | < 3       | < 3       | < 3       | < 3       | < 3       |           |
| Trichloro-fluoromethane   | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 5      | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       |
| 1,1-Dichloroethene        | µg/L  | 14    | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |           |
| Methyl tert-Butyl Ether   | µg/L  |       | < 1      |            |           | < 2      | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Chloroform                | µg/L  |       | < 0.3    | < 0.3      | < 0.3     | < 1      | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2    | < 0.2      | < 0.2     | < 0.2    | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Benzene                   | µg/L  | 5     | < 0.5    | < 0.5      | < 0.5     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1-Dichloroethylene      | µg/L  | 5     |          |            |           | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloropropane       | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Bromodichloromethane      | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 2      | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| T1,3-Dichloropropene      | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Toluene                   | µg/L  | 24    | < 0.5    | < 0.5      | < 0.5     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Tetrachloroethene         | µg/L  | 80    | --       | --         | --        | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Dibromochloromethane      | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 2      | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Chlorobenzene             | µg/L  |       | < 0.2    | < 0.2      | < 0.2     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5    | < 0.5      | < 0.5     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Bromoform                 | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 5      | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.4    | < 0.4      | < 0.4     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.2    | < 0.2      | < 0.2     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| m/p-Xylene                | µg/L  |       | < 0.4    | < 0.4      | < 0.4     | < 1.0    | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     |
| o-Xylene                  | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Total Xylene              | µg/L  | 0.3   | < 0.4    | < 0.4      | < 0.4     | < 1.1    | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     |
| Styrene                   | µg/L  |       | < 0.5    | < 0.5      | < 0.5     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.2    | < 0.2      | < 0.2     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Acetone                   | µg/L  |       | < 2      | < 2        | < 2       | < 30     | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      |
| 1,2-Dibromoethane         | µg/L  |       | < 0.1    | < 0.1      | < 0.1     | < 0.2    | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Methyl ethyl ketone       | µg/L  |       | < 1      | < 1        | < 1       | < 20     | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      |
| Methyl Isobutyl Ketone    | µg/L  |       | < 1      | < 1        | < 1       | < 20     | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      |
| Dichloromethane           | µg/L  | 50    | --       | --         | --        | < 5      | < 0.3     | < 5       | < 5       | < 5       | < 5       | < 2       | < 2       |           |
| Trichloroethylene         | µg/L  | 5     |          |            |           |          |           |           |           |           |           |           |           | < 0.5     |

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Ground Water Chemistry Summary  
- VOC

| Parameters                | Units | ODWQS | MW15B     | MW15B     | MW15B     | MW16        | MW16        | MW16      | MW16     | MW16      | MW16     | MW16       | MW16     |
|---------------------------|-------|-------|-----------|-----------|-----------|-------------|-------------|-----------|----------|-----------|----------|------------|----------|
|                           |       |       | 26-Oct-22 | 19-Apr-23 | 12-Oct-23 | 23-May-12   | 1-Oct-12    | 22-May-13 | 1-Oct-13 | 15-Oct-14 | 3-Oct-16 | 27-Apr-16  | 3-Oct-16 |
| Methyl Chloride           | µg/L  |       | < 5       | < 5       | < 5       | --          | --          | --        | --       | --        | < 0.3    | < 0.3      | < 0.3    |
| Vinyl Chloride            | µg/L  | 2     | < 0.2     | < 0.2     | < 0.2     | < 0.20      | < 0.20      | < 0.5     | < 0.5    | < 0.2     | < 0.2    | <b>0.3</b> | < 0.2    |
| Bromomethane              | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.50      | < 0.50      | < 0.5     | < 0.5    | < 0.3     | < 0.3    | < 0.3      | < 0.3    |
| Chloroethane              | µg/L  |       |           |           |           | --          | --          | --        | --       | --        | < 0.1    | < 0.1      | < 0.1    |
| Trichloro-fluoromethane   | µg/L  |       | < 5       | < 5       | < 5       | < 0.20      | < 0.20      | < 5       | < 5      | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| 1,1-Dichloroethene        | µg/L  | 14    |           | < 0.5     |           | < 0.10      | < 0.10      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2       | < 2       | < 2       | < 0.20      | < 0.20      | < 2       | < 2      | < 1       | < 1      | < 1        | < 1      |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.10      | < 0.10      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.10      | < 0.10      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | <b>1.5</b> | <b>1</b> |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.10      | < 0.10      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | <b>1.5</b> | <b>1</b> |
| Chloroform                | µg/L  |       | < 1       | < 1       | < 1       | < 0.10      | < 0.10      | < 1       | < 1      | < 0.3     | < 0.3    | < 0.3      | < 0.3    |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.10      | < 0.10      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2     | < 0.2     | < 0.2     | < 0.10      | < 0.10      | < 0.2     | < 0.2    | < 0.2     | < 0.2    | < 0.2      | < 0.2    |
| Benzene                   | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.10      | < 0.10      | < 0.5     | < 0.5    | < 0.5     | < 0.5    | < 0.5      | < 0.5    |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.20      | < 0.20      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| 1,1-Dichloroethylene      | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.10      | < 0.10      | < 0.5     | < 0.5    | < 0.1     | --       | --         | --       |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.10      | < 0.10      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| Bromodichloromethane      | µg/L  |       | < 2       | < 2       | < 2       | < 0.10      | < 0.10      | < 2       | < 2      | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.20      | < 0.20      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.20      | < 0.20      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| Toluene                   | µg/L  | 24    | < 0.5     | < 0.5     | < 0.5     | < 0.20      | < 0.20      | < 0.5     | < 0.5    | < 0.5     | < 0.5    | < 0.5      | < 0.5    |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.20      | < 0.20      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| Tetrachloroethene         | µg/L  | 80    | < 0.5     | < 0.5     | < 0.5     | <b>0.11</b> | <b>0.15</b> | < 0.5     | < 0.5    | < 0.2     | --       | --         | --       |
| Dibromochloromethane      | µg/L  |       | < 2       | < 2       | < 2       | < 0.20      | < 0.20      | < 2       | < 2      | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| Chlorobenzene             | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.10      | < 0.10      | < 0.5     | < 0.5    | < 0.2     | < 0.2    | < 0.2      | < 0.2    |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.20      | < 0.20      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5     | < 0.5     | < 0.5     | < 0.10      | < 0.10      | < 0.5     | < 0.5    | < 0.5     | < 0.5    | < 0.5      | < 0.5    |
| Bromoform                 | µg/L  |       | < 5       | < 5       | < 5       | < 0.20      | < 0.20      | < 5       | < 5      | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.20      | < 0.20      | < 0.5     | < 0.5    | < 0.4     | < 0.4    | < 0.4      | < 0.4    |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.20      | < 0.20      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.20      | < 0.20      | < 0.5     | < 0.5    | < 0.2     | < 0.2    | < 0.2      | < 0.2    |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5     | < 0.5     | < 0.5     | < 0.20      | < 0.20      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| m/p-Xylene                | µg/L  |       | < 1.0     | < 1.0     | < 1.0     | < 0.10      | < 0.10      | < 1       | < 1      | < 0.4     | < 0.4    | < 0.4      | < 0.4    |
| o-Xylene                  | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.10      | < 0.10      | < 0.5     | < 0.5    | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| Total Xylene              | µg/L  | 0.3   | < 1.1     | < 1.1     | < 1.1     | < 0.10      | < 0.10      | < 1.1     | < 1.1    | < 0.4     | < 0.4    | < 0.4      | < 0.4    |
| Styrene                   | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.20      | < 0.20      | < 0.5     | < 0.5    | < 0.5     | < 0.5    | < 0.5      | < 0.5    |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | --          | --          | < 0.5     | < 0.5    | < 0.2     | < 0.2    | < 0.2      | < 0.2    |
| Acetone                   | µg/L  |       | < 30      | < 30      | < 30      | < 10        | < 10        | < 30      | < 30     | < 2       | < 2      | < 2        | < 2      |
| 1,2-Dibromoethane         | µg/L  |       | < 0.2     | < 0.2     | < 0.2     | < 5.0       | < 5.0       | < 20      | < 20     | < 0.1     | < 0.1    | < 0.1      | < 0.1    |
| Methyl ethyl ketone       | µg/L  |       | < 20      | < 20      | < 20      | < 5.0       | < 5.0       | < 20      | < 20     | < 1       | < 1      | < 1        | < 1      |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20      | < 20      | < 20      | --          | --          | --        | --       | < 1       | < 1      | < 1        | < 1      |
| Dichloromethane           | µg/L  | 50    |           |           |           | < 0.20      | < 0.20      | < 0.2     | < 0.2    | < 0.3     | --       | --         | --       |
| Trichloroethylene         | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     |             |             |           |          |           |          |            |          |

ODWQS - Ontario Drinking Water Quality Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection

Ground Water Chemistry Summary  
- VOC

| Parameters                  | Units | ODWQS | MW16      | MW16      | MW16      | MW16      | MW16      | MW16      | MW16      | MW16      | MW16      | MW16      | MW16      | MW26       |
|-----------------------------|-------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
|                             |       |       | 17-Apr-17 | 23-Oct-17 | 25-Apr-18 | 15-Oct-18 | 11-Apr-19 | 22-Apr-20 | 19-Oct-20 | 20-Apr-22 | 26-Oct-22 | 19-Apr-23 | 12-Oct-23 | 15-Apr-15  |
| Methyl Chloride             | µg/L  |       | < 0.3     | < 0.3     | < 0.3     | < 0.06    | < 2       | < 2       | < 2       | < 5       | < 5       | < 5       | < 5       | < 0.3      |
| Vinyl Chloride              | µg/L  | 2     | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | --         |
| Bromomethane                | µg/L  |       | < 0.3     | < 0.3     | < 0.3     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.3      |
| Chloroethane                | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.08    | < 3       | < 3       | < 3       |           |           |           |           | < 0.1      |
| Trichloro-fluoromethane     | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 0.1      |
| 1,1-Dichloroethene          | µg/L  | 14    | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |           |           | < 0.5     |           | < 0.1      |
| Methyl tert-Butyl Ether     | µg/L  |       |           |           | < 1       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 1        |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1      |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1      |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | <b>1.8</b> |
| Chloroform                  | µg/L  |       | < 0.3     | < 0.3     | < 0.3     | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 0.3      |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1      |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2      |
| Benzene                     | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5      |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1      |
| 1,1-Dichloroethylene        | µg/L  | 5     |           |           | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1      |
| 1,2-Dichloropropane         | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1      |
| Bromodichloromethane        | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 0.1      |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1      |
| T1,3-Dichloropropene        | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1      |
| Toluene                     | µg/L  | 24    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5      |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.4      |
| Tetrachloroethene           | µg/L  | 80    | --        | --        | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.2      |
| Dibromochloromethane        | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 0.1      |
| Chlorobenzene               | µg/L  |       | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.2      |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1      |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5      |
| Bromoform                   | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 0.1      |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.4     | < 0.4     | < 0.4     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1      |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1      |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.2      |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1      |
| m/p-Xylene                  | µg/L  |       | < 0.4     | < 0.4     | < 0.4     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 0.4      |
| o-Xylene                    | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1      |
| Total Xylene                | µg/L  | 0.3   | < 0.4     | < 0.4     | < 0.4     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 0.4      |
| Styrene                     | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5      |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.2      |
| Acetone                     | µg/L  |       | < 2       | < 2       | < 2       | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | < 2        |
| 1,2-Dibromoethane           | µg/L  |       | < 0.1     | < 0.1     | < 0.1     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | --         |
| Methyl ethyl ketone         | µg/L  |       | < 1       | < 1       | < 1       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | --         |
| Methyl Isobutyl Ketone      | µg/L  |       | < 1       | < 1       | < 1       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | --         |
| Dichloromethane             | µg/L  | 50    | --        | --        | < 0.3     | < 0.3     | < 5       | < 5       | < 5       |           |           |           |           | --         |
| Trichloroethylene           | µg/L  | 5     |           |           |           |           |           |           |           | < 0.5     | < 0.5     | < 0.5     | < 0.5     |            |

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Ground Water Chemistry Summary  
- VOC

| Parameters                | Units | ODWQS | MW26       | MW26       | MW26     | MW26       | MW26       | MW26       | MW26      | MW26       | MW26       | MW26       | MW26       | MW26      |
|---------------------------|-------|-------|------------|------------|----------|------------|------------|------------|-----------|------------|------------|------------|------------|-----------|
|                           |       |       | 7-Oct-15   | 27-Apr-16  | 3-Oct-16 | 17-Apr-17  | 23-Oct-17  | 25-Apr-18  | 15-Oct-18 | 11-Apr-19  | 21-Oct-19  | 22-Apr-20  | 19-Oct-20  | 19-Apr-21 |
| Methyl Chloride           | µg/L  |       | < 0.3      | < 0.3      | < 0.3    | < 0.3      | < 0.3      | < 0.3      | < 0.06    | < 2        | < 2        | < 2        | < 2        | < 5       |
| Vinyl Chloride            | µg/L  | 2     | --         | <b>0.3</b> | < 0.2    | <b>0.2</b> | < 0.2      | < 0.2      | < 0.5     | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2     |
| Bromomethane              | µg/L  |       | < 0.3      | < 0.3      | < 0.3    | < 0.3      | < 0.3      | < 0.3      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| Chloroethane              | µg/L  |       | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.08    | < 3        | < 3        | < 3        | < 3        | < 3       |
| Trichloro-fluoromethane   | µg/L  |       | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 5       | < 5        | < 5        | < 5        | < 5        | < 5       |
| 1,1-Dichloroethene        | µg/L  | 14    | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| Methyl tert-Butyl Ether   | µg/L  |       | < 1        | < 1        | < 1      |            |            | < 1        | < 2       | < 2        | < 2        | < 2        | < 2        | < 2       |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.1      | <b>1.5</b> | <b>1</b> | < 0.1      | < 0.1      | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| Cis 1,2-Dichloroethene    | µg/L  |       | <b>1.4</b> | <b>1.5</b> | <b>1</b> | <b>1.4</b> | <b>1.1</b> | <b>0.9</b> | < 0.5     | <b>1.1</b> | <b>1.2</b> | <b>3.3</b> | <b>1.1</b> | <b>1</b>  |
| Chloroform                | µg/L  |       | < 0.3      | < 0.3      | < 0.3    | < 0.3      | < 0.3      | < 0.3      | < 1       | < 1        | < 1        | < 1        | < 1        | < 1       |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2      | < 0.2      | < 0.2    | < 0.2      | < 0.2      | < 0.2      | < 0.2     | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2     |
| Benzene                   | µg/L  | 5     | < 0.5      | < 0.5      | < 0.5    | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| 1,1-Dichloroethylene      | µg/L  | 5     | < 0.1      | --         | --       | --         | --         | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| 1,2-Dichloropropane       | µg/L  |       | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| Bromodichloromethane      | µg/L  |       | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 2       | < 2        | < 2        | < 2        | < 2        | < 2       |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| T1,3-Dichloropropene      | µg/L  |       | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| Toluene                   | µg/L  | 24    | 0.5        | < 0.5      | < 0.5    | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.4      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| Tetrachloroethene         | µg/L  | 80    | < 0.2      | --         | --       | --         | --         | < 0.2      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| Dibromochloromethane      | µg/L  |       | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 2       | < 2        | < 2        | < 2        | < 2        | < 2       |
| Chlorobenzene             | µg/L  |       | < 0.2      | < 0.2      | < 0.2    | < 0.2      | < 0.2      | < 0.2      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5      | < 0.5      | < 0.5    | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| Bromoform                 | µg/L  |       | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 5       | < 5        | < 5        | < 5        | < 5        | < 5       |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.1      | < 0.4      | < 0.4    | < 0.4      | < 0.4      | < 0.4      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.2      | < 0.2      | < 0.2    | < 0.2      | < 0.2      | < 0.2      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| m/p-Xylene                | µg/L  |       | < 0.4      | < 0.4      | < 0.4    | < 0.4      | < 0.4      | < 0.4      | < 1.0     | < 1.0      | < 1.0      | < 1.0      | < 1.0      | < 1.0     |
| o-Xylene                  | µg/L  |       | < 0.1      | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| Total Xylene              | µg/L  | 0.3   | < 0.4      | < 0.4      | < 0.4    | < 0.4      | < 0.4      | < 0.4      | < 1.1     | < 1.1      | < 1.1      | < 1.1      | < 1.1      | < 1.1     |
| Styrene                   | µg/L  |       | < 0.5      | < 0.5      | < 0.5    | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.2      | < 0.2      | < 0.2    | < 0.2      | < 0.2      | < 0.2      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     |
| Acetone                   | µg/L  |       | < 2        | < 2        | < 2      | < 2        | < 2        | < 2        | < 30      | < 30       | < 30       | < 30       | < 30       | < 30      |
| 1,2-Dibromoethane         | µg/L  |       | --         | < 0.1      | < 0.1    | < 0.1      | < 0.1      | < 0.1      | < 0.2     | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2     |
| Methyl ethyl ketone       | µg/L  |       | --         | < 1        | < 1      | < 1        | < 1        | < 1        | < 20      | < 20       | < 20       | < 20       | < 20       | < 20      |
| Methyl Isobutyl Ketone    | µg/L  |       | --         | < 1        | < 1      | < 1        | < 1        | < 1        | < 20      | < 20       | < 20       | < 20       | < 20       | < 20      |
| Dichloromethane           | µg/L  | 50    | --         | --         | --       | --         | --         | < 0.3      | < 0.3     | < 5        | < 5        | < 5        | < 5        | < 2       |
| Trichloroethylene         | µg/L  | 5     |            |            |          |            |            |            |           |            |            |            |            |           |

ODWQS - Ontario Drinking Water Quality Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection

Ground Water Chemistry Summary  
- VOC

| Parameters                  | Units | ODWQS | MW26       | MW26       | MW26       | MW26       | MW26       | MW26-I     | MW26-I     | MW26-I    | MW26-I     | MW26-I     | MW26-I     | MW26-I     |
|-----------------------------|-------|-------|------------|------------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|
|                             |       |       | 27-Oct-21  | 20-Apr-22  | 24-Oct-22  | 19-Apr-23  | 12-Oct-23  | 15-Apr-15  | 7-Oct-15   | 15-Apr-15 | 27-Apr-16  | 3-Oct-16   | 17-Apr-17  | 23-Oct-17  |
| Methyl Chloride             | µg/L  |       | < 5        | < 5        | < 5        | < 5        | < 5        | < 0.3      | < 0.3      | < 0.5     | < 0.3      | < 0.3      | < 0.3      | < 0.3      |
| Vinyl Chloride              | µg/L  | 2     | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2      | --         | --         | --        | <b>0.6</b> | <b>0.4</b> | <b>0.5</b> | <b>0.2</b> |
| Bromomethane                | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.3      | < 0.3      | < 0.5     | < 0.3      | < 0.3      | < 0.3      | < 0.3      |
| Chloroethane                | µg/L  |       | < 3        |            |            |            |            | < 0.1      | < 0.1      | < 5       | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Trichloro-fluoromethane     | µg/L  |       | < 5        | < 5        | < 5        | < 5        | < 5        | < 0.1      | < 0.1      | < 5       | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| 1,1-Dichloroethene          | µg/L  | 14    | < 0.5      | < 0.5      |            | < 0.5      |            | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Methyl tert-Butyl Ether     | µg/L  |       | < 2        | < 2        | < 2        | < 2        | < 2        | < 1        | < 1        | -         | < 1        | < 1        |            |            |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.1      | < 0.1      | < 0.5     | <b>3.5</b> | <b>3</b>   | < 0.1      | < 0.1      |
| Cis 1,2-Dichloroethene      | µg/L  |       | <b>0.8</b> | <b>0.6</b> | <b>0.7</b> | <b>0.6</b> | <b>1.2</b> | <b>4.1</b> | <b>2.9</b> | -         | <b>3.5</b> | <b>3</b>   | <b>3.2</b> | <b>2.9</b> |
| Chloroform                  | µg/L  |       | < 1        | < 1        | < 1        | < 1        | < 1        | < 0.3      | < 0.3      | < 0.5     | < 0.3      | < 0.3      | < 0.3      | < 0.3      |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2     | < 0.2      | < 0.2      | < 0.2      | < 0.2      |
| Benzene                     | µg/L  | 5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| 1,1-Dichloroethylene        | µg/L  | 5     | < 0.5      |            | < 0.5      | < 0.5      | < 0.5      | < 0.1      | < 0.1      | < 0.5     | --         | --         | --         | --         |
| 1,2-Dichloropropane         | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Bromodichloromethane        | µg/L  |       | < 2        | < 2        | < 2        | < 2        | < 2        | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| T1,3-Dichloropropene        | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Toluene                     | µg/L  | 24    | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.4      | < 0.4      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Tetrachloroethene           | µg/L  | 80    | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.2      | < 0.2      | < 0.5     | --         | --         | --         | --         |
| Dibromochloromethane        | µg/L  |       | < 2        | < 2        | < 2        | < 2        | < 2        | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Chlorobenzene               | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.2      | < 0.2      | < 0.5     | < 0.2      | < 0.2      | < 0.2      | < 0.2      |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Bromoform                   | µg/L  |       | < 5        | < 5        | < 5        | < 5        | < 5        | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.1      | < 0.1      | < 0.5     | < 0.4      | < 0.4      | < 0.4      | < 0.4      |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.2      | < 0.2      | < 0.5     | < 0.2      | < 0.2      | < 0.2      | < 0.2      |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| m/p-Xylene                  | µg/L  |       | < 1.0      | < 1.0      | < 1.0      | < 1.0      | < 1.0      | < 0.4      | < 0.4      | < 0.5     | < 0.4      | < 0.4      | < 0.4      | < 0.4      |
| o-Xylene                    | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.1      | < 0.1      | < 0.5     | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Total Xylene                | µg/L  | 0.3   | < 1.1      | < 1.1      | < 1.1      | < 1.1      | < 1.1      | < 0.4      | < 0.4      | < 0.5     | < 0.4      | < 0.4      | < 0.4      | < 0.4      |
| Styrene                     | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.2      | < 0.2      | --        | < 0.2      | < 0.2      | < 0.2      | < 0.2      |
| Acetone                     | µg/L  |       | < 30       | < 30       | < 30       | < 30       | < 30       | < 2        | < 2        | --        | < 2        | < 2        | < 2        | < 2        |
| 1,2-Dibromoethane           | µg/L  |       | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2      | --         | --         | --        | < 0.1      | < 0.1      | < 0.1      | < 0.1      |
| Methyl ethyl ketone         | µg/L  |       | < 20       | < 20       | < 20       | < 20       | < 20       | --         | --         | --        | < 1        | < 1        | < 1        | < 1        |
| Methyl Isobutyl Ketone      | µg/L  |       | < 20       | < 20       | < 20       | < 20       | < 20       | --         | --         | --        | < 1        | < 1        | < 1        | < 1        |
| Dichloromethane             | µg/L  | 50    | < 2        |            |            |            |            | --         | --         | --        | --         | --         | --         | --         |
| Trichloroethylene           | µg/L  | 5     |            | < 0.5      | < 0.5      | < 0.5      | < 0.5      |            |            |           |            |            |            |            |

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Ground Water Chemistry Summary  
- VOC

| Parameters                | Units | ODWQS | MW26-I     | MW26-I     | MW26-I     | MW26-I     | MW26-I     | MW26-I    | MW26-I    | MW26-I     | MW26-I     | MW26-I     | MW26-I     | MW26-I     |
|---------------------------|-------|-------|------------|------------|------------|------------|------------|-----------|-----------|------------|------------|------------|------------|------------|
|                           |       |       | 25-Apr-18  | 15-Oct-18  | 11-Apr-19  | 21-Oct-19  | 22-Apr-20  | 19-Oct-20 | 19-Apr-21 | 27-Oct-21  | 20-Apr-22  | 24-Oct-22  | 19-Apr-23  | 12-Oct-23  |
| Methyl Chloride           | µg/L  |       | < 0.3      | < 0.06     | < 2        | < 2        | < 2        | < 2       | < 5       | < 5        | < 5        | < 5        | < 5        | < 5        |
| Vinyl Chloride            | µg/L  | 2     | <b>0.5</b> | < 0.5      | < 0.2      | < 0.2      | < 0.2      | < 0.2     | < 0.2     | < 0.2      | < 0.2      | < 0.2      | < 0.2      | <b>0.2</b> |
| Bromomethane              | µg/L  |       | < 0.3      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Chloroethane              | µg/L  |       | < 0.1      | < 0.08     | < 3        | < 3        | < 3        | < 3       | < 3       | < 3        |            |            |            |            |
| Trichloro-fluoromethane   | µg/L  |       | < 0.1      | < 5        | < 5        | < 5        | < 5        | < 5       | < 5       | < 5        | < 5        | < 5        | < 5        | < 5        |
| 1,1-Dichloroethene        | µg/L  | 14    | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      |            | < 0.5      |            |
| Methyl tert-Butyl Ether   | µg/L  |       | < 1        | < 2        | < 2        | < 2        | < 2        | < 2       | < 2       | < 2        | < 2        | < 2        | < 2        | < 2        |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Cis 1,2-Dichloroethene    | µg/L  |       | <b>4.3</b> | <b>3.3</b> | <b>3.2</b> | <b>3.3</b> | <b>3.2</b> | <b>3</b>  | <b>2</b>  | <b>2.2</b> | <b>1.5</b> | <b>1.8</b> | <b>1.6</b> | <b>3.2</b> |
| Chloroform                | µg/L  |       | < 0.3      | < 1        | < 1        | < 1        | < 1        | < 1       | < 1       | < 1        | < 1        | < 1        | < 1        | < 1        |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2     | < 0.2     | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2      |
| Benzene                   | µg/L  | 5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,1-Dichloroethylene      | µg/L  | 5     | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      |            | < 0.5      | < 0.5      | < 0.5      |
| 1,2-Dichloropropane       | µg/L  |       | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Bromodichloromethane      | µg/L  |       | < 0.1      | < 2        | < 2        | < 2        | < 2        | < 2       | < 2       | < 2        | < 2        | < 2        | < 2        | < 2        |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| T1,3-Dichloropropene      | µg/L  |       | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Toluene                   | µg/L  | 24    | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Tetrachloroethene         | µg/L  | 80    | < 0.2      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Dibromochloromethane      | µg/L  |       | < 0.1      | < 2        | < 2        | < 2        | < 2        | < 2       | < 2       | < 2        | < 2        | < 2        | < 2        | < 2        |
| Chlorobenzene             | µg/L  |       | < 0.2      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Bromoform                 | µg/L  |       | < 0.1      | < 5        | < 5        | < 5        | < 5        | < 5       | < 5       | < 5        | < 5        | < 5        | < 5        | < 5        |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.4      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.2      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| m/p-Xylene                | µg/L  |       | < 0.4      | < 1.0      | < 1.0      | < 1.0      | < 1.0      | < 1.0     | < 1.0     | < 1.0      | < 1.0      | < 1.0      | < 1.0      | < 1.0      |
| o-Xylene                  | µg/L  |       | < 0.1      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Total Xylene              | µg/L  | 0.3   | < 0.4      | < 1.1      | < 1.1      | < 1.1      | < 1.1      | < 1.1     | < 1.1     | < 1.1      | < 1.1      | < 1.1      | < 1.1      | < 1.1      |
| Styrene                   | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.2      | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5     | < 0.5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Acetone                   | µg/L  |       | < 2        | < 30       | < 30       | < 30       | < 30       | < 30      | < 30      | < 30       | < 30       | < 30       | < 30       | < 30       |
| 1,2-Dibromoethane         | µg/L  |       | < 0.1      | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2     | < 0.2     | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2      |
| Methyl ethyl ketone       | µg/L  |       | < 1        | < 20       | < 20       | < 20       | < 20       | < 20      | < 20      | < 20       | < 20       | < 20       | < 20       | < 20       |
| Methyl Isobutyl Ketone    | µg/L  |       | < 1        | < 20       | < 20       | < 20       | < 20       | < 20      | < 20      | < 20       | < 20       | < 20       | < 20       | < 20       |
| Dichloromethane           | µg/L  | 50    | < 0.3      | < 0.3      | < 5        | < 5        | < 5        | < 5       | < 2       | < 2        |            |            |            |            |
| Trichloroethylene         | µg/L  | 5     |            |            |            |            |            |           |           |            | < 0.5      | < 0.5      | < 0.5      | < 0.5      |

ODWQS - Ontario Drinking Water Quality Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection

Ground Water Chemistry Summary  
- VOC

| Parameters                | Units | ODWQS | MW26-II   | MW26-II  | MW26-II   | MW26-II  | MW26-II   | MW26-II   | MW26-II   | MW26-II   | MW26-II   | MW26-II   | MW26-II   | MW26-II   |
|---------------------------|-------|-------|-----------|----------|-----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                           |       |       | 15-Apr-15 | 7-Oct-15 | 27-Apr-16 | 3-Oct-16 | 17-Apr-17 | 23-Oct-17 | 15-Oct-18 | 11-Apr-19 | 21-Oct-19 | 22-Apr-20 | 19-Oct-20 | 19-Apr-21 |
| Methyl Chloride           | µg/L  |       | < 0.3     | < 0.3    | < 0.3     | < 0.3    | < 0.3     | < 0.3     | < 0.06    | < 2       | < 2       | < 2       | < 2       | < 5       |
| Vinyl Chloride            | µg/L  | 2     | --        | --       | 0.7       | 0.5      | 0.6       | 0.4       | < 0.5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Bromomethane              | µg/L  |       | < 0.3     | < 0.3    | < 0.3     | < 0.3    | < 0.3     | < 0.3     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Chloroethane              | µg/L  |       | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.08    | < 3       | < 3       | < 3       | < 3       | < 3       |
| Trichloro-fluoromethane   | µg/L  |       | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       |
| 1,1-Dichloroethene        | µg/L  | 14    | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Methyl tert-Butyl Ether   | µg/L  |       | < 1       | < 1      | < 1       | < 1      |           |           | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Trans 1,2-Dichloroethene  | µg/L  |       | 2.6       | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.1     | < 0.1    | 2.4       | 2.2      | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.1     | 2.2      | 2.4       | 2.2      | 2.3       | 2.3       | 2.4       | 2.2       | 2.6       | 1.6       | 2.8       | 1.9       |
| Chloroform                | µg/L  |       | < 0.3     | < 0.3    | < 0.3     | < 0.3    | < 0.3     | < 0.3     | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2     | < 0.2    | < 0.2     | < 0.2    | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Benzene                   | µg/L  | 5     | < 0.5     | < 0.5    | < 0.5     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1-Dichloroethylene      | µg/L  | 5     | < 0.1     | < 0.1    | --        | --       | --        | --        | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloropropane       | µg/L  |       | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Bromodichloromethane      | µg/L  |       | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| T1,3-Dichloropropene      | µg/L  |       | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Toluene                   | µg/L  | 24    | < 0.5     | < 0.5    | < 0.5     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.4     | < 0.4    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Tetrachloroethene         | µg/L  | 80    | < 0.2     | < 0.2    | --        | --       | --        | --        | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Dibromochloromethane      | µg/L  |       | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Chlorobenzene             | µg/L  |       | < 0.2     | < 0.2    | < 0.2     | < 0.2    | < 0.2     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5     | < 0.5    | < 0.5     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Bromoform                 | µg/L  |       | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | 2.6       | < 0.1    | < 0.4     | < 0.4    | < 0.4     | < 0.4     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.2     | < 0.2    | < 0.2     | < 0.2    | < 0.2     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| m/p-Xylene                | µg/L  |       | < 0.4     | < 0.4    | < 0.4     | < 0.4    | < 0.4     | < 0.4     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     |
| o-Xylene                  | µg/L  |       | < 0.1     | < 0.1    | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Total Xylene              | µg/L  | 0.3   | < 0.4     | < 0.4    | < 0.4     | < 0.4    | < 0.4     | < 0.4     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     |
| Styrene                   | µg/L  |       | < 0.5     | < 0.5    | < 0.5     | < 0.5    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.2     | < 0.2    | < 0.2     | < 0.2    | < 0.2     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Acetone                   | µg/L  |       | < 2       | < 2      | < 2       | < 2      | < 2       | < 2       | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      |
| 1,2-Dibromoethane         | µg/L  |       | --        | --       | < 0.1     | < 0.1    | < 0.1     | < 0.1     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Methyl ethyl ketone       | µg/L  |       | --        | --       | < 1       | < 1      | < 1       | < 1       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      |
| Methyl Isobutyl Ketone    | µg/L  |       | --        | --       | < 1       | < 1      | < 1       | < 1       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      |
| Dichloromethane           | µg/L  | 50    | --        | --       | --        | --       | --        | --        | < 0.3     | < 5       | < 5       | < 5       | < 5       | < 2       |
| Trichloroethylene         | µg/L  | 5     |           |          |           |          |           |           |           |           |           |           |           |           |

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Bold indicates detection

# Ground Water Chemistry Summary

## - VOC

| Parameters                | Units | ODWQS | MW26-II    | MW26-II    | MW26-II    | MW26-II    | MW26-II    |
|---------------------------|-------|-------|------------|------------|------------|------------|------------|
|                           |       |       | 27-Oct-21  | 20-Apr-22  | 24-Oct-22  | 19-Apr-23  | 12-Oct-23  |
| Methyl Chloride           | µg/L  |       | < 5        | < 5        | < 5        | < 5        | < 5        |
| Vinyl Chloride            | µg/L  | 2     | < 0.2      | <b>0.2</b> | < 0.2      | < 0.2      | <b>0.4</b> |
| Bromomethane              | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Chloroethane              | µg/L  |       | < 3        |            |            |            |            |
| Trichloro-fluoromethane   | µg/L  |       | < 5        | < 5        | < 5        | < 5        | < 5        |
| 1,1-Dichloroethene        | µg/L  | 14    | < 0.5      | < 0.5      |            | < 0.5      |            |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2        | < 2        | < 2        | < 2        | < 2        |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Cis 1,2-Dichloroethene    | µg/L  |       | <b>1.9</b> | <b>1.6</b> | <b>2.2</b> | <b>1.6</b> | <b>3.2</b> |
| Chloroform                | µg/L  |       | < 1        | < 1        | < 1        | < 1        | < 1        |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2      |
| Benzene                   | µg/L  | 5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,1-Dichloroethylene      | µg/L  | 5     | < 0.5      |            | < 0.5      | < 0.5      | < 0.5      |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Bromodichloromethane      | µg/L  |       | < 2        | < 2        | < 2        | < 2        | < 2        |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Toluene                   | µg/L  | 24    | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Tetrachloroethene         | µg/L  | 80    | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Dibromochloromethane      | µg/L  |       | < 2        | < 2        | < 2        | < 2        | < 2        |
| Chlorobenzene             | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Bromoform                 | µg/L  |       | < 5        | < 5        | < 5        | < 5        | < 5        |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| m/p-Xylene                | µg/L  |       | < 1.0      | < 1.0      | < 1.0      | < 1.0      | < 1.0      |
| o-Xylene                  | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Total Xylene              | µg/L  | 0.3   | < 1.1      | < 1.1      | < 1.1      | < 1.1      | < 1.1      |
| Styrene                   | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5      | < 0.5      | < 0.5      | < 0.5      | < 0.5      |
| Acetone                   | µg/L  |       | < 30       | < 30       | < 30       | < 30       | < 30       |
| 1,2-Dibromoethane         | µg/L  |       | < 0.2      | < 0.2      | < 0.2      | < 0.2      | < 0.2      |
| Methyl ethyl ketone       | µg/L  |       | < 20       | < 20       | < 20       | < 20       | < 20       |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20       | < 20       | < 20       | < 20       | < 20       |
| Dichloromethane           | µg/L  | 50    | < 2        |            |            |            |            |
| Trichloroethylene         | µg/L  | 5     |            | < 0.5      | < 0.5      | < 0.5      | < 0.5      |

ODWQS - Ontario Drinking Water Quality Standards  
 Bold and highlighted indicates exceedance  
 Bold indicates detection

Ground Water Chemistry  
Summary - VOC

| Parameters                  | Units | ODWQS | MW27-I<br>15-Oct-14 | MW27-I<br>15-Apr-15 | MW27-I<br>7-Oct-15 | MW27-I<br>9-Nov-15 | MW27-I<br>27-Apr-16 | MW27-I<br>7-Jul-16 | MW27-I<br>3-Oct-16 | MW27-I<br>22-Feb-17 | MW27-I<br>20-Jul-17 | MW27-I<br>23-Oct-17 | MW27-I<br>25-Apr-18 | MW27-I<br>15-Oct-18 |
|-----------------------------|-------|-------|---------------------|---------------------|--------------------|--------------------|---------------------|--------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Methyl Chloride             | µg/L  |       | --                  | < 0.3               | < 0.3              | < 0.3              | < 0.3               | < 0.3              | < 0.3              | < 0.3               | < 0.3               | < 0.3               | < 0.3               | < 0.06              |
| Vinyl Chloride              | µg/L  | 2     | <0.2                | --                  | --                 | --                 | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.5               |
| Bromomethane                | µg/L  |       | <0.3                | < 0.3               | < 0.3              | < 0.3              | < 0.3               | < 0.3              | < 0.3              | < 0.3               | < 0.3               | < 0.3               | < 0.3               | < 0.5               |
| Chloroethane                | µg/L  |       | --                  | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.08              |
| Trichloro-fluoromethane     | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 5                 |
| 1,1-Dichloroethylene        | µg/L  | 14    | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Methyl tert-Butyl Ether     | µg/L  |       | <1                  | < 1                 | < 1                | < 1                | < 1                 | < 1                | < 1                |                     |                     |                     | < 1                 | < 2                 |
| Trans 1,2-Dichloroethene    | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| 1,1-Dichloro-ethane         | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Cis 1,2-Dichloroethene      | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Chloroform                  | µg/L  |       | <0.3                | < 0.3               | < 0.3              | < 0.3              | < 0.3               | < 0.3              | < 0.3              | < 0.3               | < 0.3               | < 0.3               | < 0.3               | < 1                 |
| 1,1,1-Trichloroethane       | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Carbon Tetrachloride        | µg/L  | 5     | <0.2                | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               |
| Benzene                     | µg/L  | 5     | <b>0.002</b>        | <b>1.4</b>          | <b>2.8</b>         | < 0.5              | <b>20.2</b>         | < 0.5              | < 0.5              | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               |
| 1,2-Dichloroethane          | µg/L  | 5     | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Trichloroethylene           | µg/L  | 5     | <0.1                | < 0.1               | < 0.1              | < 0.1              | --                  | --                 | --                 | --                  |                     |                     | < 0.1               | < 0.5               |
| 1,2-Dichloropropane         | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Bromodichloromethane        | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 2                 |
| Cis 1,3-Dichloropropene     | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| T1,3-Dichloropropene        | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Toluene                     | µg/L  | 24    | <0.5                | < 0.5               | <b>0.6</b>         | < 0.5              | <b>1</b>            | < 0.5              | < 0.5              | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               |
| 1,1,2-Trichloroethane       | µg/L  |       | <0.1                | < 0.4               | < 0.4              | < 0.4              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Tetrachloroethene           | µg/L  | 80    | <0.2                | < 0.2               | < 0.2              | < 0.2              | --                  | --                 | --                 | --                  |                     |                     | < 0.2               | < 0.5               |
| Dibromochloromethane        | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 2                 |
| Chlorobenzene               | µg/L  |       | <0.2                | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.5               |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Ethylbenzene                | µg/L  | 2.4   | <0.5                | < 0.5               | < 0.5              | < 0.5              | <b>1</b>            | < 0.5              | < 0.5              | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               |
| Bromoform                   | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 5                 |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | <0.4                | < 0.1               | < 0.1              | < 0.1              | < 0.4               | < 0.4              | < 0.4              | < 0.4               | < 0.4               | < 0.4               | < 0.4               | < 0.5               |
| 1,3-Dichlorobenzene         | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| 1,4-Dichlorobenzene         | µg/L  | 5     | <0.2                | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.5               |
| 1,2-Dichlorobenzene         | µg/L  | 200   | <0.1                | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| m/p-Xylene                  | µg/L  |       | <0.4                | < 0.4               | < 0.4              | < 0.4              | <b>0.7</b>          | < 0.4              | < 0.4              | < 0.4               | < 0.4               | < 0.4               | < 0.4               | < 1.0               |
| o-Xylene                    | µg/L  |       | <0.1                | < 0.1               | < 0.1              | < 0.1              | <b>0.2</b>          | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Total Xylene                | µg/L  | 0.3   | <0.4                | < 0.4               | < 0.4              | < 0.4              | <b>0.9</b>          | < 0.4              | < 0.4              | < 0.4               | < 0.4               | < 0.4               | < 0.4               | < 1.1               |
| Styrene                     | µg/L  |       | <0.5                | < 0.5               | < 0.5              | < 0.5              | < 0.5               | < 0.5              | < 0.5              | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               |
| 1,2,4 Trichlorobenzene      | µg/L  |       | <0.2                | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.5               |
| Acetone                     | µg/L  |       | <b>3</b>            | <b>3</b>            | < 2                | < 2                | <b>13</b>           | < 2                | < 2                | < 2                 | < 2                 | < 2                 | < 2                 | < 30                |
| 1,2-Dibromoethane           | µg/L  |       | <0.1                | --                  | --                 | --                 | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.2               |
| Methyl ethyl ketone         | µg/L  |       | < 1                 | --                  | --                 | --                 | <b>4</b>            | < 1                | < 1                | < 1                 | < 1                 | < 1                 | < 1                 | < 20                |
| Methyl Isobutyl Ketone      | µg/L  |       | < 1                 | --                  | --                 | --                 | < 1                 | < 1                | < 1                | < 1                 | < 1                 | < 1                 | < 1                 | < 20                |
| Dichloromethane             | µg/L  | 50    | <0.3                | --                  | --                 | --                 | --                  | --                 | --                 | --                  | --                  | --                  | < 0.3               | < 0.3               |
| Trichloroethylene           | µg/L  | 5     |                     |                     |                    |                    |                     |                    |                    |                     |                     |                     |                     |                     |

ODWQS - Ontario Drinking Water Quality

Standards

Bold and highlighted indicates exceedance

Bold indicates detection

Ground Water Chemistry  
Summary - VOC

| Parameters                | Units | ODWQS | MW27-I<br>11-Apr-19 | MW27-I<br>21-Oct-19 | MW27-I<br>22-Apr-20 | MW27-I<br>19-Oct-20 | MW27-I<br>19-Apr-21 | MW27-I<br>27-Oct-21 | MW27-I<br>20-Apr-22 | MW27-I<br>26-Oct-22 | MW27-I<br>19-Apr-23 | MW27-I<br>12-Oct-23 | MW27-II<br>15-Oct-14 | MW27-II<br>15-Apr-15 |
|---------------------------|-------|-------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|----------------------|
| Methyl Chloride           | µg/L  |       | < 2                 | < 2                 | < 2                 | < 2                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | --                   | < 0.3                |
| Vinyl Chloride            | µg/L  | 2     | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2                | --                   |
| Bromomethane              | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.3                | < 0.3                |
| Chloroethane              | µg/L  |       | < 3                 | < 3                 | < 3                 | < 3                 | < 3                 | < 3                 |                     |                     |                     |                     | --                   | < 0.1                |
| Trichloro-fluoromethane   | µg/L  |       | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 0.1                | < 0.1                |
| 1,1-Dichloroethylene      | µg/L  | 14    | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               |                     | < 0.5               |                     | < 0.1                | < 0.1                |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 1                  | < 1                  |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.1                |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.1                |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.1                |
| Chloroform                | µg/L  |       | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 0.3                | < 0.3                |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.1                |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2                | < 0.2                |
| Benzene                   | µg/L  | 5     | <b>0.6</b>          | <b>0.8</b>          | < 0.5               | <b>3.5</b>          | <b>0.9</b>          | <b>1.3</b>          | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5                | < 0.5                |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.1                |
| Trichloroethylene         | µg/L  | 5     | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               |                     | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.1                |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.1                |
| Bromodichloromethane      | µg/L  |       | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 0.1                | < 0.1                |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.1                |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.1                |
| Toluene                   | µg/L  | 24    | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5                | < 0.5                |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.4                |
| Tetrachloroethene         | µg/L  | 80    | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.2                | < 0.2                |
| Dibromochloromethane      | µg/L  |       | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 0.1                | < 0.1                |
| Chlorobenzene             | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.2                | < 0.2                |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.1                |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5                | < 0.5                |
| Bromoform                 | µg/L  |       | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 0.1                | < 0.1                |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.4                | < 0.1                |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.1                |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.2                | < 0.2                |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.1                |
| m/p-Xylene                | µg/L  |       | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 0.4                | < 0.4                |
| o-Xylene                  | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                | < 0.1                |
| Total Xylene              | µg/L  | 0.3   | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 0.4                | < 0.4                |
| Styrene                   | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5                | < 0.5                |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.2                | < 0.2                |
| Acetone                   | µg/L  |       | < 30                | < 30                | < 30                | < 30                | < 30                | < 30                | < 30                | < 30                | < 30                | < 30                | < 2                  | < 2                  |
| 1,2-Dibromoethane         | µg/L  |       | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.1                | --                   |
| Methyl ethyl ketone       | µg/L  |       | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 1                  | --                   |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 1                  | --                   |
| Dichloromethane           | µg/L  | 50    | < 5                 | < 5                 | < 5                 | < 5                 | < 2                 | < 2                 |                     |                     |                     |                     | < 0.3                | --                   |
| Trichloroethylene         | µg/L  | 5     |                     |                     |                     |                     |                     |                     | < 0.5               | < 0.5               | < 0.5               | < 0.5               |                      |                      |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection

Ground Water Chemistry  
Summary - VOC

| Parameters                  | Units | ODWQS | MW27-II<br>7-Oct-15 | MW27-II<br>##### | MW27-II<br>27-Apr-16 | MW27-II<br>7-Jul-16 | MW27-II<br>3-Oct-16 | MW27-II<br>22-Feb-17 | MW27-II<br>17-Apr-17 | MW27-II<br>20-Jul-17 | MW27-II<br>23-Oct-17 | MW27-II<br>26-Apr-18 | MW27-II<br>15-Oct-18 | MW27-II<br>11-Apr-19 |
|-----------------------------|-------|-------|---------------------|------------------|----------------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Methyl Chloride             | µg/L  |       | < 0.3               | < 0.3            | < 0.3                | < 0.3               | < 0.3               | < 0.3                | < 0.3                | < 0.3                | < 0.3                | < 0.3                | < 0.06               | < 2                  |
| Vinyl Chloride              | µg/L  | 2     | --                  | --               | < 0.2                | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.5                | < 0.2                |
| Bromomethane                | µg/L  |       | < 0.3               | < 0.3            | < 0.3                | < 0.3               | < 0.3               | < 0.3                | < 0.3                | < 0.3                | < 0.3                | < 0.3                | < 0.5                | < 0.5                |
| Chloroethane                | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.08               | < 3                  |
| Trichloro-fluoromethane     | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 5                  | < 5                  |
| 1,1-Dichloroethylene        | µg/L  | 14    | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| Methyl tert-Butyl Ether     | µg/L  |       | < 1                 | < 1              | < 1                  | < 1                 | < 1                 |                      |                      |                      |                      | < 1                  | < 2                  | < 2                  |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| Chloroform                  | µg/L  |       | < 0.3               | < 0.3            | < 0.3                | < 0.3               | < 0.3               | < 0.3                | < 0.3                | < 0.3                | < 0.3                | < 0.3                | < 1                  | < 1                  |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2               | < 0.2            | < 0.2                | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                |
| Benzene                     | µg/L  | 5     | < 0.5               | < 0.5            | < 0.5                | < 0.5               | < 0.5               | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| Trichloroethylene           | µg/L  | 5     | < 0.1               | < 0.1            | --                   | --                  | --                  | --                   | --                   | --                   | --                   | < 0.1                | < 0.5                | < 0.5                |
| 1,2-Dichloropropane         | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| Bromodichloromethane        | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 2                  | < 2                  |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| T1,3-Dichloropropene        | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| Toluene                     | µg/L  | 24    | <b>0.5</b>          | < 0.5            | < 0.5                | < 0.5               | < 0.5               | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.4               | < 0.4            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| Tetrachloroethene           | µg/L  | 80    | < 0.2               | < 0.2            | --                   | --                  | --                  | --                   | --                   | --                   | --                   | < 0.2                | < 0.5                | < 0.5                |
| Dibromochloromethane        | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 2                  | < 2                  |
| Chlorobenzene               | µg/L  |       | < 0.2               | < 0.2            | < 0.2                | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.5                | < 0.5                |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5               | < 0.5            | < 0.5                | < 0.5               | < 0.5               | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Bromoform                   | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 5                  | < 5                  |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.1               | < 0.1            | < 0.4                | < 0.4               | < 0.4               | < 0.4                | < 0.4                | < 0.4                | < 0.4                | < 0.4                | < 0.5                | < 0.5                |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.2               | < 0.2            | < 0.2                | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.5                | < 0.5                |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| m/p-Xylene                  | µg/L  |       | < 0.4               | < 0.4            | < 0.4                | < 0.4               | < 0.4               | < 0.4                | < 0.4                | < 0.4                | < 0.4                | < 0.4                | < 1.0                | < 1.0                |
| o-Xylene                    | µg/L  |       | < 0.1               | < 0.1            | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.5                | < 0.5                |
| Total Xylene                | µg/L  | 0.3   | < 0.4               | < 0.4            | < 0.4                | < 0.4               | < 0.4               | < 0.4                | < 0.4                | < 0.4                | < 0.4                | < 0.4                | < 1.1                | < 1.1                |
| Styrene                     | µg/L  |       | < 0.5               | < 0.5            | < 0.5                | < 0.5               | < 0.5               | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.2               | < 0.2            | < 0.2                | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.5                | < 0.5                |
| Acetone                     | µg/L  |       | < 2                 | < 2              | < 2                  | < 2                 | < 2                 | < 2                  | <b>4</b>             | < 2                  | < 2                  | <b>5</b>             | < 30                 | < 30                 |
| 1,2-Dibromoethane           | µg/L  |       | --                  | --               | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.2                | < 0.2                |
| Methyl ethyl ketone         | µg/L  |       | --                  | --               | < 1                  | < 1                 | < 1                 | < 1                  | < 1                  | < 1                  | < 1                  | <b>1</b>             | < 20                 | < 20                 |
| Methyl Isobutyl Ketone      | µg/L  |       | --                  | --               | < 1                  | < 1                 | < 1                 | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  | < 20                 | < 20                 |
| Dichloromethane             | µg/L  | 50    | --                  | --               | --                   | --                  | --                  | --                   | --                   | --                   | --                   | < 0.3                | < 0.3                | < 5                  |
| Trichloroethylene           | µg/L  | 5     |                     |                  |                      |                     |                     |                      |                      |                      |                      |                      |                      |                      |

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Ground Water Chemistry  
Summary - VOC

| Parameters                  | Units | ODWQS | MW27-II<br>21-Oct-19 | MW27-II<br>22-Apr-20 | MW27-II<br>19-Oct-20 | MW27-II<br>19-Apr-21 | MW27-II<br>27-Oct-21 | MW27-II<br>20-Apr-22 | MW27-II<br>26-Oct-22 | MW27-II<br>19-Apr-23 | MW27-II<br>12-Oct-23 | MW27-III<br>15-Oct-14 | MW27-III<br>15-Apr-15 |
|-----------------------------|-------|-------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|
| Methyl Chloride             | µg/L  |       | < 2                  | < 2                  | < 2                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | --                    | < 0.3                 |
| Vinyl Chloride              | µg/L  | 2     | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | <0.2                  | --                    |
| Bromomethane                | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.3                  | < 0.3                 |
| Chloroethane                | µg/L  |       | < 3                  | < 3                  | < 3                  | < 3                  | < 3                  |                      |                      |                      |                      | --                    | < 0.1                 |
| Trichloro-fluoromethane     | µg/L  |       | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | <0.1                  | < 0.1                 |
| 1,1-Dichloroethylene        | µg/L  | 14    | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |                      | < 0.5                |                      | <0.1                  | < 0.1                 |
| Methyl tert-Butyl Ether     | µg/L  |       | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | <1                    | < 1                   |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.1                 |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.1                 |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.1                 |
| Chloroform                  | µg/L  |       | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  | <0.3                  | < 0.3                 |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.1                 |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | <0.2                  | < 0.2                 |
| Benzene                     | µg/L  | 5     | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.5                  | < 0.5                 |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.1                 |
| Trichloroethylene           | µg/L  | 5     | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |                      | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.1                 |
| 1,2-Dichloropropane         | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.1                 |
| Bromodichloromethane        | µg/L  |       | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | <0.1                  | < 0.1                 |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.1                 |
| T1,3-Dichloropropene        | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.1                 |
| Toluene                     | µg/L  | 24    | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.5                  | < 0.5                 |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.4                 |
| Tetrachloroethene           | µg/L  | 80    | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.2                  | < 0.2                 |
| Dibromochloromethane        | µg/L  |       | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | <0.1                  | < 0.1                 |
| Chlorobenzene               | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.2                  | < 0.2                 |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.1                 |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.5                  | < 0.5                 |
| Bromoform                   | µg/L  |       | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | <0.1                  | < 0.1                 |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.4                  | < 0.1                 |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.1                 |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.2                  | < 0.2                 |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.1                 |
| m/p-Xylene                  | µg/L  |       | < 1.0                | < 1.0                | < 1.0                | < 1.0                | < 1.0                | < 1.0                | < 1.0                | < 1.0                | < 1.0                | <0.4                  | < 0.4                 |
| o-Xylene                    | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.1                  | < 0.1                 |
| Total Xylene                | µg/L  | 0.3   | < 1.1                | < 1.1                | < 1.1                | < 1.1                | < 1.1                | < 1.1                | < 1.1                | < 1.1                | < 1.1                | <0.4                  | < 0.4                 |
| Styrene                     | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.5                  | < 0.5                 |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <0.2                  | < 0.2                 |
| Acetone                     | µg/L  |       | < 30                 | < 30                 | < 30                 | < 30                 | < 30                 | < 30                 | < 30                 | < 30                 | < 30                 | <2                    | 2                     |
| 1,2-Dibromoethane           | µg/L  |       | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | <0.1                  | --                    |
| Methyl ethyl ketone         | µg/L  |       | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 1                   | --                    |
| Methyl Isobutyl Ketone      | µg/L  |       | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 1                   | --                    |
| Dichloromethane             | µg/L  | 50    | < 5                  | < 5                  | < 5                  | < 2                  | < 2                  |                      |                      |                      |                      | <0.3                  | --                    |
| Trichloroethylene           | µg/L  | 5     |                      |                      |                      |                      |                      | < 0.5                | < 0.5                | < 0.5                | < 0.5                |                       |                       |

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Ground Water Chemistry  
Summary - VOC

| Parameters                  | Units | ODWQS | MW27-III<br>7-Oct-15 | MW27-III<br>9-Nov-15 | MW27-III<br>21-Jan-16 | MW27-III<br>27-Apr-16 | MW27-III<br>7-Jul-16 | MW27-III<br>3-Oct-16 | MW27-III<br>22-Feb-17 | MW27-III<br>17-Apr-17 | MW27-III<br>20-Jul-17 | MW27-III<br>23-Oct-17 | MW27-III<br>25-Apr-18 |
|-----------------------------|-------|-------|----------------------|----------------------|-----------------------|-----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Methyl Chloride             | µg/L  |       | < 0.3                | < 0.3                | < 0.3                 | < 0.3                 | < 0.3                | < 0.3                | < 0.3                 | < 0.3                 | < 0.3                 | < 0.3                 | < 0.3                 |
| Vinyl Chloride              | µg/L  | 2     | --                   | --                   | < 0.2                 | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 |
| Bromomethane                | µg/L  |       | < 0.3                | < 0.3                | < 0.3                 | < 0.3                 | < 0.3                | < 0.3                | < 0.3                 | < 0.3                 | < 0.3                 | < 0.3                 | < 0.3                 |
| Chloroethane                | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Trichloro-fluoromethane     | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| 1,1-Dichloroethylene        | µg/L  | 14    | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Methyl tert-Butyl Ether     | µg/L  |       | < 1                  | < 1                  | < 1                   | < 1                   | < 1                  | < 1                  |                       |                       |                       |                       | < 1                   |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Chloroform                  | µg/L  |       | < 0.3                | < 0.3                | < 0.3                 | < 0.3                 | < 0.3                | < 0.3                | < 0.3                 | < 0.3                 | < 0.3                 | < 0.3                 | < 0.3                 |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 |
| Benzene                     | µg/L  | 5     | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Trichloroethylene           | µg/L  | 5     | < 0.1                | < 0.1                | --                    | --                    | --                   | --                   | --                    | --                    | --                    | --                    | < 0.1                 |
| 1,2-Dichloropropane         | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Bromodichloromethane        | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| T1,3-Dichloropropene        | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Toluene                     | µg/L  | 24    | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.4                | < 0.4                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Tetrachloroethene           | µg/L  | 80    | < 0.2                | < 0.2                | --                    | --                    | --                   | --                   | --                    | --                    | --                    | --                    | < 0.2                 |
| Dibromochloromethane        | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Chlorobenzene               | µg/L  |       | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |
| Bromoform                   | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.1                | < 0.1                | < 0.4                 | < 0.4                 | < 0.4                | < 0.4                | < 0.4                 | < 0.4                 | < 0.4                 | < 0.4                 | < 0.4                 |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| m/p-Xylene                  | µg/L  |       | < 0.4                | < 0.4                | < 0.4                 | < 0.4                 | < 0.4                | < 0.4                | < 0.4                 | < 0.4                 | < 0.4                 | < 0.4                 | < 0.4                 |
| o-Xylene                    | µg/L  |       | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Total Xylene                | µg/L  | 0.3   | < 0.4                | < 0.4                | < 0.4                 | < 0.4                 | < 0.4                | < 0.4                | < 0.4                 | < 0.4                 | < 0.4                 | < 0.4                 | < 0.4                 |
| Styrene                     | µg/L  |       | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 |
| Acetone                     | µg/L  |       | < 2                  | < 2                  | < 2                   | < 2                   | < 2                  | < 2                  | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   |
| 1,2-Dibromoethane           | µg/L  |       | --                   | --                   | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Methyl ethyl ketone         | µg/L  |       | --                   | --                   | < 1                   | < 1                   | < 1                  | < 1                  | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   |
| Methyl Isobutyl Ketone      | µg/L  |       | --                   | --                   | < 1                   | < 1                   | < 1                  | < 1                  | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   |
| Dichloromethane             | µg/L  | 50    | --                   | --                   | --                    | --                    | --                   | --                   | --                    | --                    | --                    | --                    | < 0.3                 |
| Trichloroethylene           | µg/L  | 5     |                      |                      |                       |                       |                      |                      |                       |                       |                       |                       |                       |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection

Ground Water Chemistry  
Summary - VOC

| Parameters                | Units | ODWQS | MW27-III<br>15-Oct-18 | MW27-III<br>11-Apr-19 | MW27-III<br>21-Oct-19 | MW27-III<br>22-Apr-20 | MW27-III<br>19-Oct-20 | MW27-III<br>27-Oct-21 | MW27-III<br>20-Apr-22 | MW27-III<br>26-Oct-22 | MW27-III<br>19-Apr-23 | MW27-III<br>12-Oct-23 | MW28-I<br>15-Apr-15 | MW28-I<br>7-Oct-15 |
|---------------------------|-------|-------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------|--------------------|
| Methyl Chloride           | µg/L  |       | < 0.06                | < 2                   | < 2                   | < 2                   | < 2                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 0.3               | < 0.3              |
| Vinyl Chloride            | µg/L  | 2     | < 0.5                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | --                  | --                 |
| Bromomethane              | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.3               | < 0.3              |
| Chloroethane              | µg/L  |       | < 0.08                | < 3                   | < 3                   | < 3                   | < 3                   | < 3                   |                       |                       |                       |                       | < 0.1               | < 0.1              |
| Trichloro-fluoromethane   | µg/L  |       | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 0.1               | < 0.1              |
| 1,1-Dichloroethylene      | µg/L  | 14    | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |                       | < 0.5                 |                       | < 0.1               | < 0.1              |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 1                 | < 1                |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| Chloroform                | µg/L  |       | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   | < 0.3               | < 0.3              |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2               | < 0.2              |
| Benzene                   | µg/L  | 5     | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5               | < 0.5              |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| Trichloroethylene         | µg/L  | 5     | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |                       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| Bromodichloromethane      | µg/L  |       | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 0.1               | < 0.1              |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| Toluene                   | µg/L  | 24    | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5               | < 0.5              |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.4               | < 0.4              |
| Tetrachloroethene         | µg/L  | 80    | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.2               | < 0.2              |
| Dibromochloromethane      | µg/L  |       | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 0.1               | < 0.1              |
| Chlorobenzene             | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.2               | < 0.2              |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5               | < 0.5              |
| Bromoform                 | µg/L  |       | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 0.1               | < 0.1              |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.2               | < 0.2              |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| m/p-Xylene                | µg/L  |       | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 0.4               | < 0.4              |
| o-Xylene                  | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1               | < 0.1              |
| Total Xylene              | µg/L  | 0.3   | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 0.4               | < 0.4              |
| Styrene                   | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5               | < 0.5              |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.2               | < 0.2              |
| Acetone                   | µg/L  |       | < 30                  | < 30                  | < 30                  | < 30                  | < 30                  | < 30                  | < 30                  | < 30                  | < 30                  | < 30                  | 3                   | < 2                |
| 1,2-Dibromoethane         | µg/L  |       | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | --                  | --                 |
| Methyl ethyl ketone       | µg/L  |       | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | --                  | --                 |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | --                  | --                 |
| Dichloromethane           | µg/L  | 50    | < 0.3                 | < 5                   | < 5                   | < 5                   | < 5                   | < 2                   |                       |                       |                       |                       | --                  | --                 |
| Trichloroethylene         | µg/L  | 5     |                       |                       |                       |                       |                       |                       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |                     |                    |

ODWQS - Ontario Drinking Water Quality

Standards

Bold and highlighted indicates exceedance

Bold indicates detection

Ground Water Chemistry  
Summary - VOC

| Parameters                  | Units | ODWQS | MW28-I<br>9-Nov-15 | MW28-I<br>21-Jan-16 | MW28-I<br>27-Apr-16 | MW28-I<br>7-Jul-16 | MW28-I<br>3-Oct-16 | MW28-I<br>22-Feb-17 | MW28-I<br>17-Apr-17 | MW28-I<br>20-Jul-17 | MW28-I<br>23-Oct-17 | MW28-I<br>25-Apr-18 | MW28-I<br>15-Oct-18 |
|-----------------------------|-------|-------|--------------------|---------------------|---------------------|--------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Methyl Chloride             | µg/L  |       | < 0.3              | < 0.3               | < 0.3               | < 0.3              | < 0.3              | < 0.3               | < 0.3               | < 0.3               | < 0.3               | < 0.3               | < 0.06              |
| Vinyl Chloride              | µg/L  | 2     | --                 | < 0.2               | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.5               |
| Bromomethane                | µg/L  |       | < 0.3              | < 0.3               | < 0.3               | < 0.3              | < 0.3              | < 0.3               | < 0.3               | < 0.3               | < 0.3               | < 0.3               | < 0.5               |
| Chloroethane                | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.08              |
| Trichloro-fluoromethane     | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 5                 |
| 1,1-Dichloroethylene        | µg/L  | 14    | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Methyl tert-Butyl Ether     | µg/L  |       | < 1                | < 1                 | < 1                 | < 1                | < 1                |                     |                     |                     |                     | < 1                 | < 2                 |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Chloroform                  | µg/L  |       | < 0.3              | < 0.3               | < 0.3               | < 0.3              | < 0.3              | < 0.3               | < 0.3               | < 0.3               | < 0.3               | < 0.3               | < 1                 |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2              | < 0.2               | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               |
| Benzene                     | µg/L  | 5     | < 0.5              | < 0.5               | < 0.5               | < 0.5              | < 0.5              | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Trichloroethylene           | µg/L  | 5     | < 0.1              | --                  | --                  | --                 | --                 | --                  | --                  | --                  | --                  | < 0.1               | < 0.5               |
| 1,2-Dichloropropane         | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Bromodichloromethane        | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 2                 |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| T1,3-Dichloropropene        | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Toluene                     | µg/L  | 24    | < 0.5              | < 0.5               | < 0.5               | < 0.5              | < 0.5              | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.4              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Tetrachloroethene           | µg/L  | 80    | < 0.2              | --                  | --                  | --                 | --                 | --                  | --                  | --                  | --                  | < 0.2               | < 0.5               |
| Dibromochloromethane        | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 2                 |
| Chlorobenzene               | µg/L  |       | < 0.2              | < 0.2               | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.5               |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5              | < 0.5               | < 0.5               | < 0.5              | < 0.5              | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               |
| Bromoform                   | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 5                 |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.1              | < 0.4               | < 0.4               | < 0.4              | < 0.4              | < 0.4               | < 0.4               | < 0.4               | < 0.4               | < 0.4               | < 0.5               |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.2              | < 0.2               | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.5               |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| m/p-Xylene                  | µg/L  |       | < 0.4              | < 0.4               | < 0.4               | < 0.4              | < 0.4              | < 0.4               | < 0.4               | < 0.4               | < 0.4               | < 0.4               | < 1.0               |
| o-Xylene                    | µg/L  |       | < 0.1              | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.5               |
| Total Xylene                | µg/L  | 0.3   | < 0.4              | < 0.4               | < 0.4               | < 0.4              | < 0.4              | < 0.4               | < 0.4               | < 0.4               | < 0.4               | < 0.4               | < 1.1               |
| Styrene                     | µg/L  |       | < 0.5              | < 0.5               | < 0.5               | < 0.5              | < 0.5              | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.2              | < 0.2               | < 0.2               | < 0.2              | < 0.2              | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.5               |
| Acetone                     | µg/L  |       | < 2                | < 2                 | < 2                 | < 2                | < 2                | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 30                |
| 1,2-Dibromoethane           | µg/L  |       | --                 | < 0.1               | < 0.1               | < 0.1              | < 0.1              | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.1               | < 0.2               |
| Methyl ethyl ketone         | µg/L  |       | --                 | < 1                 | < 1                 | < 1                | < 1                | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 20                |
| Methyl Isobutyl Ketone      | µg/L  |       | --                 | < 1                 | < 1                 | < 1                | < 1                | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 20                |
| Dichloromethane             | µg/L  | 50    | --                 | --                  | --                  | --                 | --                 | --                  | --                  | --                  | --                  | < 0.3               | < 0.3               |
| Trichloroethylene           | µg/L  | 5     |                    |                     |                     |                    |                    |                     |                     |                     |                     |                     |                     |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection

Ground Water Chemistry  
Summary - VOC

| Parameters                | Units | ODWQS | MW28-I<br>11-Apr-19 | MW28-I<br>21-Oct-19 | MW28-I<br>22-Apr-20 | MW28-I<br>19-Oct-20 | MW28-I<br>19-Apr-21 | MW28-I<br>27-Oct-21 | MW28-I<br>20-Apr-22 | MW28-I<br>26-Oct-22 | MW28-I<br>19-Apr-23 | MW28-I<br>12-Oct-23 | MW28-II<br>15-Apr-15 |
|---------------------------|-------|-------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|
| Methyl Chloride           | µg/L  |       | < 2                 | < 2                 | < 2                 | < 2                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 0.3                |
| Vinyl Chloride            | µg/L  | 2     | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | --                   |
| Bromomethane              | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.3                |
| Chloroethane              | µg/L  |       | < 3                 | < 3                 | < 3                 | < 3                 | < 3                 | < 3                 |                     |                     |                     |                     | < 0.1                |
| Trichloro-fluoromethane   | µg/L  |       | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 0.1                |
| 1,1-Dichloroethylene      | µg/L  | 14    | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 1                  |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| Chloroform                | µg/L  |       | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 1                 | < 0.3                |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2                |
| Benzene                   | µg/L  | 5     | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5                |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| Trichloroethylene         | µg/L  | 5     | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               |                     | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| Bromodichloromethane      | µg/L  |       | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 0.1                |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| Toluene                   | µg/L  | 24    | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5                |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.4                |
| Tetrachloroethene         | µg/L  | 80    | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.2                |
| Dibromochloromethane      | µg/L  |       | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 2                 | < 0.1                |
| Chlorobenzene             | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.2                |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5                |
| Bromoform                 | µg/L  |       | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 5                 | < 0.1                |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.2                |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| m/p-Xylene                | µg/L  |       | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 1.0               | < 0.4                |
| o-Xylene                  | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.1                |
| Total Xylene              | µg/L  | 0.3   | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 1.1               | < 0.4                |
| Styrene                   | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5                |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.5               | < 0.2                |
| Acetone                   | µg/L  |       | < 30                | < 30                | < 30                | < 30                | < 30                | < 30                | < 30                | < 30                | < 30                | < 30                | < 2                  |
| 1,2-Dibromoethane         | µg/L  |       | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | < 0.2               | --                   |
| Methyl ethyl ketone       | µg/L  |       | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | --                   |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | < 20                | --                   |
| Dichloromethane           | µg/L  | 50    | < 5                 | < 5                 | < 5                 | < 5                 | < 2                 | < 2                 |                     |                     |                     |                     | --                   |
| Trichloroethylene         | µg/L  | 5     |                     |                     |                     |                     |                     |                     | < 0.5               | < 0.5               | < 0.5               | < 0.5               |                      |

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Ground Water Chemistry  
Summary - VOC

| Parameters                  | Units | ODWQS | MW28-II<br>7-Oct-15 | MW28-II<br>9-Nov-15 | MW28-II<br>21-Jan-16 | MW28-II<br>27-Apr-16 | MW28-II<br>7-Jul-16 | MW28-II<br>3-Oct-16 | MW28-II<br>22-Feb-17 | MW28-II<br>17-Apr-17 | MW28-II<br>20-Jul-17 | MW28-II<br>23-Oct-17 | MW28-II<br>25-Apr-18 |
|-----------------------------|-------|-------|---------------------|---------------------|----------------------|----------------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Methyl Chloride             | µg/L  |       | < 0.3               | < 0.3               | < 0.3                | < 0.3                | < 0.3               | < 0.3               | < 0.3                | < 0.3                | < 0.3                | < 0.3                | < 0.3                |
| Vinyl Chloride              | µg/L  | 2     | --                  | --                  | < 0.2                | < 0.2                | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                |
| Bromomethane                | µg/L  |       | < 0.3               | < 0.3               | < 0.3                | < 0.3                | < 0.3               | < 0.3               | < 0.3                | < 0.3                | < 0.3                | < 0.3                | < 0.3                |
| Chloroethane                | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Trichloro-fluoromethane     | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| 1,1-Dichloroethylene        | µg/L  | 14    | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Methyl tert-Butyl Ether     | µg/L  |       | < 1                 | < 1                 | < 1                  | < 1                  | < 1                 | < 1                 |                      |                      |                      |                      | < 1                  |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Chloroform                  | µg/L  |       | < 0.3               | < 0.3               | < 0.3                | < 0.3                | < 0.3               | < 0.3               | < 0.3                | < 0.3                | < 0.3                | < 0.3                | < 0.3                |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                |
| Benzene                     | µg/L  | 5     | < 0.5               | < 0.5               | < 0.5                | < 0.5                | < 0.5               | < 0.5               | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Trichloroethylene           | µg/L  | 5     | < 0.1               | < 0.1               | --                   | --                   | --                  | --                  | --                   | --                   | --                   | --                   | < 0.1                |
| 1,2-Dichloropropane         | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Bromodichloromethane        | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| T1,3-Dichloropropene        | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Toluene                     | µg/L  | 24    | 0.6                 | 0.5                 | < 0.5                | < 0.5                | < 0.5               | < 0.5               | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.4               | < 0.4               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Tetrachloroethene           | µg/L  | 80    | < 0.2               | < 0.2               | --                   | --                   | --                  | --                  | --                   | --                   | --                   | --                   | < 0.2                |
| Dibromochloromethane        | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Chlorobenzene               | µg/L  |       | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5               | < 0.5               | < 0.5                | < 0.5                | < 0.5               | < 0.5               | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Bromoform                   | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.1               | < 0.1               | < 0.4                | < 0.4                | < 0.4               | < 0.4               | < 0.4                | < 0.4                | < 0.4                | < 0.4                | < 0.4                |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| m/p-Xylene                  | µg/L  |       | < 0.4               | < 0.4               | < 0.4                | < 0.4                | < 0.4               | < 0.4               | < 0.4                | < 0.4                | < 0.4                | < 0.4                | < 0.4                |
| o-Xylene                    | µg/L  |       | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Total Xylene                | µg/L  | 0.3   | < 0.4               | < 0.4               | < 0.4                | < 0.4                | < 0.4               | < 0.4               | < 0.4                | < 0.4                | < 0.4                | < 0.4                | < 0.4                |
| Styrene                     | µg/L  |       | < 0.5               | < 0.5               | < 0.5                | < 0.5                | < 0.5               | < 0.5               | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2               | < 0.2               | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                |
| Acetone                     | µg/L  |       | < 2                 | < 2                 | < 2                  | < 2                  | < 2                 | < 2                 | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  |
| 1,2-Dibromoethane           | µg/L  |       | --                  | --                  | < 0.1                | < 0.1                | < 0.1               | < 0.1               | < 0.1                | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Methyl ethyl ketone         | µg/L  |       | --                  | --                  | < 1                  | < 1                  | < 1                 | < 1                 | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  |
| Methyl Isobutyl Ketone      | µg/L  |       | --                  | --                  | < 1                  | < 1                  | < 1                 | < 1                 | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  |
| Dichloromethane             | µg/L  | 50    | --                  | --                  | --                   | --                   | --                  | --                  | --                   | --                   | --                   | --                   | < 0.3                |
| Trichloroethylene           | µg/L  | 5     |                     |                     |                      |                      |                     |                     |                      |                      |                      |                      |                      |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection



Ground Water Chemistry  
Summary - VOC

| Parameters                  | Units | ODWQS | MW28-II<br>15-Oct-18 | MW28-II<br>11-Apr-19 | MW28-II<br>21-Oct-19 | MW28-II<br>22-Apr-20 | MW28-II<br>19-Oct-20 | MW28-II<br>19-Apr-21 | MW28-II<br>27-Oct-21 | MW28-II<br>20-Apr-22 | MW28-II<br>26-Oct-22 | MW28-II<br>19-Apr-23 | MW28-II<br>12-Oct-23 |
|-----------------------------|-------|-------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Methyl Chloride             | µg/L  |       | < 0.06               | < 2                  | < 2                  | < 2                  | < 2                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  |
| Vinyl Chloride              | µg/L  | 2     | < 0.5                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                |
| Bromomethane                | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Chloroethane                | µg/L  |       | < 0.08               | < 3                  | < 3                  | < 3                  | < 3                  | < 3                  | < 3                  |                      |                      |                      |                      |
| Trichloro-fluoromethane     | µg/L  |       | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  |
| 1,1-Dichloroethylene        | µg/L  | 14    | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |                      | < 0.5                |                      |
| Methyl tert-Butyl Ether     | µg/L  |       | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Chloroform                  | µg/L  |       | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  | < 1                  |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                |
| Benzene                     | µg/L  | 5     | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Trichloroethylene           | µg/L  | 5     | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |                      | < 0.5                | < 0.5                | < 0.5                |
| 1,2-Dichloropropane         | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Bromodichloromethane        | µg/L  |       | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| T1,3-Dichloropropene        | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Toluene                     | µg/L  | 24    | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | <b>0.6</b>           |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Tetrachloroethene           | µg/L  | 80    | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Dibromochloromethane        | µg/L  |       | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  | < 2                  |
| Chlorobenzene               | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Bromoform                   | µg/L  |       | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  | < 5                  |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| m/p-Xylene                  | µg/L  |       | < 1.0                | < 1.0                | < 1.0                | < 1.0                | < 1.0                | < 1.0                | < 1.0                | < 1.0                | < 1.0                | < 1.0                | < 1.0                |
| o-Xylene                    | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Total Xylene                | µg/L  | 0.3   | < 1.1                | < 1.1                | < 1.1                | < 1.1                | < 1.1                | < 1.1                | < 1.1                | < 1.1                | < 1.1                | < 1.1                | < 1.1                |
| Styrene                     | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                | < 0.5                |
| Acetone                     | µg/L  |       | < 30                 | < 30                 | < 30                 | < 30                 | < 30                 | < 30                 | < 30                 | < 30                 | < 30                 | < 30                 | < 30                 |
| 1,2-Dibromoethane           | µg/L  |       | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                | < 0.2                |
| Methyl ethyl ketone         | µg/L  |       | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 |
| Methyl Isobutyl Ketone      | µg/L  |       | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 | < 20                 |
| Dichloromethane             | µg/L  | 50    | < 0.3                | < 5                  | < 5                  | < 5                  | < 5                  | < 2                  | < 2                  |                      |                      |                      |                      |
| Trichloroethylene           | µg/L  | 5     |                      |                      |                      |                      |                      |                      |                      | < 0.5                | < 0.5                | < 0.5                | < 0.5                |

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Ground Water Chemistry  
Summary - VOC

| Parameters                  | Units | ODWQS | MW28-III<br>15-Apr-15 | MW28-III<br>7-Oct-15 | MW28-III<br>9-Nov-15 | MW28-III<br>21-Jan-16 | MW28-III<br>27-Apr-16 | MW28-III<br>7-Jul-16 | MW28-III<br>3-Oct-16 | MW28-III<br>22-Feb-17 | MW28-III<br>17-Apr-17 | MW28-III<br>20-Jul-17 | MW28-III<br>23-Oct-17 | MW28-III<br>25-Apr-18 |
|-----------------------------|-------|-------|-----------------------|----------------------|----------------------|-----------------------|-----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Methyl Chloride             | µg/L  |       | < 0.3                 | < 0.3                | < 0.3                | < 0.3                 | < 0.3                 | < 0.3                | < 0.3                | < 0.3                 | < 0.3                 | < 0.3                 | < 0.3                 | < 0.3                 |
| Vinyl Chloride              | µg/L  | 2     | --                    | --                   | --                   | < 0.2                 | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 |
| Bromomethane                | µg/L  |       | < 0.3                 | < 0.3                | < 0.3                | < 0.3                 | < 0.3                 | < 0.3                | < 0.3                | < 0.3                 | < 0.3                 | < 0.3                 | < 0.3                 | < 0.3                 |
| Chloroethane                | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Trichloro-fluomethane       | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| 1,1-Dichloroethylene        | µg/L  | 14    | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Methyl tert-Butyl Ether     | µg/L  |       | < 1                   | < 1                  | < 1                  | < 1                   | < 1                   | < 1                  | < 1                  |                       |                       |                       |                       | < 1                   |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Chloroform                  | µg/L  |       | < 0.3                 | < 0.3                | < 0.3                | < 0.3                 | < 0.3                 | < 0.3                | < 0.3                | < 0.3                 | < 0.3                 | < 0.3                 | < 0.3                 | < 0.3                 |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 |
| Benzene                     | µg/L  | 5     | < 0.5                 | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Trichloroethylene           | µg/L  | 5     | < 0.1                 | < 0.1                | < 0.1                | --                    | --                    | --                   | --                   | --                    | --                    | --                    | --                    | < 0.1                 |
| 1,2-Dichloropropane         | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Bromodichloromethane        | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| T1,3-Dichloropropene        | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Toluene                     | µg/L  | 24    | < 0.5                 | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.4                 | < 0.4                | < 0.4                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Tetrachloroethene           | µg/L  | 80    | < 0.2                 | < 0.2                | < 0.2                | --                    | --                    | --                   | --                   | --                    | --                    | --                    | --                    | < 0.2                 |
| Dibromochloromethane        | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Chlorobenzene               | µg/L  |       | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5                 | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |
| Bromoform                   | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.4                 | < 0.4                 | < 0.4                | < 0.4                | < 0.4                 | < 0.4                 | < 0.4                 | < 0.4                 | < 0.4                 |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| m/p-Xylene                  | µg/L  |       | < 0.4                 | < 0.4                | < 0.4                | < 0.4                 | < 0.4                 | < 0.4                | < 0.4                | < 0.4                 | < 0.4                 | < 0.4                 | < 0.4                 | < 0.4                 |
| o-Xylene                    | µg/L  |       | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Total Xylene                | µg/L  | 0.3   | < 0.4                 | < 0.4                | < 0.4                | < 0.4                 | < 0.4                 | < 0.4                | < 0.4                | < 0.4                 | < 0.4                 | < 0.4                 | < 0.4                 | < 0.4                 |
| Styrene                     | µg/L  |       | < 0.5                 | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                | < 0.5                | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                | < 0.2                | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 |
| Acetone                     | µg/L  |       | < 2                   | < 2                  | < 2                  | < 2                   | < 2                   | < 2                  | < 2                  | < 2                   | < 2                   | < 2                   | < 2                   | <b>6</b>              |
| 1,2-Dibromoethane           | µg/L  |       | --                    | --                   | --                   | < 0.1                 | < 0.1                 | < 0.1                | < 0.1                | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 | < 0.1                 |
| Methyl ethyl ketone         | µg/L  |       | --                    | --                   | --                   | < 1                   | < 1                   | < 1                  | < 1                  | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   |
| Methyl Isobutyl Ketone      | µg/L  |       | --                    | --                   | --                   | < 1                   | < 1                   | < 1                  | < 1                  | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   |
| Dichloromethane             | µg/L  | 50    | --                    | --                   | --                   | --                    | --                    | --                   | --                   | --                    | --                    | --                    | --                    | < 0.3                 |
| Trichloroethylene           | µg/L  | 5     |                       |                      |                      |                       |                       |                      |                      |                       |                       |                       |                       |                       |

ODWQS - Ontario Drinking Water Quality

Standards

Bold and highlighted indicates exceedance

Bold indicates detection

Ground Water Chemistry  
Summary - VOC

| Parameters                | Units | ODWQS | MW28-III<br>15-Oct-18 | MW28-III<br>11-Apr-19 | MW28-III<br>21-Oct-19 | MW28-III<br>22-Apr-20 | MW28-III<br>19-Oct-20 | MW28-III<br>19-Apr-21 | MW28-III<br>27-Oct-21 | MW28-III<br>20-Apr-22 | MW28-III<br>26-Oct-22 | MW28-III<br>19-Apr-23 | MW28-III<br>12-Oct-23 | WP1<br>16-Apr-15 |
|---------------------------|-------|-------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------|
| Methyl Chloride           | µg/L  |       | < 0.06                | < 2                   | < 2                   | < 2                   | < 2                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 0.3            |
| Vinyl Chloride            | µg/L  | 2     | < 0.5                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | --               |
| Bromomethane              | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.3            |
| Chloroethane              | µg/L  |       | < 0.08                | < 3                   | < 3                   | < 3                   | < 3                   | < 3                   | < 3                   |                       |                       |                       |                       | < 0.1            |
| Trichloro-fluoromethane   | µg/L  |       | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 0.1            |
| 1,1-Dichloroethylene      | µg/L  | 14    | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |                       | < 0.5                 | < 0.5                 | < 0.1            |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 1              |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| Chloroform                | µg/L  |       | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   | < 1                   | < 0.3            |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2            |
| Benzene                   | µg/L  | 5     | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5            |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| Trichloroethylene         | µg/L  | 5     | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |                       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| Bromodichloromethane      | µg/L  |       | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 0.1            |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| Toluene                   | µg/L  | 24    | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5            |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.4            |
| Tetrachloroethene         | µg/L  | 80    | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.2            |
| Dibromochloromethane      | µg/L  |       | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 2                   | < 0.1            |
| Chlorobenzene             | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.2            |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5            |
| Bromoform                 | µg/L  |       | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 5                   | < 0.1            |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.2            |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| m/p-Xylene                | µg/L  |       | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 1.0                 | < 0.4            |
| o-Xylene                  | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.1            |
| Total Xylene              | µg/L  | 0.3   | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 1.1                 | < 0.4            |
| Styrene                   | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5            |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 | < 0.2            |
| Acetone                   | µg/L  |       | < 30                  | < 30                  | < 30                  | < 30                  | < 30                  | < 30                  | < 30                  | < 30                  | < 30                  | < 30                  | < 30                  | < 2              |
| 1,2-Dibromoethane         | µg/L  |       | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | < 0.2                 | --               |
| Methyl ethyl ketone       | µg/L  |       | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | --               |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | < 20                  | --               |
| Dichloromethane           | µg/L  | 50    | < 0.3                 | < 5                   | < 5                   | < 5                   | < 5                   | < 2                   | < 2                   |                       |                       |                       |                       | --               |
| Trichloroethylene         | µg/L  | 5     |                       |                       |                       |                       |                       |                       |                       | < 0.5                 | < 0.5                 | < 0.5                 | < 0.5                 |                  |

ODWQS - Ontario Drinking Water Quality

Standards

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Ground Water Chemistry  
Summary - VOC

| Parameters                  | Units | ODWQS | WP1<br>8-Oct-15 | WP1<br>28-Apr-16 | WP1<br>4-Oct-16 | WP1<br>18-Apr-17 | WP1<br>23-Oct-17 | WP1<br>25-Apr-18 | WP1<br>16-Oct-18 | WP1<br>11-Apr-19 | WP1<br>22-Oct-19 | WP1<br>23-Apr-20 | WP1<br>20-Oct-20 |
|-----------------------------|-------|-------|-----------------|------------------|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Methyl Chloride             | µg/L  |       | < 0.3           | < 0.3            | < 0.3           | < 0.3            | < 0.3            | < 0.3            | < 0.06           | < 2              | < 2              | < 2              | < 2              |
| Vinyl Chloride              | µg/L  | 2     | --              | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.5            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Bromomethane                | µg/L  |       | < 0.3           | < 0.3            | < 0.3           | < 0.3            | < 0.3            | < 0.3            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Chloroethane                | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.08           | < 3              | < 3              | < 3              | < 3              |
| Trichloro-fluomethane       | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 5              | < 5              | < 5              | < 5              | < 5              |
| 1,1-Dichloroethylene        | µg/L  | 14    | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Methyl tert-Butyl Ether     | µg/L  |       | < 1             | < 1              | < 1             |                  |                  | < 1              | < 2              | < 2              | < 2              | < 2              | < 2              |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Chloroform                  | µg/L  |       | < 0.3           | < 0.3            | < 0.3           | < 0.3            | < 0.3            | < 0.3            | < 1              | < 1              | < 1              | < 1              | < 1              |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2           | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Benzene                     | µg/L  | 5     | < 0.5           | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Trichloroethylene           | µg/L  | 5     | < 0.1           | --               | --              | --               | --               | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichloropropane         | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Bromodichloromethane        | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 2              | < 2              | < 2              | < 2              | < 2              |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| T1,3-Dichloropropene        | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Toluene                     | µg/L  | 24    | < 0.5           | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.4           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Tetrachloroethene           | µg/L  | 80    | < 0.2           | --               | --              | --               | --               | < 0.2            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Dibromochloromethane        | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 2              | < 2              | < 2              | < 2              | < 2              |
| Chlorobenzene               | µg/L  |       | < 0.2           | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5           | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Bromoform                   | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 5              | < 5              | < 5              | < 5              | < 5              |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.1           | < 0.4            | < 0.4           | < 0.4            | < 0.4            | < 0.4            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.2           | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| m/p-Xylene                  | µg/L  |       | < 0.4           | < 0.4            | < 0.4           | < 0.4            | < 0.4            | < 0.4            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            |
| o-Xylene                    | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Total Xylene                | µg/L  | 0.3   | < 0.4           | < 0.4            | < 0.4           | < 0.4            | < 0.4            | < 0.4            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            |
| Styrene                     | µg/L  |       | < 0.5           | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.2           | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Acetone                     | µg/L  |       | < 2             | < 2              | < 2             | < 2              | < 2              | <b>4</b>         | < 30             | < 30             | < 30             | < 30             | < 30             |
| 1,2-Dibromoethane           | µg/L  |       | --              | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Methyl ethyl ketone         | µg/L  |       | --              | < 1              | < 1             | < 1              | < 1              | < 1              | < 20             | < 20             | < 20             | < 20             | < 20             |
| Methyl Isobutyl Ketone      | µg/L  |       | --              | < 1              | < 1             | < 1              | < 1              | < 1              | < 20             | < 20             | < 20             | < 20             | < 20             |
| Dichloromethane             | µg/L  | 50    | --              | --               | --              | --               | --               | < 0.3            | < 0.3            | < 5              | < 5              | < 5              | < 5              |
| Trichloroethylene           | µg/L  | 5     |                 |                  |                 |                  |                  |                  |                  |                  |                  |                  |                  |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection

Ground Water Chemistry  
Summary - VOC

| Parameters                | Units | ODWQS | DUP              |                  |                  |                  |                  |                  |                  |                  |                 |                  |                  |                  |
|---------------------------|-------|-------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------|------------------|------------------|------------------|
|                           |       |       | WP1<br>20-Apr-21 | WP1<br>27-Oct-21 | WP1<br>20-Apr-22 | WP1<br>24-Oct-22 | WP1<br>19-Apr-23 | WP1<br>12-Oct-23 | WP1<br>12-Oct-23 | WP2<br>17-Apr-15 | WP2<br>8-Oct-15 | WP2<br>28-Apr-16 | WP2<br>18-Apr-17 | WP2<br>24-Oct-17 |
| Methyl Chloride           | µg/L  |       | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 0.3            | < 0.3           | < 0.3            | < 0.3            | < 0.3            |
| Vinyl Chloride            | µg/L  | 2     | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | --               | --              | < 0.2            | < 0.2            | < 0.2            |
| Bromomethane              | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | <b>2.1</b>       | < 0.5            | < 0.5            | < 0.5            | < 0.3            | < 0.3           | < 0.3            | < 0.3            | < 0.3            |
| Chloroethane              | µg/L  |       | < 3              | < 3              |                  |                  |                  |                  |                  | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Trichloro-fluoromethane   | µg/L  |       | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| 1,1-Dichloroethylene      | µg/L  | 14    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 1              | < 1             | < 1              |                  |                  |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                  | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Chloroform                | µg/L  |       | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              | < 0.3            | < 0.3           | < 0.3            | < 0.3            | < 0.3            |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            |
| Benzene                   | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Trichloroethylene         | µg/L  | 5     | < 0.5            | < 0.5            |                  | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | --               | --               | --               |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Bromodichloromethane      | µg/L  |       | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Toluene                   | µg/L  | 24    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.4            | < 0.4           | < 0.1            | < 0.1            | < 0.1            |
| Tetrachloroethene         | µg/L  | 80    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2           | --               | --               | --               |
| Dibromochloromethane      | µg/L  |       | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Chlorobenzene             | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            |
| Bromoform                 | µg/L  |       | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.4            | < 0.4            | < 0.4            |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | ,                | < 0.1            | < 0.1            |
| m/p-Xylene                | µg/L  |       | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 0.4            | < 0.4           | < 0.4            | < 0.4            | < 0.4            |
| o-Xylene                  | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Total Xylene              | µg/L  | 0.3   | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 0.4            | < 0.4           | < 0.4            | < 0.4            | < 0.4            |
| Styrene                   | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            |
| Acetone                   | µg/L  |       | < 30             | < 30             | < 30             | < 30             | < 30             | < 30             | < 30             | <b>7</b>         | < 2             | <b>11</b>        | <b>9</b>         | < 2              |
| 1,2-Dibromoethane         | µg/L  |       | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | --               | --              | < 0.1            | < 0.1            | < 0.1            |
| Methyl ethyl ketone       | µg/L  |       | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | --               | --              | < 1              | <b>2</b>         | < 1              |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | --               | --              | < 1              | < 1              | < 1              |
| Dichloromethane           | µg/L  | 50    | < 2              | < 2              |                  |                  |                  |                  |                  | --               | --              | --               | --               | --               |
| Trichloroethylene         | µg/L  | 5     |                  |                  | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                  |                 |                  |                  |                  |

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Ground Water Chemistry  
Summary - VOC

| Parameters                  | Units | ODWQS | WP2       | WP2       | WP2       | WP2       | WP2        | WP2       | WP2       | WP2       | WP2       | WP2       | WP2       | WP3       |
|-----------------------------|-------|-------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                             |       |       | 24-Apr-18 | 16-Oct-18 | 22-Oct-19 | 23-Apr-20 | 20-Oct-20  | 20-Apr-21 | 27-Oct-21 | 21-Apr-22 | 24-Oct-22 | 19-Apr-23 | 12-Oct-23 | 17-Apr-15 |
| Methyl Chloride             | µg/L  |       | < 0.3     | < 0.06    | < 2       | < 2       | < 2        | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 0.3     |
| Vinyl Chloride              | µg/L  | 2     | < 0.2     | < 0.5     | < 0.2     | < 0.2     | < 0.2      | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | --        |
| Bromomethane                | µg/L  |       | < 0.3     | < 0.5     | < 0.5     | < 0.5     | <b>1.3</b> | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.3     |
| Chloroethane                | µg/L  |       | < 0.1     | < 0.08    | < 3       | < 3       | < 3        | < 3       | < 3       |           |           |           |           | < 0.1     |
| Trichloro-fluoromethane     | µg/L  |       | < 0.1     | < 5       | < 5       | < 5       | < 5        | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 0.1     |
| 1,1-Dichloroethylene        | µg/L  | 14    | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     |           | < 0.5     |           | < 0.1     |
| Methyl tert-Butyl Ether     | µg/L  |       | < 1       | < 2       | < 2       | < 2       | < 2        | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 1       |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1     |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     |           | < 0.5     | < 0.1     |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1     |
| Chloroform                  | µg/L  |       | < 0.3     | < 1       | < 1       | < 1       | < 1        | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 0.3     |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1     |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2      | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Benzene                     | µg/L  | 5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1     |
| Trichloroethylene           | µg/L  | 5     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     |           | < 0.5     | < 0.5     | < 0.5     | < 0.1     |
| 1,2-Dichloropropane         | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1     |
| Bromodichloromethane        | µg/L  |       | < 0.1     | < 2       | < 2       | < 2       | < 2        | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 0.1     |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1     |
| T1,3-Dichloropropene        | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1     |
| Toluene                     | µg/L  | 24    | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.4     |
| Tetrachloroethene           | µg/L  | 80    | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.2     |
| Dibromochloromethane        | µg/L  |       | < 0.1     | < 2       | < 2       | < 2       | < 2        | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 0.1     |
| Chlorobenzene               | µg/L  |       | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.2     |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1     |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Bromoform                   | µg/L  |       | < 0.1     | < 5       | < 5       | < 5       | < 5        | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       | < 0.1     |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.4     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1     |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1     |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.2     |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1     |
| m/p-Xylene                  | µg/L  |       | < 0.4     | < 1.0     | < 1.0     | < 1.0     | < 1.0      | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 0.4     |
| o-Xylene                    | µg/L  |       | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.1     |
| Total Xylene                | µg/L  | 0.3   | < 0.4     | < 1.1     | < 1.1     | < 1.1     | < 1.1      | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 0.4     |
| Styrene                     | µg/L  |       | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.2     |
| Acetone                     | µg/L  |       | <b>11</b> | < 30      | < 30      | < 30      | < 30       | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      | <b>4</b>  |
| 1,2-Dibromoethane           | µg/L  |       | < 0.1     | < 0.2     | < 0.2     | < 0.2     | < 0.2      | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | --        |
| Methyl ethyl ketone         | µg/L  |       | <b>1</b>  | < 20      | < 20      | < 20      | < 20       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | --        |
| Methyl Isobutyl Ketone      | µg/L  |       | < 1       | < 20      | < 20      | < 20      | < 20       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      | --        |
| Dichloromethane             | µg/L  | 50    | < 0.3     | < 0.3     | < 5       | < 5       | < 5        | < 2       | < 2       |           |           |           |           | --        |
| Trichloroethylene           | µg/L  | 5     |           |           |           |           |            |           |           | < 0.5     | < 0.5     | < 0.5     | < 0.5     |           |

ODWQS - Ontario Drinking Water Quality

Standards

Bold and highlighted indicates exceedance

Bold indicates detection



Ground Water Chemistry  
Summary - VOC

| Parameters                  | Units | ODWQS | WP3<br>8-Oct-15 | WP3<br>28-Apr-16 | WP3<br>4-Oct-16 | WP3<br>18-Apr-17 | WP3<br>23-Oct-17 | WP3<br>24-Apr-18 | WP3<br>16-Oct-18 | WP3<br>12-Apr-19 | WP3<br>22-Oct-19 | WP3<br>23-Apr-20 | WP3<br>20-Oct-20 |
|-----------------------------|-------|-------|-----------------|------------------|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Methyl Chloride             | µg/L  |       | < 0.3           | < 0.3            | < 0.3           | < 0.3            | < 0.3            | < 0.3            | < 0.06           | < 2              | < 2              | < 2              | < 2              |
| Vinyl Chloride              | µg/L  | 2     | --              | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.5            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Bromomethane                | µg/L  |       | < 0.3           | < 0.3            | < 0.3           | < 0.3            | < 0.3            | < 0.3            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Chloroethane                | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.08           | < 3              | < 3              | < 3              | < 3              |
| Trichloro-fluoromethane     | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 5              | < 5              | < 5              | < 5              | < 5              |
| 1,1-Dichloroethylene        | µg/L  | 14    | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Methyl tert-Butyl Ether     | µg/L  |       | < 1             | < 1              | < 1             |                  |                  | < 1              | < 2              | < 2              | < 2              | < 2              | < 2              |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Chloroform                  | µg/L  |       | < 0.3           | < 0.3            | < 0.3           | < 0.3            | < 0.3            | < 0.3            | < 1              | < 1              | < 1              | < 1              | < 1              |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2           | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Benzene                     | µg/L  | 5     | < 0.5           | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Trichloroethylene           | µg/L  | 5     | < 0.1           | --               | --              | --               | --               | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichloropropane         | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Bromodichloromethane        | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 2              | < 2              | < 2              | < 2              | < 2              |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| T1,3-Dichloropropene        | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Toluene                     | µg/L  | 24    | < 0.5           | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.4           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Tetrachloroethene           | µg/L  | 80    | < 0.2           | --               | --              | --               | --               | < 0.2            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Dibromochloromethane        | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 2              | < 2              | < 2              | < 2              | < 2              |
| Chlorobenzene               | µg/L  |       | < 0.2           | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5           | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Bromoform                   | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 5              | < 5              | < 5              | < 5              | < 5              |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.1           | < 0.4            | < 0.4           | < 0.4            | < 0.4            | < 0.4            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.2           | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| m/p-Xylene                  | µg/L  |       | < 0.4           | < 0.4            | < 0.4           | < 0.4            | < 0.4            | < 0.4            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            |
| o-Xylene                    | µg/L  |       | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Total Xylene                | µg/L  | 0.3   | < 0.4           | < 0.4            | < 0.4           | < 0.4            | < 0.4            | < 0.4            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            |
| Styrene                     | µg/L  |       | < 0.5           | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.2           | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Acetone                     | µg/L  |       | < 2             | < 2              | < 2             | < 2              | < 2              | <b>11</b>        | < 30             | < 30             | < 30             | < 30             | < 30             |
| 1,2-Dibromoethane           | µg/L  |       | --              | < 0.1            | < 0.1           | < 0.1            | < 0.1            | < 0.1            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Methyl ethyl ketone         | µg/L  |       | --              | < 1              | < 1             | < 1              | < 1              | < 1              | < 20             | < 20             | < 20             | < 20             | < 20             |
| Methyl Isobutyl Ketone      | µg/L  |       | --              | < 1              | < 1             | < 1              | < 1              | < 1              | < 20             | < 20             | < 20             | < 20             | < 20             |
| Dichloromethane             | µg/L  | 50    | --              | --               | --              | --               | --               | < 0.3            | < 0.3            | < 5              | < 5              | < 5              | < 5              |
| Trichloroethylene           | µg/L  | 5     |                 |                  |                 |                  |                  |                  |                  |                  |                  |                  |                  |

ODWQS - Ontario Drinking Water Quality  
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Ground Water Chemistry  
Summary - VOC

| Parameters                | Units | ODWQS | WP3<br>20-Apr-21 | WP3<br>27-Oct-21 | WP3<br>21-Apr-22 | WP3<br>24-Oct-22 | WP3<br>19-Apr-23 | WP3<br>12-Oct-23 | WP4<br>17-Apr-15 | WP4<br>8-Oct-15 | WP4<br>28-Apr-16 | WP4<br>4-Oct-16 | WP4<br>18-Apr-17 | WP4<br>24-Apr-18 |
|---------------------------|-------|-------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------|------------------|-----------------|------------------|------------------|
| Methyl Chloride           | µg/L  |       | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 0.3            | < 0.3           | < 0.3            | < 0.3           | < 0.3            | < 0.3            |
| Vinyl Chloride            | µg/L  | 2     | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | --               | --              | < 0.2            | < 0.2           | < 0.2            | < 0.2            |
| Bromomethane              | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.3            | < 0.3           | < 0.3            | < 0.3           | < 0.3            | < 0.3            |
| Chloroethane              | µg/L  |       | < 3              | < 3              |                  |                  |                  |                  | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Trichloro-fluoromethane   | µg/L  |       | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| 1,1-Dichloroethylene      | µg/L  | 14    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 1              | < 1             | < 1              | < 1             |                  | < 1              |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                  | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Chloroform                | µg/L  |       | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              | < 0.3            | < 0.3           | < 0.3            | < 0.3           | < 0.3            | < 0.3            |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2           | < 0.2            | < 0.2           | < 0.2            | < 0.2            |
| Benzene                   | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | <b>3.6</b>       | 1.2              | 0.8             | < 0.5            | <b>0.5</b>      | < 0.5            | < 0.5            |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Trichloroethylene         | µg/L  | 5     | < 0.5            | < 0.5            |                  | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | --               | --              | --               | < 0.1            |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Bromodichloromethane      | µg/L  |       | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Toluene                   | µg/L  | 24    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5           | < 0.5            | < 0.5            |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.4            | < 0.4           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Tetrachloroethene         | µg/L  | 80    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2           | --               | --              | --               | < 0.2            |
| Dibromochloromethane      | µg/L  |       | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Chlorobenzene             | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2           | < 0.2            | < 0.2           | < 0.2            | < 0.2            |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | <b>0.6</b>       | < 0.5            | < 0.5           | < 0.5            | < 0.5           | < 0.5            | < 0.5            |
| Bromoform                 | µg/L  |       | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.4            | < 0.4           | < 0.4            | < 0.4            |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2           | < 0.2            | < 0.2           | < 0.2            | < 0.2            |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| m/p-Xylene                | µg/L  |       | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | <b>2.0</b>       | < 0.4            | < 0.4           | < 0.4            | < 0.4           | < 0.4            | < 0.4            |
| o-Xylene                  | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | <b>0.7</b>       | < 0.1            | < 0.1           | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Total Xylene              | µg/L  | 0.3   | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | <b>2.70</b>      | < 0.4            | < 0.4           | < 0.4            | < 0.4           | < 0.4            | < 0.4            |
| Styrene                   | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5           | < 0.5            | < 0.5            |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2           | < 0.2            | < 0.2           | < 0.2            | < 0.2            |
| Acetone                   | µg/L  |       | < 30             | < 30             | < 30             | < 30             | < 30             | <b>39</b>        | 10               | < 2             | <b>7</b>         | <b>11</b>       | <b>3</b>         | < 2              |
| 1,2-Dibromoethane         | µg/L  |       | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | --               | --              | < 0.1            | < 0.1           | < 0.1            | < 0.1            |
| Methyl ethyl ketone       | µg/L  |       | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | --               | --              | < 1              | < 1             | <b>1</b>         | < 1              |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | --               | --              | < 1              | < 1             | < 1              | < 1              |
| Dichloromethane           | µg/L  | 50    | < 2              | < 2              |                  |                  |                  |                  | --               | --              | --               | --              | --               | < 0.3            |
| Trichloroethylene         | µg/L  | 5     |                  |                  | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                  |                 |                  |                 |                  |                  |

ODWQS - Ontario Drinking Water Quality

Standards

Bold and highlighted indicates exceedance

Bold indicates detection

Ground Water Chemistry  
Summary - VOC

| Parameters                | Units | ODWQS | WP4<br>16-Oct-18 | WP4<br>12-Apr-19 | WP4<br>22-Oct-19 | WP4<br>23-Apr-20 | WP4<br>20-Oct-20 | WP4<br>20-Apr-21 | WP4<br>27-Oct-21 | WP4<br>21-Apr-22 | WP4<br>24-Oct-22 | WP4<br>19-Apr-23 | WP4<br>12-Oct-23 |
|---------------------------|-------|-------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Methyl Chloride           | µg/L  |       | < 0.06           | < 2              | < 2              | < 2              | < 2              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              |
| Vinyl Chloride            | µg/L  | 2     | < 0.5            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Bromomethane              | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | 1.1              | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Chloroethane              | µg/L  |       | < 0.08           | < 3              | < 3              | < 3              | < 3              | < 3              | < 3              |                  |                  |                  |                  |
| Trichloro-fluoromethane   | µg/L  |       | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              |
| 1,1-Dichloroethylene      | µg/L  | 14    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                  | < 0.5            |                  |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                  | < 0.5            |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Chloroform                | µg/L  |       | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Benzene                   | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Trichloroethylene         | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                  | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Bromodichloromethane      | µg/L  |       | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Toluene                   | µg/L  | 24    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Tetrachloroethene         | µg/L  | 80    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Dibromochloromethane      | µg/L  |       | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              |
| Chlorobenzene             | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Bromoform                 | µg/L  |       | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| m/p-Xylene                | µg/L  |       | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            |
| o-Xylene                  | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Total Xylene              | µg/L  | 0.3   | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            |
| Styrene                   | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Acetone                   | µg/L  |       | < 30             | < 30             | < 30             | < 30             | < 30             | < 30             | < 30             | < 30             | < 30             | < 30             | < 30             |
| 1,2-Dibromoethane         | µg/L  |       | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Methyl ethyl ketone       | µg/L  |       | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             |
| Dichloromethane           | µg/L  | 50    | < 0.3            | < 5              | < 5              | < 5              | < 5              | < 2              | < 2              |                  |                  |                  |                  |
| Trichloroethylene         | µg/L  | 5     |                  |                  |                  |                  |                  |                  |                  | < 0.5            | < 0.5            | < 0.5            | < 0.5            |

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Ground Water Chemistry  
Summary - VOC

| Parameters                  | Units | ODWQS | WP5        | WP5       | WP5       | WP5       | WP5       | WP5       | WP5       | WP5       | WP5       | WP5       | WP5       |
|-----------------------------|-------|-------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                             |       |       | 16-Apr-15  | 27-Apr-16 | 18-Apr-17 | 24-Oct-17 | 23-Apr-18 | 16-Oct-18 | 12-Apr-19 | 22-Apr-20 | 19-Oct-20 | 20-Apr-21 | 27-Oct-21 |
| Methyl Chloride             | µg/L  |       | <b>0.3</b> | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.06    | < 2       | < 2       | < 2       | < 5       | < 5       |
| Vinyl Chloride              | µg/L  | 2     | --         | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Bromomethane                | µg/L  |       | < 0.3      | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Chloroethane                | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.08    | < 3       | < 3       | < 3       | < 3       | < 3       |
| Trichloro-fluoromethane     | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       |
| 1,1-Dichloroethylene        | µg/L  | 14    | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Methyl tert-Butyl Ether     | µg/L  |       | < 1        | < 1       |           |           | < 1       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Chloroform                  | µg/L  |       | < 0.3      | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2      | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Benzene                     | µg/L  | 5     | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Trichloroethylene           | µg/L  | 5     | < 0.1      | --        | --        | --        | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloropropane         | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Bromodichloromethane        | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| T1,3-Dichloropropene        | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Toluene                     | µg/L  | 24    | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.4      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Tetrachloroethene           | µg/L  | 80    | < 0.2      | --        | --        | --        | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Dibromochloromethane        | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       |
| Chlorobenzene               | µg/L  |       | < 0.2      | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Bromoform                   | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 5       | < 5       | < 5       | < 5       | < 5       | < 5       |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.1      | < 0.4     | < 0.4     | < 0.4     | < 0.4     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.2      | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| m/p-Xylene                  | µg/L  |       | < 0.4      | < 0.4     | < 0.4     | < 0.4     | < 0.4     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     | < 1.0     |
| o-Xylene                    | µg/L  |       | < 0.1      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Total Xylene                | µg/L  | 0.3   | < 0.4      | < 0.4     | < 0.4     | < 0.4     | < 0.4     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     | < 1.1     |
| Styrene                     | µg/L  |       | < 0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.2      | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Acetone                     | µg/L  |       | < 2        | < 2       | <b>4</b>  | < 2       | < 2       | < 30      | < 30      | < 30      | < 30      | < 30      | < 30      |
| 1,2-Dibromoethane           | µg/L  |       | --         | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Methyl ethyl ketone         | µg/L  |       | --         | < 1       | <b>1</b>  | < 1       | < 1       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      |
| Methyl Isobutyl Ketone      | µg/L  |       | --         | < 1       | < 1       | < 1       | < 1       | < 20      | < 20      | < 20      | < 20      | < 20      | < 20      |
| Dichloromethane             | µg/L  | 50    | --         | --        | --        | --        | < 0.3     | < 0.3     | < 5       | < 5       | < 5       | < 2       | < 2       |
| Trichloroethylene           | µg/L  | 5     |            |           |           |           |           |           |           |           |           |           |           |

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Ground Water Chemistry  
Summary - VOC

| Parameters                | Units | ODWQS | WP5<br>21-Apr-22 | WP5<br>26-Oct-22 | WP5<br>19-Apr-23 | WP5<br>12-Oct-23 | WP6<br>16-Apr-15 | WP6<br>8-Oct-15 | WP6<br>9-Nov-15 | WP6<br>4-Oct-16 | WP6<br>28-Apr-16 | WP6<br>18-Apr-17 | WP6<br>24-Oct-17 |
|---------------------------|-------|-------|------------------|------------------|------------------|------------------|------------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|
| Methyl Chloride           | µg/L  |       | < 5              | < 5              | < 5              | < 5              | < 0.3            | < 0.3           | < 0.3           | < 0.3           | < 0.3            | < 0.3            | < 0.3            |
| Vinyl Chloride            | µg/L  | 2     | < 0.2            | < 0.2            | < 0.2            | < 0.2            | --               | --              | --              | < 0.2           | < 0.2            | < 0.2            | < 0.2            |
| Bromomethane              | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.3            | < 0.3           | < 0.3           | < 0.3           | < 0.3            | < 0.3            | < 0.3            |
| Chloroethane              | µg/L  |       |                  |                  |                  |                  | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Trichloro-fluoromethane   | µg/L  |       | < 5              | < 5              | < 5              | < 5              | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| 1,1-Dichloroethylene      | µg/L  | 14    | < 0.5            |                  | < 0.5            |                  | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Methyl tert-Butyl Ether   | µg/L  |       | < 2              | < 2              | < 2              | < 2              | < 1              | < 1             | < 1             | < 1             | < 1              |                  |                  |
| Trans 1,2-Dichloroethene  | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| 1,1-Dichloro-ethane       | µg/L  |       | < 0.5            | < 0.5            |                  | < 0.5            | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Cis 1,2-Dichloroethene    | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Chloroform                | µg/L  |       | < 1              | < 1              | < 1              | < 1              | < 0.3            | < 0.3           | < 0.3           | < 0.3           | < 0.3            | < 0.3            | < 0.3            |
| 1,1,1-Trichloroethane     | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Carbon Tetrachloride      | µg/L  | 5     | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2           | < 0.2           | < 0.2           | < 0.2            | < 0.2            | < 0.2            |
| Benzene                   | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5           | < 0.5           | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichloroethane        | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Trichloroethylene         | µg/L  | 5     |                  | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1           | --              | --               | --               | --               |
| 1,2-Dichloropropane       | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Bromodichloromethane      | µg/L  |       | < 2              | < 2              | < 2              | < 2              | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Cis 1,3-Dichloropropene   | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| T1,3-Dichloropropene      | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Toluene                   | µg/L  | 24    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | 3.9             | < 0.5           | < 0.5           | < 0.5            | < 0.5            | < 0.5            |
| 1,1,2-Trichloroethane     | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.4            | < 0.4           | < 0.4           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Tetrachloroethene         | µg/L  | 80    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2           | < 0.2           | --              | --               | --               | --               |
| Dibromochloromethane      | µg/L  |       | < 2              | < 2              | < 2              | < 2              | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Chlorobenzene             | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2           | < 0.2           | < 0.2           | < 0.2            | < 0.2            | < 0.2            |
| 1,1,1,2 Tetrachloroethane | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Ethylbenzene              | µg/L  | 2.4   | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5           | < 0.5           | < 0.5            | < 0.5            | < 0.5            |
| Bromoform                 | µg/L  |       | < 5              | < 5              | < 5              | < 5              | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| 1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1           | < 0.4           | < 0.4            | < 0.4            | < 0.4            |
| 1,3-Dichlorobenzene       | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| 1,4-Dichlorobenzene       | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2           | < 0.2           | < 0.2           | < 0.2            | < 0.2            | < 0.2            |
| 1,2-Dichlorobenzene       | µg/L  | 200   | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| m/p-Xylene                | µg/L  |       | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 0.4            | < 0.4           | < 0.4           | < 0.4           | < 0.4            | < 0.4            | < 0.4            |
| o-Xylene                  | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1           | < 0.1           | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Total Xylene              | µg/L  | 0.3   | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 0.4            | < 0.4           | < 0.4           | < 0.4           | < 0.4            | < 0.4            | < 0.4            |
| Styrene                   | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5           | < 0.5           | < 0.5            | < 0.5            | < 0.5            |
| 1,2,4 Trichlorobenzene    | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2           | < 0.2           | < 0.2           | < 0.2            | < 0.2            | < 0.2            |
| Acetone                   | µg/L  |       | < 30             | < 30             | < 30             | < 30             | 2                | < 2             | < 2             | < 2             | < 2              | < 2              | < 2              |
| 1,2-Dibromoethane         | µg/L  |       | < 0.2            | < 0.2            | < 0.2            | < 0.2            | --               | --              | --              | < 0.1           | < 0.1            | < 0.1            | < 0.1            |
| Methyl ethyl ketone       | µg/L  |       | < 20             | < 20             | < 20             | < 20             | --               | --              | --              | < 1             | < 1              | < 1              | < 1              |
| Methyl Isobutyl Ketone    | µg/L  |       | < 20             | < 20             | < 20             | < 20             | --               | --              | --              | < 1             | < 1              | < 1              | < 1              |
| Dichloromethane           | µg/L  | 50    |                  |                  |                  |                  | --               | --              | --              | --              | --               | --               | --               |
| Trichloroethylene         | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                  |                 |                 |                 |                  |                  |                  |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection

Ground Water Chemistry  
Summary - VOC

| Parameters                  | Units | ODWQS | WP6<br>24-Apr-18 | WP6<br>12-Apr-19 | WP6<br>22-Oct-19 | WP6<br>23-Apr-20 | WP6<br>20-Oct-20 | WP6<br>##### | WP6<br>##### | WP6<br>##### | WP6<br>##### | WP6<br>19-Apr-23 | WP6<br>##### |
|-----------------------------|-------|-------|------------------|------------------|------------------|------------------|------------------|--------------|--------------|--------------|--------------|------------------|--------------|
| Methyl Chloride             | µg/L  |       | < 0.3            | < 2              | < 2              | < 2              | < 2              | < 5          | < 5          | < 5          | < 5          | < 5              | < 5          |
| Vinyl Chloride              | µg/L  | 2     | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2        | < 0.2        | < 0.2        | < 0.2        | < 0.2            | < 0.2        |
| Bromomethane                | µg/L  |       | < 0.3            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| Chloroethane                | µg/L  |       | < 0.1            | < 3              | < 3              | < 3              | < 3              | < 3          | < 3          |              |              |                  |              |
| Trichloro-fluoromethane     | µg/L  |       | < 0.1            | < 5              | < 5              | < 5              | < 5              | < 5          | < 5          | < 5          | < 5          | < 5              | < 5          |
| 1,1-Dichloroethylene        | µg/L  | 14    | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        |              | < 0.5            |              |
| Methyl tert-Butyl Ether     | µg/L  |       | < 1              | < 2              | < 2              | < 2              | < 2              | < 2          | < 2          | < 2          | < 2          | < 2              | < 2          |
| Trans 1,2-Dichloroethene    | µg/L  |       | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| 1,1-Dichloro-ethane         | µg/L  |       | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| Cis 1,2-Dichloroethene      | µg/L  |       | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| Chloroform                  | µg/L  |       | < 0.3            | < 1              | < 1              | < 1              | < 1              | < 1          | < 1          | < 1          | < 1          | < 1              | < 1          |
| 1,1,1-Trichloroethane       | µg/L  |       | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| Carbon Tetrachloride        | µg/L  | 5     | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2        | < 0.2        | < 0.2        | < 0.2        | < 0.2            | < 0.2        |
| Benzene                     | µg/L  | 5     | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| 1,2-Dichloroethane          | µg/L  | 5     | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| Trichloroethylene           | µg/L  | 5     | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        |              | < 0.5        | < 0.5            | < 0.5        |
| 1,2-Dichloropropane         | µg/L  |       | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| Bromodichloromethane        | µg/L  |       | < 0.1            | < 2              | < 2              | < 2              | < 2              | < 2          | < 2          | < 2          | < 2          | < 2              | < 2          |
| Cis 1,3-Dichloropropene     | µg/L  |       | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| T1,3-Dichloropropene        | µg/L  |       | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| Toluene                     | µg/L  | 24    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| 1,1,2-Trichloroethane       | µg/L  |       | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| Tetrachloroethene           | µg/L  | 80    | < 0.2            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| Dibromochloromethane        | µg/L  |       | < 0.1            | < 2              | < 2              | < 2              | < 2              | < 2          | < 2          | < 2          | < 2          | < 2              | < 2          |
| Chlorobenzene               | µg/L  |       | < 0.2            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| 1,1,1,2 Tetrachloroethane   | µg/L  |       | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| Ethylbenzene                | µg/L  | 2.4   | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| Bromoform                   | µg/L  |       | < 0.1            | < 5              | < 5              | < 5              | < 5              | < 5          | < 5          | < 5          | < 5          | < 5              | < 5          |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |       | < 0.4            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| 1,3-Dichlorobenzene         | µg/L  |       | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| 1,4-Dichlorobenzene         | µg/L  | 5     | < 0.2            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| 1,2-Dichlorobenzene         | µg/L  | 200   | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| m/p-Xylene                  | µg/L  |       | < 0.4            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0        | < 1.0        | < 1.0        | < 1.0        | < 1.0            | < 1.0        |
| o-Xylene                    | µg/L  |       | < 0.1            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| Total Xylene                | µg/L  | 0.3   | < 0.4            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1        | < 1.1        | < 1.1        | < 1.1        | < 1.1            | < 1.1        |
| Styrene                     | µg/L  |       | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| 1,2,4 Trichlorobenzene      | µg/L  |       | < 0.2            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5        | < 0.5        | < 0.5        | < 0.5        | < 0.5            | < 0.5        |
| Acetone                     | µg/L  |       | < 2              | < 30             | < 30             | < 30             | < 30             | < 30         | < 30         | < 30         | < 30         | < 30             | < 30         |
| 1,2-Dibromoethane           | µg/L  |       | < 0.1            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2        | < 0.2        | < 0.2        | < 0.2        | < 0.2            | < 0.2        |
| Methyl ethyl ketone         | µg/L  |       | < 1              | < 20             | < 20             | < 20             | < 20             | < 20         | < 20         | < 20         | < 20         | < 20             | < 20         |
| Methyl Isobutyl Ketone      | µg/L  |       | < 1              | < 20             | < 20             | < 20             | < 20             | < 20         | < 20         | < 20         | < 20         | < 20             | < 20         |
| Dichloromethane             | µg/L  | 50    | < 0.3            | < 5              | < 5              | < 5              | < 5              | < 2          | < 2          |              |              |                  |              |
| Trichloroethylene           | µg/L  | 5     |                  |                  |                  |                  |                  |              |              | < 0.5        | < 0.5        | < 0.5            | < 0.5        |

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Surface Water Chemistry  
Summary - VOC

| Parameters                | Units | PWQO | SW2<br>30-May-12 | SW2<br>16-Aug-12 | SW2<br>22-May-13 | SW2<br>12-Aug-13 | SW2<br>24-Apr-14 | SW2<br>14-Jul-14 | SW2<br>16-Apr-15 | SW2<br>28-Jul-15 | SW2<br>29-Apr-16 | SW2<br>24-Aug-16 |
|---------------------------|-------|------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Methyl Chloride           | µg/L  |      | --               | --               | --               | --               | --               | --               | < 0.3            | < 0.3            | --               | --               |
| Vinyl Chloride            | µg/L  | 600  | < 0.20           | < 0.20           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Bromomethane              | µg/L  | 0.9  | < 0.50           | < 0.50           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.3            | < 0.3            | < 0.3            | < 0.3            |
| Chloroethane              | µg/L  |      | --               | --               | --               | --               | --               | --               | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Trichloro-fluoromethane   | µg/L  |      | < 0.20           | < 0.20           | < 5              | < 5              | <5               | <5               | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| 1,1-Dichloroethylene      | µg/L  | 40   | < 0.10           | < 0.10           | < 0.5            | < 0.5            | --               | --               | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Methyl tert-Butyl Ether   | µg/L  | 200  | < 0.20           | < 0.20           | < 2              | < 2              | <2               | <2               | < 1              | < 1              | < 1              | < 1              |
| Trans 1,2-Dichloroethene  | µg/L  |      | < 0.10           | < 0.10           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| 1,1-Dichloro-ethane       | µg/L  | 200  | < 0.10           | < 0.10           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Cis 1,2-Dichloroethene    | µg/L  | 200  | < 0.10           | < 0.10           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Chloroform                | µg/L  |      | < 0.10           | < 0.10           | < 1              | < 1              | <1               | <1               | < 0.3            | < 0.3            | < 0.3            | < 0.3            |
| 1,1,1-Trichloroethane     | µg/L  | 800  | < 0.10           | < 0.10           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Carbon Tetrachloride      | µg/L  |      | < 0.10           | < 0.10           | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Benzene                   | µg/L  | 100  | < 0.10           | < 0.10           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichloroethane        | µg/L  | 70   | < 0.20           | < 0.20           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.4            | < 0.4            | < 0.4            | < 0.4            |
| Trichloroethylene         | µg/L  | 20   | < 0.20           | < 0.20           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| 1,2-Dichloropropane       | µg/L  | 100  | < 0.20           | < 0.20           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Bromodichloromethane      | µg/L  | 200  | < 0.10           | < 0.10           | < 2              | < 2              | <2               | <2               | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Cis 1,3-Dichloropropene   | µg/L  |      | < 0.20           | < 0.20           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| T1,3-Dichloropropene      | µg/L  |      | < 0.20           | < 0.20           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Toluene                   | µg/L  | 0.8  | < 0.20           | < 0.20           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1,2-Trichloroethane     | µg/L  |      |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Tetrachloroethene         | µg/L  |      | < 0.10           | < 0.10           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2            | --               | --               |
| Dibromochloromethane      | µg/L  |      | < 0.20           | < 0.20           | < 2              | < 2              | <2               | <2               | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Chlorobenzene             | µg/L  | 15   | < 0.10           | < 0.10           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| 1,1,1,2 Tetrachloroethane | µg/L  | 20   | < 0.20           | < 0.20           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Ethylbenzene              | µg/L  | 8    | < 0.10           | < 0.10           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Bromoform                 | µg/L  | 60   | < 0.20           | < 0.20           | < 5              | < 5              | <5               | <5               | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| 1,1,2,2 Tetrachloroethane | µg/L  |      |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| 1,3-Dichlorobenzene       | µg/L  | 2.5  | < 0.20           | < 0.20           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| 1,4-Dichlorobenzene       | µg/L  | 4    | < 0.20           | < 0.20           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| 1,2-Dichlorobenzene       | µg/L  | 2.5  | < 0.20           | < 0.20           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| m/p-Xylene                | µg/L  |      | < 0.10           | < 0.10           | < 1              | < 1              | <1.0             | <1.0             | < 0.4            | < 0.4            | < 0.4            | < 0.4            |
| o-Xylene                  | µg/L  | 40   | < 0.10           | < 0.10           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Total Xylene              | µg/L  |      | < 0.10           | < 0.10           | < 1.1            | < 1.1            | <1.1             | <1.1             | < 0.4            | < 0.4            | < 0.4            | < 0.4            |
| Styrene                   | µg/L  | 4    | < 0.20           | < 0.20           | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2,4 Trichlorobenzene    | µg/L  | 0.5  | --               | --               | < 0.5            | < 0.5            | <0.5             | <0.5             | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Acetone                   | µg/L  |      | < 10             | < 10             | < 30             | < 30             | <30              | <30              | < 2              | < 2              | < 2              | < 2              |
| 1,2-Dibromoethane         | µg/L  |      | < 0.20           | < 0.20           | < 0.2            | < 0.2            | <0.2             | <0.2             | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Methyl ethyl ketone       | µg/L  | 400  | < 5.0            | < 5.0            | < 20             | < 20             | < 20             | < 20             | --               | --               | < 1              | < 1              |
| Methyl Isobutyl Ketone    | µg/L  |      | < 5.0            | < 5.0            | < 20             | < 20             | < 20             | < 20             | --               | --               | < 1              | < 1              |
| Dichloromethane           | µg/L  | 100  | < 0.50           | < 0.50           | < 5              | < 5              | < 0.5            | < 0.5            | < 0.3            | < 0.3            | < 0.3            | < 0.3            |
| Trichloroethylene         | µg/L  | 20   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |

ODWQS - Ontario Drinking Water Quality  
Standards

Bold and highlighted indicates exceedance

Bold indicates detection

Surface Water Chemistry  
Summary - VOC

| Parameters                | Units | PWQO | SW2<br>18-Apr-17 | SW2<br>23-Apr-18 | SW2<br>18-Jul-18 | SW2<br>12-Apr-19 | SW2<br>8-Jul-19 | SW2<br>23-Apr-20 | SW2<br>20-Jul-20 | SW2<br>20-Apr-21 | SW2<br>19-Jul-21 | SW2<br>21-Apr-22 |
|---------------------------|-------|------|------------------|------------------|------------------|------------------|-----------------|------------------|------------------|------------------|------------------|------------------|
| Methyl Chloride           | µg/L  |      | --               | < 0.3            | < 0.3            | < 2              | < 2             | < 2              | < 2              | < 5              | < 5              | < 5              |
| Vinyl Chloride            | µg/L  | 600  | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Bromomethane              | µg/L  | 0.9  | < 0.3            | < 0.3            | < 0.3            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Chloroethane              | µg/L  |      | < 0.1            | < 0.1            | < 0.1            | < 3              | < 3             | < 3              | < 3              | < 3              | < 3              |                  |
| Trichloro-fluoromethane   | µg/L  |      | < 0.1            | < 0.1            | < 0.1            | < 5              | < 5             | < 5              | < 5              | < 5              | < 5              | < 5              |
| 1,1-Dichloroethylene      | µg/L  | 40   | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                  |
| Methyl tert-Butyl Ether   | µg/L  | 200  | < 1              | < 1              | < 1              | < 2              | < 2             | < 2              | < 2              | < 2              | < 2              | < 2              |
| Trans 1,2-Dichloroethene  | µg/L  |      | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1-Dichloro-ethane       | µg/L  | 200  | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Cis 1,2-Dichloroethene    | µg/L  | 200  | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Chloroform                | µg/L  |      | < 0.3            | < 0.3            | < 0.3            | < 1              | < 1             | < 1              | < 1              | < 1              | < 1              | < 1              |
| 1,1,1-Trichloroethane     | µg/L  | 800  | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Carbon Tetrachloride      | µg/L  |      | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Benzene                   | µg/L  | 100  | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichloroethane        | µg/L  | 70   | < 0.4            | < 0.4            | < 0.4            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Trichloroethylene         | µg/L  | 20   | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichloropropane       | µg/L  | 100  | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Bromodichloromethane      | µg/L  | 200  | < 0.1            | < 0.1            | < 0.1            | < 2              | < 2             | < 2              | < 2              | < 2              | < 2              | < 2              |
| Cis 1,3-Dichloropropene   | µg/L  |      | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| T1,3-Dichloropropene      | µg/L  |      | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Toluene                   | µg/L  | 0.8  | <0.5             | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1,2-Trichloroethane     | µg/L  |      |                  |                  |                  | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Tetrachloroethene         | µg/L  |      | --               | < 0.2            | < 0.2            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Dibromochloromethane      | µg/L  |      | < 0.1            | < 0.1            | < 0.1            | < 2              | < 2             | < 2              | < 2              | < 2              | < 2              | < 2              |
| Chlorobenzene             | µg/L  | 15   | < 0.2            | < 0.2            | < 0.2            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1,1,2 Tetrachloroethane | µg/L  | 20   | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Ethylbenzene              | µg/L  | 8    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Bromoform                 | µg/L  | 60   | < 0.1            | < 0.1            | < 0.1            | < 5              | < 5             | < 5              | < 5              | < 5              | < 5              | < 5              |
| 1,1,2,2 Tetrachloroethane | µg/L  |      |                  |                  |                  | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,3-Dichlorobenzene       | µg/L  | 2.5  | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,4-Dichlorobenzene       | µg/L  | 4    | < 0.2            | < 0.2            | < 0.2            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichlorobenzene       | µg/L  | 2.5  | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| m/p-Xylene                | µg/L  |      | < 0.4            | < 0.4            | < 0.4            | < 1.0            | < 1.0           | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            |
| o-Xylene                  | µg/L  | 40   | < 0.1            | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Total Xylene              | µg/L  |      | --               | < 0.4            | < 0.4            | < 1.1            | < 1.1           | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            |
| Styrene                   | µg/L  | 4    | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2,4 Trichlorobenzene    | µg/L  | 0.5  | < 0.2            | < 0.2            | < 0.2            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Acetone                   | µg/L  |      | < 2              | < 2              | < 2              | < 30             | < 30            | < 30             | < 30             | < 30             | < 30             | < 30             |
| 1,2-Dibromoethane         | µg/L  |      | < 0.1            | < 0.1            | < 0.1            | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Methyl ethyl ketone       | µg/L  | 400  | < 1              | < 1              | < 1              | < 20             | < 20            | < 20             | < 20             | < 20             | < 20             | < 20             |
| Methyl Isobutyl Ketone    | µg/L  |      | < 1              | < 1              | < 1              | < 20             | < 20            | < 20             | < 20             | < 20             | < 20             | < 20             |
| Dichloromethane           | µg/L  | 100  | < 0.3            | < 0.3            | < 0.5            | < 5              | < 5             | < 5              | < 5              | < 2              | < 2              |                  |
| Trichloroethylene         | µg/L  | 20   |                  |                  |                  |                  |                 |                  |                  |                  |                  | < 0.5            |

ODWQS - Ontario Drinking Water Quality  
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Surface Water Chemistry  
Summary - VOC

| Parameters                | Units | PWQO | SW2       | SW2       | SW2       | SW3      | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       |
|---------------------------|-------|------|-----------|-----------|-----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                           |       |      | 20-Jul-22 | 20-Apr-23 | 30-Aug-23 | 7-Jun-11 | 23-Aug-11 | 30-May-12 | 16-Aug-12 | 22-May-13 | 12-Aug-13 | 24-Apr-14 |
| Methyl Chloride           | µg/L  |      | < 5       | < 5       | < 5       | --       | --        | --        | --        | --        | --        | --        |
| Vinyl Chloride            | µg/L  | 600  | < 0.2     | < 0.2     | < 0.2     | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 0.5     | < 0.5     | < 0.5     |
| Bromomethane              | µg/L  | 0.9  | < 0.5     | < 0.5     | < 0.5     | < 0.50   | < 0.50    | < 1.3     | < 1.3     | < 0.5     | < 0.5     | <0.5      |
| Chloroethane              | µg/L  |      |           |           |           | --       | --        | --        | --        | --        | --        | --        |
| Trichloro-fluoromethane   | µg/L  |      | < 5       | < 5       | < 5       | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 5       | < 5       | <5        |
| 1,1-Dichloroethylene      | µg/L  | 40   |           |           |           | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 0.5     | < 0.5     | --        |
| Methyl tert-Butyl Ether   | µg/L  | 200  | < 2       | < 2       | < 2       | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 2       | < 2       | <2        |
| Trans 1,2-Dichloroethene  | µg/L  |      | < 0.5     | < 0.5     | < 0.5     | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 0.5     | < 0.5     | <0.5      |
| 1,1-Dichloro-ethane       | µg/L  | 200  | < 0.5     | < 0.5     | < 0.5     | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 0.5     | < 0.5     | <0.5      |
| Cis 1,2-Dichloroethene    | µg/L  | 200  | < 0.5     | < 0.5     | < 0.5     | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 0.5     | < 0.5     | <0.5      |
| Chloroform                | µg/L  |      | < 1       | < 1       | < 1       | < 0.10   | < 0.10    | < 0.25    | 0.27      | < 1       | < 1       | <1        |
| 1,1,1-Trichloroethane     | µg/L  | 800  | < 0.5     | < 0.5     | < 0.5     | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 0.5     | < 0.5     | <0.5      |
| Carbon Tetrachloride      | µg/L  |      | < 0.2     | < 0.2     | < 0.2     | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 0.2     | < 0.2     | < 0.2     |
| Benzene                   | µg/L  | 100  | < 0.5     | < 0.5     | < 0.5     | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloroethane        | µg/L  | 70   | < 0.5     | < 0.5     | < 0.5     | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 0.5     | < 0.5     | <0.5      |
| Trichloroethylene         | µg/L  | 20   | < 0.5     | < 0.5     | < 0.5     | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 0.5     | < 0.5     | <0.5      |
| 1,2-Dichloropropane       | µg/L  | 100  | < 0.5     | < 0.5     | < 0.5     | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 0.5     | < 0.5     | < 0.5     |
| Bromodichloromethane      | µg/L  | 200  | < 2       | < 2       | < 2       | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 2       | < 2       | <2        |
| Cis 1,3-Dichloropropene   | µg/L  |      | < 0.5     | < 0.5     | < 0.5     | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 0.5     | < 0.5     | <0.5      |
| T1,3-Dichloropropene      | µg/L  |      | < 0.5     | < 0.5     | < 0.5     | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 0.5     | < 0.5     | <0.5      |
| Toluene                   | µg/L  | 0.8  | < 0.5     | < 0.5     | < 0.5     | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 0.5     | < 0.5     | <0.5      |
| 1,1,2-Trichloroethane     | µg/L  |      | < 0.5     | < 0.5     | < 0.5     |          |           |           |           |           |           |           |
| Tetrachloroethene         | µg/L  |      | < 0.5     | < 0.5     | < 0.5     | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 0.5     | < 0.5     | < 0.5     |
| Dibromochloromethane      | µg/L  |      | < 2       | < 2       | < 2       | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 2       | < 2       | <2        |
| Chlorobenzene             | µg/L  | 15   | < 0.5     | < 0.5     | < 0.5     | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 0.5     | < 0.5     | < 0.5     |
| 1,1,1,2 Tetrachloroethane | µg/L  | 20   | < 0.5     | < 0.5     | < 0.5     | < 0.10   | < 0.10    | < 0.50    | < 0.50    | < 0.5     | < 0.5     | <0.5      |
| Ethylbenzene              | µg/L  | 8    | < 0.5     | < 0.5     | < 0.5     | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 0.5     | < 0.5     | <0.5      |
| Bromoform                 | µg/L  | 60   | < 5       | < 5       | < 5       | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 5       | < 5       | <5        |
| 1,1,2,2 Tetrachloroethane | µg/L  |      | < 0.5     | < 0.5     | < 0.5     |          |           |           |           |           |           |           |
| 1,3-Dichlorobenzene       | µg/L  | 2.5  | < 0.5     | < 0.5     | < 0.5     | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 0.5     | < 0.5     | <0.5      |
| 1,4-Dichlorobenzene       | µg/L  | 4    | < 0.5     | < 0.5     | < 0.5     | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichlorobenzene       | µg/L  | 2.5  | < 0.5     | < 0.5     | < 0.5     | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 0.5     | < 0.5     | < 0.5     |
| m/p-Xylene                | µg/L  |      | < 1.0     | < 1.0     | < 1.0     | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 1       | < 1       | <1.0      |
| o-Xylene                  | µg/L  | 40   | < 0.5     | < 0.5     | < 0.5     | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 0.5     | < 0.5     | <0.5      |
| Total Xylene              | µg/L  |      | < 1.1     | < 1.1     | < 1.1     | < 0.10   | < 0.10    | < 0.25    | < 0.25    | < 1.1     | < 1.1     | <1.1      |
| Styrene                   | µg/L  | 4    | < 0.5     | < 0.5     | < 0.5     | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 0.5     | < 0.5     | <0.5      |
| 1,2,4 Trichlorobenzene    | µg/L  | 0.5  | < 0.5     | < 0.5     | < 0.5     | --       | --        | --        | --        | < 0.5     | < 0.5     | <0.5      |
| Acetone                   | µg/L  |      | < 30      | < 30      | < 30      | < 10     | < 10      | < 25      | < 25      | < 30      | < 30      | <30       |
| 1,2-Dibromoethane         | µg/L  |      | < 0.2     | < 0.2     | < 0.2     | < 0.20   | < 0.20    | < 0.50    | < 0.50    | < 0.2     | < 0.2     | <0.2      |
| Methyl ethyl ketone       | µg/L  | 400  | < 20      | < 20      | < 20      | < 5.0    | < 5.0     | < 13      | < 13      | < 20      | < 20      | < 20      |
| Methyl Isobutyl Ketone    | µg/L  |      | < 20      | < 20      | < 20      | < 5.0    | < 5.0     | < 13      | < 13      | < 20      | < 20      | < 20      |
| Dichloromethane           | µg/L  | 100  |           |           |           | < 0.50   | < 0.50    | < 1.3     | < 1.3     | < 5       | < 5       | < 0.5     |
| Trichloroethylene         | µg/L  | 20   | < 0.5     | < 0.5     | < 0.5     |          |           |           |           |           |           |           |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection

Surface Water Chemistry  
Summary - VOC

| Parameters                | Units | PWQO | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       | SW3       |
|---------------------------|-------|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                           |       |      | 14-Jul-14 | 16-Apr-15 | 28-Jul-15 | 11-May-16 | 24-Aug-16 | 18-Apr-17 | 20-Jul-17 | 24-Apr-18 | 18-Jul-18 | 12-Apr-19 |
| Methyl Chloride           | µg/L  |      | --        | < 0.3     | < 0.3     | --        | --        | --        | --        | < 0.3     | < 0.3     | < 2       |
| Vinyl Chloride            | µg/L  | 600  | < 0.5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Bromomethane              | µg/L  | 0.9  | <0.5      | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.5     |
| Chloroethane              | µg/L  |      | --        | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 3       |
| Trichloro-fluoromethane   | µg/L  |      | <5        | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 5       |
| 1,1-Dichloroethylene      | µg/L  | 40   | --        | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     |
| Methyl tert-Butyl Ether   | µg/L  | 200  | <2        | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 2       |
| Trans 1,2-Dichloroethene  | µg/L  |      | <0.5      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     |
| 1,1-Dichloro-ethane       | µg/L  | 200  | <0.5      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     |
| Cis 1,2-Dichloroethene    | µg/L  | 200  | <0.5      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     |
| Chloroform                | µg/L  |      | <1        | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 1       |
| 1,1,1-Trichloroethane     | µg/L  | 800  | <0.5      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     |
| Carbon Tetrachloride      | µg/L  |      | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     |
| Benzene                   | µg/L  | 100  | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2-Dichloroethane        | µg/L  | 70   | <0.5      | < 0.4     | < 0.4     | < 0.4     | < 0.4     | < 0.4     | < 0.4     | < 0.4     | < 0.4     | < 0.5     |
| Trichloroethylene         | µg/L  | 20   | <0.5      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     |
| 1,2-Dichloropropane       | µg/L  | 100  | < 0.5     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     |
| Bromodichloromethane      | µg/L  | 200  | <2        | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 2       |
| Cis 1,3-Dichloropropene   | µg/L  |      | <0.5      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     |
| T1,3-Dichloropropene      | µg/L  |      | <0.5      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     |
| Toluene                   | µg/L  | 0.8  | <0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | <0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,2-Trichloroethane     | µg/L  |      |           |           |           |           |           |           |           |           |           | < 0.5     |
| Tetrachloroethene         | µg/L  |      | < 0.5     | < 0.2     | < 0.2     | --        | --        | --        | --        | < 0.2     | < 0.2     | < 0.5     |
| Dibromochloromethane      | µg/L  |      | <2        | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 2       |
| Chlorobenzene             | µg/L  | 15   | < 0.5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.5     |
| 1,1,1,2 Tetrachloroethane | µg/L  | 20   | <0.5      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     |
| Ethylbenzene              | µg/L  | 8    | <0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| Bromoform                 | µg/L  | 60   | <5        | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 5       |
| 1,1,2,2 Tetrachloroethane | µg/L  |      |           |           |           |           |           |           |           |           |           | < 0.5     |
| 1,3-Dichlorobenzene       | µg/L  | 2.5  | <0.5      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     |
| 1,4-Dichlorobenzene       | µg/L  | 4    | < 0.5     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.5     |
| 1,2-Dichlorobenzene       | µg/L  | 2.5  | < 0.5     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     |
| m/p-Xylene                | µg/L  |      | <1.0      | < 0.4     | < 0.4     | < 0.4     | < 0.4     | < 0.4     | < 0.4     | < 0.4     | < 0.4     | < 1.0     |
| o-Xylene                  | µg/L  | 40   | <0.5      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.5     |
| Total Xylene              | µg/L  |      | <1.1      | < 0.4     | < 0.4     | < 0.4     | < 0.4     |           | < 0.4     | < 0.4     | < 0.4     | < 1.1     |
| Styrene                   | µg/L  | 4    | <0.5      | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,2,4 Trichlorobenzene    | µg/L  | 0.5  | <0.5      | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.2     | < 0.5     |
| Acetone                   | µg/L  |      | <30       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 2       | < 30      |
| 1,2-Dibromoethane         | µg/L  |      | <0.2      | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.1     | < 0.2     |
| Methyl ethyl ketone       | µg/L  | 400  | < 20      | --        | --        | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 20      |
| Methyl Isobutyl Ketone    | µg/L  |      | < 20      | --        | --        | < 1       | < 1       | < 1       | < 1       | < 1       | < 1       | < 20      |
| Dichloromethane           | µg/L  | 100  | < 0.5     | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.3     | < 0.5     | < 5       |
| Trichloroethylene         | µg/L  | 20   |           |           |           |           |           |           |           |           |           |           |

ODWQS - Ontario Drinking Water Quality  
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Surface Water Chemistry  
Summary - VOC

| DUP                       |       |      |                 |                  |                  |                  |                  |                  |                  |                  |                  |                 |
|---------------------------|-------|------|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------|
| Parameters                | Units | PWQO | SW3<br>8-Jul-19 | SW3<br>23-Apr-20 | SW3<br>20-Jul-20 | SW3<br>20-Apr-21 | SW3<br>19-Jul-21 | SW3<br>21-Apr-22 | SW3<br>19/Apr/23 | SW3<br>19/Apr/23 | SW3<br>30/Aug/23 | SW4<br>7-Jun-11 |
| Methyl Chloride           | µg/L  |      | < 2             | < 2              | < 2              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | --              |
| Vinyl Chloride            | µg/L  | 600  | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.20          |
| Bromomethane              | µg/L  | 0.9  | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.50          |
| Chloroethane              | µg/L  |      | < 3             | < 3              | < 3              | < 3              | < 3              |                  |                  |                  |                  | --              |
| Trichloro-fluoromethane   | µg/L  |      | < 5             | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 0.20          |
| 1,1-Dichloroethylene      | µg/L  | 40   | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                  |                  |                  |                  | < 0.10          |
| Methyl tert-Butyl Ether   | µg/L  | 200  | < 2             | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 0.20          |
| Trans 1,2-Dichloroethene  | µg/L  |      | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.10          |
| 1,1-Dichloro-ethane       | µg/L  | 200  | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.10          |
| Cis 1,2-Dichloroethene    | µg/L  | 200  | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.10          |
| Chloroform                | µg/L  |      | < 1             | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              | < 0.10          |
| 1,1,1-Trichloroethane     | µg/L  | 800  | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.10          |
| Carbon Tetrachloride      | µg/L  |      | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.10          |
| Benzene                   | µg/L  | 100  | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.10          |
| 1,2-Dichloroethane        | µg/L  | 70   | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.20          |
| Trichloroethylene         | µg/L  | 20   | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.20          |
| 1,2-Dichloropropane       | µg/L  | 100  | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.20          |
| Bromodichloromethane      | µg/L  | 200  | < 2             | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 0.10          |
| Cis 1,3-Dichloropropene   | µg/L  |      | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.20          |
| T1,3-Dichloropropene      | µg/L  |      | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.20          |
| Toluene                   | µg/L  | 0.8  | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.20          |
| 1,1,2-Trichloroethane     | µg/L  |      | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                 |
| Tetrachloroethene         | µg/L  |      | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.10          |
| Dibromochloromethane      | µg/L  |      | < 2             | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | < 0.20          |
| Chlorobenzene             | µg/L  | 15   | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.10          |
| 1,1,1,2 Tetrachloroethane | µg/L  | 20   | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.10          |
| Ethylbenzene              | µg/L  | 8    | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.10          |
| Bromoform                 | µg/L  | 60   | < 5             | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              | < 0.20          |
| 1,1,2,2 Tetrachloroethane | µg/L  |      | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                 |
| 1,3-Dichlorobenzene       | µg/L  | 2.5  | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.20          |
| 1,4-Dichlorobenzene       | µg/L  | 4    | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.20          |
| 1,2-Dichlorobenzene       | µg/L  | 2.5  | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.20          |
| m/p-Xylene                | µg/L  |      | < 1.0           | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 0.10          |
| o-Xylene                  | µg/L  | 40   | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.10          |
| Total Xylene              | µg/L  |      | < 1.1           | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 0.10          |
| Styrene                   | µg/L  | 4    | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.20          |
| 1,2,4 Trichlorobenzene    | µg/L  | 0.5  | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | --              |
| Acetone                   | µg/L  |      | < 30            | < 30             | < 30             | < 30             | < 30             | < 30             | < 30             | < 30             | < 30             | < 10            |
| 1,2-Dibromoethane         | µg/L  |      | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.20          |
| Methyl ethyl ketone       | µg/L  | 400  | < 20            | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 5.0           |
| Methyl Isobutyl Ketone    | µg/L  |      | < 20            | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             | < 5.0           |
| Dichloromethane           | µg/L  | 100  | < 5             | < 5              | < 5              | < 2              | < 2              |                  |                  |                  |                  | < 0.50          |
| Trichloroethylene         | µg/L  | 20   |                 |                  |                  |                  |                  | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                 |

ODWQS - Ontario Drinking Water Quality  
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Surface Water Chemistry  
Summary - VOC

| Parameters                | Units | PWQO | SW4<br>22-May-13 | SW4<br>24-Apr-14 | SW4<br>14-Jul-14 | SW4<br>16-Apr-15 | SW4<br>28-Jul-15 | SW4<br>29-Apr-16 | SW4<br>24-Aug-16 | SW4<br>18-Apr-17 | SW4<br>20-Jul-17 | SW4<br>26-Oct-17 |
|---------------------------|-------|------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Methyl Chloride           | µg/L  |      | --               | --               | --               | < 0.3            | < 0.3            | --               | --               | --               | --               | --               |
| Vinyl Chloride            | µg/L  | 600  | < 0.5            | <b>114</b>       | < 0.5            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Bromomethane              | µg/L  | 0.9  | < 0.5            | <0.5             | <0.5             | < 0.3            | < 0.3            | < 0.3            | < 0.3            | < 0.3            | < 0.3            | < 0.3            |
| Chloroethane              | µg/L  |      | --               | --               | --               | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Trichloro-fluoromethane   | µg/L  |      | < 5              | <5               | <5               | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| 1,1-Dichloroethylene      | µg/L  | 40   | < 0.5            | --               | --               | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Methyl tert-Butyl Ether   | µg/L  | 200  | < 2              | <2               | <2               | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              |
| Trans 1,2-Dichloroethene  | µg/L  |      | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| 1,1-Dichloro-ethane       | µg/L  | 200  | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Cis 1,2-Dichloroethene    | µg/L  | 200  | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Chloroform                | µg/L  |      | < 1              | <1               | <1               | < 0.3            | < 0.3            | < 0.3            | < 0.3            | < 0.3            | < 0.3            | < 0.3            |
| 1,1,1-Trichloroethane     | µg/L  | 800  | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Carbon Tetrachloride      | µg/L  |      | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Benzene                   | µg/L  | 100  | < 0.5            | <0.5             | <0.5             | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | <b>0.7</b>       |
| 1,2-Dichloroethane        | µg/L  | 70   | < 0.5            | <0.5             | <0.5             | < 0.4            | < 0.4            | < 0.4            | < 0.4            | < 0.4            | < 0.4            | < 0.4            |
| Trichloroethylene         | µg/L  | 20   | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| 1,2-Dichloropropane       | µg/L  | 100  | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Bromodichloromethane      | µg/L  | 200  | < 2              | <2               | <2               | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Cis 1,3-Dichloropropene   | µg/L  |      | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| T1,3-Dichloropropene      | µg/L  |      | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Toluene                   | µg/L  | 0.8  | < 0.5            | <0.5             | <0.5             | < 0.5            | < 0.5            | < 0.5            | < 0.5            | <0.5             | < 0.5            | < 0.5            |
| 1,1,2-Trichloroethane     | µg/L  |      |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Tetrachloroethene         | µg/L  |      | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2            | --               | --               | --               | --               | --               |
| Dibromochloromethane      | µg/L  |      | < 2              | <2               | <2               | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Chlorobenzene             | µg/L  | 15   | < 0.5            | < 0.5            | < 0.5            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| 1,1,1,2 Tetrachloroethane | µg/L  | 20   | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Ethylbenzene              | µg/L  | 8    | < 0.5            | <0.5             | <0.5             | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Bromoform                 | µg/L  | 60   | < 5              | <5               | <5               | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| 1,1,2,2 Tetrachloroethane | µg/L  |      |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| 1,3-Dichlorobenzene       | µg/L  | 2.5  | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| 1,4-Dichlorobenzene       | µg/L  | 4    | < 0.5            | <0.5             | <0.5             | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| 1,2-Dichlorobenzene       | µg/L  | 2.5  | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| m/p-Xylene                | µg/L  |      | < 1              | <1.0             | <1.0             | < 0.4            | < 0.4            | < 0.4            | < 0.4            | < 0.4            | < 0.4            | < 0.4            |
| o-Xylene                  | µg/L  | 40   | < 0.5            | <0.5             | <0.5             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Total Xylene              | µg/L  |      | < 1.1            | <1.1             | <1.1             | < 0.4            | < 0.4            | < 0.4            | < 0.4            | --               | < 0.4            | < 0.4            |
| Styrene                   | µg/L  | 4    | < 0.5            | <0.5             | <0.5             | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2,4 Trichlorobenzene    | µg/L  | 0.5  | < 0.5            | <0.5             | <0.5             | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Acetone                   | µg/L  |      | < 30             | <30              | <30              | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              | <b>4</b>         |
| 1,2-Dibromoethane         | µg/L  |      | < 0.2            | <0.2             | <0.2             | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            | < 0.1            |
| Methyl ethyl ketone       | µg/L  | 400  | < 20             | < 20             | < 20             | --               | --               | < 1              | < 1              | < 1              | < 1              | < 1              |
| Methyl Isobutyl Ketone    | µg/L  |      | < 20             | < 20             | < 20             | --               | --               | < 1              | < 1              | < 1              | < 1              | < 1              |
| Dichloromethane           | µg/L  | 100  | < 5              | < 0.5            | < 0.5            | < 0.3            | < 0.3            | < 0.3            | < 0.3            | < 0.3            | < 0.3            | < 0.3            |
| Trichloroethylene         | µg/L  | 20   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection



Surface Water Chemistry  
Summary - VOC

| Parameters                | Units | PWQO | SW4<br>24-Apr-18 | SW4<br>18-Jul-18 | SW4<br>12-Apr-19 | SW4<br>8-Jul-19 | SW4<br>23-Apr-20 | SW4<br>20-Jul-20 | SW4<br>20-Apr-21 | SW4<br>19-Jul-21 | SW4<br>21-Apr-22 | SW4<br>20-Jul-22 |
|---------------------------|-------|------|------------------|------------------|------------------|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Methyl Chloride           | µg/L  |      | < 0.3            | < 0.3            | < 2              | < 2             | < 2              | < 2              | < 5              | < 5              | < 5              | < 5              |
| Vinyl Chloride            | µg/L  | 600  | < 0.2            | < 0.2            | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Bromomethane              | µg/L  | 0.9  | < 0.3            | < 0.3            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Chloroethane              | µg/L  |      | < 0.1            | < 0.1            | < 3              | < 3             | < 3              | < 3              | < 3              | < 3              |                  |                  |
| Trichloro-fluoromethane   | µg/L  |      | < 0.1            | < 0.1            | < 5              | < 5             | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              |
| 1,1-Dichloroethylene      | µg/L  | 40   | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            |                  |                  |
| Methyl tert-Butyl Ether   | µg/L  | 200  | < 1              | < 1              | < 2              | < 2             | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              |
| Trans 1,2-Dichloroethene  | µg/L  |      | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1-Dichloro-ethane       | µg/L  | 200  | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Cis 1,2-Dichloroethene    | µg/L  | 200  | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Chloroform                | µg/L  |      | < 0.3            | < 0.3            | < 1              | < 1             | < 1              | < 1              | < 1              | < 1              | < 1              | < 1              |
| 1,1,1-Trichloroethane     | µg/L  | 800  | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Carbon Tetrachloride      | µg/L  |      | < 0.2            | < 0.2            | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Benzene                   | µg/L  | 100  | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichloroethane        | µg/L  | 70   | < 0.4            | < 0.4            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Trichloroethylene         | µg/L  | 20   | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichloropropane       | µg/L  | 100  | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Bromodichloromethane      | µg/L  | 200  | < 0.1            | < 0.1            | < 2              | < 2             | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              |
| Cis 1,3-Dichloropropene   | µg/L  |      | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| T1,3-Dichloropropene      | µg/L  |      | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Toluene                   | µg/L  | 0.8  | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1,2-Trichloroethane     | µg/L  |      |                  |                  | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Tetrachloroethene         | µg/L  |      | < 0.2            | < 0.2            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Dibromochloromethane      | µg/L  |      | < 0.1            | < 0.1            | < 2              | < 2             | < 2              | < 2              | < 2              | < 2              | < 2              | < 2              |
| Chlorobenzene             | µg/L  | 15   | < 0.2            | < 0.2            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,1,1,2 Tetrachloroethane | µg/L  | 20   | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Ethylbenzene              | µg/L  | 8    | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Bromoform                 | µg/L  | 60   | < 0.1            | < 0.1            | < 5              | < 5             | < 5              | < 5              | < 5              | < 5              | < 5              | < 5              |
| 1,1,2,2 Tetrachloroethane | µg/L  |      |                  |                  | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,3-Dichlorobenzene       | µg/L  | 2.5  | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,4-Dichlorobenzene       | µg/L  | 4    | < 0.2            | < 0.2            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2-Dichlorobenzene       | µg/L  | 2.5  | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| m/p-Xylene                | µg/L  |      | < 0.4            | < 0.4            | < 1.0            | < 1.0           | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            | < 1.0            |
| o-Xylene                  | µg/L  | 40   | < 0.1            | < 0.1            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Total Xylene              | µg/L  |      | < 0.4            | < 0.4            | < 1.1            | < 1.1           | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            | < 1.1            |
| Styrene                   | µg/L  | 4    | < 0.5            | < 0.5            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| 1,2,4 Trichlorobenzene    | µg/L  | 0.5  | < 0.2            | < 0.2            | < 0.5            | < 0.5           | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            | < 0.5            |
| Acetone                   | µg/L  |      | < 2              | < 2              | < 30             | < 30            | < 30             | < 30             | < 30             | < 30             | < 30             | < 30             |
| 1,2-Dibromoethane         | µg/L  |      | < 0.1            | < 0.1            | < 0.2            | < 0.2           | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            | < 0.2            |
| Methyl ethyl ketone       | µg/L  | 400  | < 1              | < 1              | < 20             | < 20            | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             |
| Methyl Isobutyl Ketone    | µg/L  |      | < 1              | < 1              | < 20             | < 20            | < 20             | < 20             | < 20             | < 20             | < 20             | < 20             |
| Dichloromethane           | µg/L  | 100  | < 0.3            | < 0.5            | < 5              | < 5             | < 5              | < 5              | < 2              | < 2              |                  |                  |
| Trichloroethylene         | µg/L  | 20   |                  |                  |                  |                 |                  |                  |                  |                  | < 0.5            | < 0.5            |

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Surface Water Chemistry  
Summary - VOC

| Parameters                  | Units | PWQO | 10m       |           | 10m       |           | 10m       |           | 10m       |           | 10m       |           |
|-----------------------------|-------|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                             |       |      | SW4       | SW4       | SW12      | SW12      | SW 12     | SW13      | SW13      | SW 13     | SW 13     | SW 13     |
|                             |       |      | 19-Apr-23 | 30-Aug-23 | 20-Jul-17 | 24-Apr-18 | 12-Apr-19 | 20-Jul-17 | 24-Apr-18 | 12-Apr-19 | 20-Apr-21 | 21-Apr-22 |
| Methyl Chloride             | µg/L  |      | < 5       | < 5       | --        | --        |           | --        | --        |           |           |           |
| Vinyl Chloride              | µg/L  | 600  | < 0.2     | < 0.2     | --        | --        |           | --        | --        |           |           |           |
| Bromomethane                | µg/L  | 0.9  | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| Chloroethane                | µg/L  |      |           |           | --        | --        |           | --        | --        |           |           |           |
| Trichloro-fluoromethane     | µg/L  |      | < 5       | < 5       | --        | --        |           | --        | --        |           |           |           |
| 1,1-Dichloroethylene        | µg/L  | 40   |           |           | --        | --        |           | --        | --        |           |           |           |
| Methyl tert-Butyl Ether     | µg/L  | 200  | < 2       | < 2       | --        | --        |           | --        | --        |           |           |           |
| Trans 1,2-Dichloroethene    | µg/L  |      | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| 1,1-Dichloro-ethane         | µg/L  | 200  | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| Cis 1,2-Dichloroethene      | µg/L  | 200  | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| Chloroform                  | µg/L  |      | < 1       | < 1       | --        | --        |           | --        | --        |           |           |           |
| 1,1,1-Trichloroethane       | µg/L  | 800  | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| Carbon Tetrachloride        | µg/L  |      | < 0.2     | < 0.2     | --        | --        |           | --        | --        |           |           |           |
| Benzene                     | µg/L  | 100  | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| 1,2-Dichloroethane          | µg/L  | 70   | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| Trichloroethylene           | µg/L  | 20   | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| 1,2-Dichloropropane         | µg/L  | 100  | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| Bromodichloromethane        | µg/L  | 200  | < 2       | < 2       | --        | --        |           | --        | --        |           |           |           |
| Cis 1,3-Dichloropropene     | µg/L  |      | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| T1,3-Dichloropropene        | µg/L  |      | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| Toluene                     | µg/L  | 0.8  | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     | < 0.5     |
| 1,1,2-Trichloroethane       | µg/L  |      | < 0.5     | < 0.5     |           |           |           |           |           |           |           |           |
| Tetrachloroethene           | µg/L  |      | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| Dibromochloromethane        | µg/L  |      | < 2       | < 2       | --        | --        |           | --        | --        |           |           |           |
| Chlorobenzene               | µg/L  | 15   | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| 1,1,1,2 Tetrachloroethane   | µg/L  | 20   | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| Ethylbenzene                | µg/L  | 8    | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| Bromoform                   | µg/L  | 60   | < 5       | < 5       | --        | --        |           | --        | --        |           |           |           |
| 1,1,1,2,2 Tetrachloroethane | µg/L  |      | < 0.5     | < 0.5     |           |           |           |           |           |           |           |           |
| 1,3-Dichlorobenzene         | µg/L  | 2.5  | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| 1,4-Dichlorobenzene         | µg/L  | 4    | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| 1,2-Dichlorobenzene         | µg/L  | 2.5  | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| m/p-Xylene                  | µg/L  |      | < 1.0     | < 1.0     | --        | --        |           | --        | --        |           |           |           |
| o-Xylene                    | µg/L  | 40   | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| Total Xylene                | µg/L  |      | < 1.1     | < 1.1     | --        | --        |           | --        | --        |           |           |           |
| Styrene                     | µg/L  | 4    | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| 1,2,4 Trichlorobenzene      | µg/L  | 0.5  | < 0.5     | < 0.5     | --        | --        |           | --        | --        |           |           |           |
| Acetone                     | µg/L  |      | < 30      | < 30      | --        | --        |           | --        | --        |           |           |           |
| 1,2-Dibromoethane           | µg/L  |      | < 0.2     | < 0.2     | --        | --        |           | --        | --        |           |           |           |
| Methyl ethyl ketone         | µg/L  | 400  | < 20      | < 20      | --        | --        |           | --        | --        |           |           |           |
| Methyl Isobutyl Ketone      | µg/L  |      | < 20      | < 20      | --        | --        |           | --        | --        |           |           |           |
| Dichloromethane             | µg/L  | 100  |           |           | --        | --        |           | --        | --        |           |           |           |
| Trichloroethylene           | µg/L  | 20   | < 0.5     | < 0.5     |           |           |           |           |           |           |           |           |

ODWQS - Ontario Drinking Water Quality  
Standards  
Bold and highlighted indicates exceedance  
Bold indicates detection

Surface Water Chemistry  
Summary - VOC

| 10m                       |       |      |                    |                   |                   |                   |                   |                   |                  |                   |                   |                   |
|---------------------------|-------|------|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|-------------------|-------------------|-------------------|
| Parameters                | Units | PWQO | SW 13<br>19-Apr-23 | SW14<br>18-Apr-17 | SW14<br>20-Jul-17 | SW14<br>26-Oct-17 | SW14<br>24-Apr-18 | SW14<br>12-Apr-19 | SW14<br>8-Jul-19 | SW14<br>23-Apr-20 | SW14<br>20-Apr-21 | SW14<br>19-Jul-21 |
| Methyl Chloride           | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Vinyl Chloride            | µg/L  | 600  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Bromomethane              | µg/L  | 0.9  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Chloroethane              | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Trichloro-fluoromethane   | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| 1,1-Dichloroethylene      | µg/L  | 40   |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Methyl tert-Butyl Ether   | µg/L  | 200  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Trans 1,2-Dichloroethene  | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| 1,1-Dichloro-ethane       | µg/L  | 200  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Cis 1,2-Dichloroethene    | µg/L  | 200  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Chloroform                | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| 1,1,1-Trichloroethane     | µg/L  | 800  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Carbon Tetrachloride      | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Benzene                   | µg/L  | 100  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| 1,2-Dichloroethane        | µg/L  | 70   |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Trichloroethylene         | µg/L  | 20   |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| 1,2-Dichloropropane       | µg/L  | 100  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Bromodichloromethane      | µg/L  | 200  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Cis 1,3-Dichloropropene   | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| T1,3-Dichloropropene      | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Toluene                   | µg/L  | 0.8  | < 0.5              | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.5            | <0.5              | < 0.5             | < 0.5             |
| 1,1,2-Trichloroethane     | µg/L  |      |                    |                   |                   |                   |                   |                   |                  |                   |                   |                   |
| Tetrachloroethene         | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Dibromochloromethane      | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Chlorobenzene             | µg/L  | 15   |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| 1,1,1,2 Tetrachloroethane | µg/L  | 20   |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Ethylbenzene              | µg/L  | 8    |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Bromoform                 | µg/L  | 60   |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| 1,1,2,2 Tetrachloroethane | µg/L  |      |                    |                   |                   |                   |                   |                   |                  |                   |                   |                   |
| 1,3-Dichlorobenzene       | µg/L  | 2.5  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| 1,4-Dichlorobenzene       | µg/L  | 4    |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| 1,2-Dichlorobenzene       | µg/L  | 2.5  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| m/p-Xylene                | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| o-Xylene                  | µg/L  | 40   |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Total Xylene              | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Styrene                   | µg/L  | 4    |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| 1,2,4 Trichlorobenzene    | µg/L  | 0.5  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Acetone                   | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| 1,2-Dibromoethane         | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Methyl ethyl ketone       | µg/L  | 400  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Methyl Isobutyl Ketone    | µg/L  |      |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Dichloromethane           | µg/L  | 100  |                    | --                | --                | --                | --                |                   |                  |                   |                   |                   |
| Trichloroethylene         | µg/L  | 20   |                    |                   |                   |                   |                   |                   |                  |                   |                   |                   |

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Surface Water Chemistry  
Summary - VOC

10m

| Parameters                | Units | PWQO | SW14<br>21-Apr-22 | SW14<br>20-Jul-22 | SW14<br>19-Apr-23 | SW15<br>24-Apr-18 | SW 15<br>12-Apr-19 | SW16<br>24-Apr-14 | SW16<br>24-Apr-18 |
|---------------------------|-------|------|-------------------|-------------------|-------------------|-------------------|--------------------|-------------------|-------------------|
| Methyl Chloride           | µg/L  |      |                   |                   |                   | --                |                    | --                | --                |
| Vinyl Chloride            | µg/L  | 600  |                   |                   |                   | --                |                    | < 0.5             | --                |
| Bromomethane              | µg/L  | 0.9  |                   |                   |                   | --                |                    | <0.5              | --                |
| Chloroethane              | µg/L  |      |                   |                   |                   | --                |                    | --                | --                |
| Trichloro-fluoromethane   | µg/L  |      |                   |                   |                   | --                |                    | <5                | --                |
| 1,1-Dichloroethylene      | µg/L  | 40   |                   |                   |                   | --                |                    | --                | --                |
| Methyl tert-Butyl Ether   | µg/L  | 200  |                   |                   |                   | --                |                    | <2                | --                |
| Trans 1,2-Dichloroethene  | µg/L  |      |                   |                   |                   | --                |                    | <0.5              | --                |
| 1,1-Dichloro-ethane       | µg/L  | 200  |                   |                   |                   | --                |                    | <0.5              | --                |
| Cis 1,2-Dichloroethene    | µg/L  | 200  |                   |                   |                   | --                |                    | <0.5              | --                |
| Chloroform                | µg/L  |      |                   |                   |                   | --                |                    | <1                | --                |
| 1,1,1-Trichloroethane     | µg/L  | 800  |                   |                   |                   | --                |                    | <0.5              | --                |
| Carbon Tetrachloride      | µg/L  |      |                   |                   |                   | --                |                    | < 0.2             | --                |
| Benzene                   | µg/L  | 100  |                   |                   |                   | --                |                    | <0.5              | --                |
| 1,2-Dichloroethane        | µg/L  | 70   |                   |                   |                   | --                |                    | <0.5              | --                |
| Trichloroethylene         | µg/L  | 20   |                   |                   |                   | --                |                    | <0.5              | --                |
| 1,2-Dichloropropane       | µg/L  | 100  |                   |                   |                   | --                |                    | <0.5              | --                |
| Bromodichloromethane      | µg/L  | 200  |                   |                   |                   | --                |                    | <2                | --                |
| Cis 1,3-Dichloropropene   | µg/L  |      |                   |                   |                   | --                |                    | <0.5              | --                |
| T1,3-Dichloropropene      | µg/L  |      |                   |                   |                   | --                |                    | <0.5              | --                |
| Toluene                   | µg/L  | 0.8  | < 0.5             | < 0.5             | < 0.5             | < 0.5             | < 0.5              | <0.5              | < 0.5             |
| 1,1,2-Trichloroethane     | µg/L  |      |                   |                   |                   |                   |                    |                   |                   |
| Tetrachloroethene         | µg/L  |      |                   |                   |                   | --                |                    | < 0.5             | --                |
| Dibromochloromethane      | µg/L  |      |                   |                   |                   | --                |                    | <2                | --                |
| Chlorobenzene             | µg/L  | 15   |                   |                   |                   | --                |                    | < 0.5             | --                |
| 1,1,1,2 Tetrachloroethane | µg/L  | 20   |                   |                   |                   | --                |                    | <0.5              | --                |
| Ethylbenzene              | µg/L  | 8    |                   |                   |                   | --                |                    | <0.5              | --                |
| Bromoform                 | µg/L  | 60   |                   |                   |                   | --                |                    | <5                | --                |
| 1,1,2,2 Tetrachloroethane | µg/L  |      |                   |                   |                   |                   |                    |                   |                   |
| 1,3-Dichlorobenzene       | µg/L  | 2.5  |                   |                   |                   | --                |                    | <0.5              | --                |
| 1,4-Dichlorobenzene       | µg/L  | 4    |                   |                   |                   | --                |                    | <0.5              | --                |
| 1,2-Dichlorobenzene       | µg/L  | 2.5  |                   |                   |                   | --                |                    | <0.5              | --                |
| m/p-Xylene                | µg/L  |      |                   |                   |                   | --                |                    | <1.0              | --                |
| o-Xylene                  | µg/L  | 40   |                   |                   |                   | --                |                    | <0.5              | --                |
| Total Xylene              | µg/L  |      |                   |                   |                   | --                |                    | <1.1              | --                |
| Styrene                   | µg/L  | 4    |                   |                   |                   | --                |                    | <0.5              | --                |
| 1,2,4 Trichlorobenzene    | µg/L  | 0.5  |                   |                   |                   | --                |                    | <0.5              | --                |
| Acetone                   | µg/L  |      |                   |                   |                   | --                |                    | <30               | --                |
| 1,2-Dibromoethane         | µg/L  |      |                   |                   |                   | --                |                    | <0.2              | --                |
| Methyl ethyl ketone       | µg/L  | 400  |                   |                   |                   | --                |                    | < 20              | --                |
| Methyl Isobutyl Ketone    | µg/L  |      |                   |                   |                   | --                |                    | < 20              | --                |
| Dichloromethane           | µg/L  | 100  |                   |                   |                   | --                |                    | < 0.5             | --                |
| Trichloroethylene         | µg/L  | 20   |                   |                   |                   |                   |                    |                   |                   |

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## Ground Water Quality - PCB's

| Parameters<br>Units<br>ODWQS / PWQO | PCB<br>µg/L<br>3 / 0.001 | Parameters<br>Units<br>ODWQS / PWQO | PCB<br>µg/L<br>3 / 0.001 |
|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| Monitoring Well 7                   |                          | Monitoring Well 15B                 |                          |
| 2010-05-05                          | <0.001                   | 2010-05-14                          | < 0.001                  |
| 2011-06-08                          | <b>0.028</b>             | 2010-10-20                          | <0.001                   |
| 2013-10-01                          | <0.05                    | 2011-06-09                          | < 0.001                  |
| 2017-04-17                          | <0.05                    | 2011-11-10                          | < 0.001                  |
| 2018-04-25                          | <0.05                    | 2012-05-23                          | < 0.001                  |
| 2019-04-11                          | < 0.05                   | 2012-10-01                          | < 0.001                  |
| 2020-04-28                          | < 0.05                   | 2013-05-23                          | < 0.05                   |
| 2021-04-19                          | <0.05                    | 2013-10-01                          | < 0.05                   |
| 2022-04-21                          | <0.05                    | 2014-04-23                          | < 0.05                   |
| 2023-04-19                          | <0.05                    | 2014-10-15                          | < 0.05                   |
|                                     |                          | 2015-04-15                          | < 0.05                   |
| Monitoring Well 15                  |                          | 2015-10-07                          | < 0.2                    |
| 2009-06-04                          | <0.001                   | 2017-04-17                          | < 0.05                   |
| 2010-05-14                          | <b>0.003</b>             | 2017-10-23                          | < 0.05                   |
| 2010-10-20                          | <0.001                   | 2018-04-25                          | < 0.05                   |
| 2011-06-09                          | < 0.001                  | 2018-10-15                          | < 0.05                   |
| 2011-11-10                          | < 0.001                  | 2019-04-11                          | < 0.05                   |
| 2012-05-23                          | < 0.001                  | 2019-10-21                          | < 0.05                   |
| 2012-10-01                          | < 0.001                  | 2020-04-22                          | <0.05                    |
| 2013-05-23                          | < 0.2                    | 2020-10-19                          | <0.05                    |
| 2013-10-01                          | < 0.05                   | 2021-04-19                          | <0.05                    |
| 2014-04-23                          | < 0.04                   | 2021-10-27                          | <0.05                    |
| 2014-10-15                          | < 0.05                   | 2022-04-21                          | <0.05                    |
| 2015-04-15                          | < 0.05                   | 2022-10-26                          | <0.05                    |
| 2015-10-07                          | < 0.2                    | 2023-04-19                          | <0.05                    |
| 2017-04-17                          | < 0.05                   | 2023-10-12                          | <0.05                    |
| 2017-10-23                          | < 0.05                   |                                     |                          |
| 2018-04-25                          | < 0.05                   | Monitoring Well 16                  |                          |
| 2018-10-15                          | < 0.05                   | 2017-04-17                          | < 0.05                   |
| 2019-04-11                          | < 0.05                   | 2018-04-25                          | < 0.05                   |
| 2019-10-21                          | < 0.05                   | 2018-10-15                          | < 0.05                   |
| 2020-04-22                          | <0.05                    | 2019-04-11                          | < 0.05                   |
| 2020-10-19                          | <0.05                    | 2020-04-22                          | <0.05                    |
| 2021-04-19                          | <0.05                    | 2020-10-19                          | <0.05                    |
| 2021-10-27                          | <0.05                    | 2022-04-21                          | <0.05                    |
| 2022-04-21                          | <0.05                    | 2022-10-26                          | <0.05                    |
| 2022-10-26                          | <0.05                    | 2023-04-19                          | <0.05                    |
| 2023-04-19                          | <0.05                    | 2023-10-12                          | <0.05                    |
| 2023-10-12                          | <0.05                    |                                     |                          |

| Parameters<br>Units<br>ODWQS / PWQO | PCB<br>µg/L<br>3 / 0.001 |
|-------------------------------------|--------------------------|
| Monitoring Well 15A                 |                          |
| 2008-09-24                          | <0.001                   |
| 2009-08-20                          | <0.001                   |
| 2010-05-14                          | < 0.001                  |
| 2010-10-20                          | <0.001                   |
| 2011-06-09                          | < 0.001                  |
| 2011-11-10                          | < 0.001                  |
| 2012-05-23                          | < 0.001                  |
| 2012-10-01                          | < 0.001                  |
| 2013-05-23                          | < 0.2                    |
| 2013-10-01                          | < 0.05                   |
| 2014-04-23                          | < 0.05                   |
| 2014-10-15                          | < 0.05                   |
| 2015-04-15                          | < 0.05                   |
| 2015-10-07                          | < 0.2                    |
| 2017-04-17                          | < 0.05                   |
| 2017-10-23                          | < 0.05                   |
| 2018-04-25                          | < 0.05                   |
| 2018-10-15                          | < 0.05                   |
| 2019-04-11                          | < 0.05                   |
| 2019-10-21                          | < 0.05                   |
| 2020-04-22                          | <0.05                    |
| 2020-10-19                          | <0.05                    |
| 2021-10-27                          | <0.05                    |
| 2021-10-27                          | <0.05                    |
| 2022-04-21                          | <0.05                    |
| 2022-10-26                          | <0.05                    |
| 2023-04-19                          | <0.05                    |
| 2023-10-12                          | <0.05                    |

| Parameters<br>Units<br>ODWQS / PWQO | PCB<br>µg/L<br>3 / 0.001 |
|-------------------------------------|--------------------------|
| Monitoring Well 26                  |                          |
| 2009-08-18                          | <0.001                   |
| 2010-05-11                          | <0.001                   |
| 2010-10-26                          | <0.001                   |
| 2011-06-09                          | < 0.001                  |
| 2011-11-10                          | < 0.001                  |
| 2012-05-23                          | < 0.001                  |
| 2012-10-01                          | < 0.001                  |
| 2013-05-23                          | < 0.05                   |
| 2013-10-01                          | < 0.05                   |
| 2014-04-24                          | < 0.05                   |
| 2014-10-15                          | < 0.05                   |
| 2015-04-15                          | < 0.05                   |
| 2015-10-07                          | < 0.2                    |
| 2016-04-27                          | < 0.05                   |
| 2017-04-17                          | < 0.05                   |
| 2017-10-23                          | < 0.05                   |
| 2018-04-25                          | < 0.05                   |
| 2018-10-15                          | < 0.05                   |
| 2019-04-11                          | < 0.05                   |
| 2019-10-21                          | < 0.05                   |
| 2020-04-22                          | <0.05                    |
| 2020-10-19                          | <0.05                    |
| 2021-04-19                          | <0.05                    |
| 2021-10-27                          | <0.05                    |
| 2022-04-21                          | <0.05                    |
| 2022-10-26                          | <0.05                    |
| 2023-04-19                          | <0.05                    |
| 2023-10-12                          | <0.05                    |



| Parameters<br>Units<br>ODWQS / PWQO | PCB<br>µg/L<br>3 / 0.001 |
|-------------------------------------|--------------------------|
| Monitoring Well 26-I                |                          |
| 2009-08-18                          | <0.001                   |
| 2010-05-11                          | <0.001                   |
| 2010-10-26                          | <0.001                   |
| 2011-06-09                          | < 0.001                  |
| 2011-11-10                          | < 0.001                  |
| 2012-05-23                          | < 0.001                  |
| 2012-10-01                          | < 0.001                  |
| 2013-05-23                          | < 0.05                   |
| 2013-10-01                          | < 0.05                   |
| 2014-04-24                          | < 0.05                   |
| 2014-10-15                          | < 0.05                   |
| 2015-04-15                          | < 0.04                   |
| 2015-10-07                          | < 0.2                    |
| 2015-04-15                          | < 0.05                   |
| 2015-10-07                          | < 0.2                    |
| 2016-04-27                          | < 0.05                   |
| 2017-04-17                          | < 0.05                   |
| 2017-10-23                          | < 0.05                   |
| 2018-04-25                          | < 0.05                   |
| 2018-10-15                          | < 0.05                   |
| 2019-04-11                          | < 0.05                   |
| 2019-10-21                          | < 0.05                   |
| 2020-04-22                          | <0.05                    |
| 2020-10-19                          | <0.05                    |
| 2021-04-19                          | <0.05                    |
| 2021-10-27                          | <0.05                    |
| 2022-04-21                          | <0.05                    |
| 2022-10-26                          | <0.05                    |
| 2023-04-19                          | <0.05                    |
| 2023-10-12                          | <0.05                    |
| Monitoring Well 26-2                |                          |
| 2011-06-09                          | < 0.001                  |
| 2011-11-10                          | < 0.001                  |
| 2012-05-23                          | < 0.001                  |
| 2012-10-01                          | < 0.001                  |
| 2013-05-23                          | < 0.05                   |
| 2013-10-01                          | < 0.05                   |
| 2014-04-24                          | < 0.05                   |
| 2014-10-15                          | < 0.05                   |
| 2015-04-15                          | < 0.05                   |
| 2015-10-07                          | < 0.2                    |
| 2016-04-27                          | < 0.05                   |
| 2017-04-17                          | < 0.05                   |
| 2017-10-23                          | < 0.05                   |
| 2018-04-25                          | < 0.05                   |
| 2018-05-08                          | < 0.05                   |
| 2018-10-15                          | < 0.05                   |
| 2019-04-11                          | < 0.05                   |
| 2019-10-21                          | < 0.05                   |
| 2020-04-22                          | <0.05                    |
| 2020-10-19                          | <0.05                    |
| 2021-04-19                          | <0.05                    |
| 2021-10-27                          | <0.05                    |
| 2022-04-21                          | <0.05                    |
| 2022-10-26                          | <0.05                    |
| 2023-04-19                          | <0.05                    |
| 2023-10-12                          | <0.05                    |

| Parameters<br>Units<br>ODWQS / PWQO | PCB<br>µg/L<br>3 / 0.001 |
|-------------------------------------|--------------------------|
| Monitoring Well 27-I                |                          |
| 2014-04-24                          | < 0.05                   |
| 2014-10-15                          | < 0.05                   |
| 2015-04-15                          | < 0.05                   |
| 2015-10-07                          | < 0.2                    |
| 2017-02-22                          | < 0.05                   |
| 2017-04-17                          | < 0.05                   |
| 2017-10-23                          | < 0.05                   |
| 2018-04-25                          | < 0.05                   |
| 2018-10-15                          | < 0.05                   |
| 2019-04-11                          | < 0.05                   |
| 2019-10-21                          | < 0.05                   |
| 2020-04-22                          | <0.05                    |
| 2020-10-19                          | <0.05                    |
| 2021-04-19                          | <0.05                    |
| 2021-10-27                          | <0.05                    |
| 2022-04-21                          | <0.05                    |
| 2022-10-26                          | <0.05                    |
| 2023-04-19                          | <0.05                    |
| 2023-10-12                          | <0.05                    |
| Monitoring Well 27-II               |                          |
| 2014-04-24                          | < 0.05                   |
| 2014-10-15                          | < 0.05                   |
| 2015-04-15                          | < 0.05                   |
| 2015-10-07                          | < 0.2                    |
| 2016-04-27                          | < 0.05                   |
| 2016-04-27                          | < 0.05                   |
| 2017-02-22                          | < 0.05                   |
| 2017-04-17                          | < 0.05                   |
| 2017-07-20                          | < 0.05                   |
| 2017-10-23                          | < 0.05                   |
| 2018-10-15                          | < 0.05                   |
| 2018-05-08                          | < 0.05                   |
| 2019-04-11                          | < 0.05                   |
| 2019-10-21                          | < 0.05                   |
| 2020-04-22                          | <0.05                    |
| 2020-10-19                          | <0.05                    |
| 2021-04-19                          | <0.05                    |
| 2021-10-27                          | <0.05                    |
| 2022-04-21                          | <0.05                    |
| 2022-10-26                          | <0.05                    |
| 2023-04-19                          | <0.05                    |
| 2023-10-12                          | <0.05                    |
| Monitoring Well 28-I                |                          |
| 2015-04-15                          | < 0.05                   |
| 2015-10-07                          | < 0.2                    |
| 2016-04-27                          | < 0.05                   |
| 2016-04-27                          | < 0.05                   |
| 2017-02-22                          | < 0.05                   |
| 2017-04-17                          | < 0.05                   |
| 2017-07-20                          | < 0.05                   |
| 2017-10-23                          | < 0.05                   |
| 2018-04-25                          | < 0.05                   |
| 2018-10-15                          | < 0.05                   |
| 2019-04-11                          | < 0.05                   |
| 2019-10-21                          | < 0.05                   |
| 2020-04-22                          | <0.05                    |
| 2020-10-19                          | <0.05                    |
| 2021-04-19                          | <0.05                    |
| 2021-10-27                          | <0.05                    |
| 2022-04-21                          | <0.05                    |
| 2022-10-26                          | <0.05                    |
| 2023-04-19                          | <0.05                    |
| 2023-10-12                          | <0.05                    |

|              |           |
|--------------|-----------|
| Parameters   | PCB       |
| Units        | µg/L      |
| ODWQS / PWQO | 3 / 0.001 |

Monitoring Well 27-III

|            |        |
|------------|--------|
| 2014-04-24 | < 0.05 |
| 2014-10-15 | < 0.05 |
| 2015-04-15 | < 0.05 |
| 2015-10-07 | < 0.2  |
| 2016-04-27 | < 0.05 |
| 2016-04-27 | < 0.05 |
| 2017-02-22 | < 0.05 |
| 2017-04-17 | < 0.05 |
| 2017-07-20 | < 0.05 |
| 2017-10-23 | < 0.05 |
| 2018-04-25 | < 0.05 |
| 2018-10-15 | < 0.05 |
| 2019-04-11 | < 0.05 |
| 2019-10-21 | < 0.05 |
| 2020-04-22 | <0.05  |
| 2020-10-19 | <0.05  |
| 2021-04-19 | <0.05  |
| 2021-10-27 | <0.05  |
| 2022-04-21 | <0.05  |
| 2022-10-26 | <0.05  |
| 2023-04-19 | <0.05  |
| 2023-10-12 | <0.05  |

Monitoring Well 28-III

|            |        |
|------------|--------|
| 2015-04-15 | < 0.05 |
| 2015-10-07 | < 0.2  |
| 2016-04-27 | < 0.05 |
| 2017-02-22 | < 0.05 |
| 2017-04-17 | < 0.05 |
| 2017-07-20 | < 0.05 |
| 2017-10-23 | < 0.05 |
| 2018-04-25 | < 0.05 |
| 2018-10-15 | < 0.05 |
| 2019-04-11 | < 0.05 |
| 2019-10-21 | < 0.05 |
| 2020-04-22 | <0.05  |
| 2020-10-19 | <0.05  |
| 2021-04-19 | <0.05  |
| 2021-10-27 | <0.05  |
| 2022-04-21 | <0.05  |
| 2022-10-26 | <0.05  |
| 2023-04-19 | <0.05  |
| 2023-10-12 | <0.05  |

|              |           |
|--------------|-----------|
| Parameters   | PCB       |
| Units        | µg/L      |
| ODWQS / PWQO | 3 / 0.001 |

Monitoring Well 28-II

|            |        |
|------------|--------|
| 2015-04-15 | < 0.05 |
| 2015-10-07 | < 0.2  |
| 2016-04-27 | < 0.05 |
| 2017-02-22 | < 0.05 |
| 2017-04-17 | <0.05  |
| 2017-07-20 | < 0.05 |
| 2017-10-23 | < 0.05 |
| 2018-04-25 | < 0.05 |
| 2018-10-15 | < 0.05 |
| 2019-04-11 | < 0.05 |
| 2019-10-21 | < 0.05 |
| 2020-04-22 | <0.05  |
| 2020-10-19 | <0.05  |
| 2021-04-19 | <0.05  |
| 2021-10-27 | <0.05  |
| 2022-04-21 | <0.05  |
| 2022-10-26 | <0.05  |
| 2023-04-19 | <0.05  |
| 2023-10-12 | <0.05  |

Surface Water 3

|            |         |
|------------|---------|
| 2008-07-24 | <0.001  |
| 2009-08-17 | <0.001  |
| 2010-04-28 | <0.001  |
| 2010-08-16 | <0.001  |
| 2010-11-02 | <0.001  |
| 2011-06-07 | < 0.001 |
| 2011-08-23 | < 0.001 |
| 2011-11-11 | < 0.001 |
| 2012-05-30 | < 0.001 |
| 2012-08-16 | < 0.001 |
| 2012-10-01 | < 0.001 |
| 2013-05-22 | < 0.05  |
| 2013-08-12 | < 0.05  |
| 2014-04-24 | <0.05   |
| 2014-07-14 | <0.05   |
| 2014-10-15 | <0.05   |
| 2015-07-28 | < 0.05  |
| 2015-10-08 | < 0.2   |
| 2016-04-29 | < 0.05  |
| 2016-10-04 | < 0.05  |
| 2017-10-24 | < 0.05  |
| 2018-10-16 | < 0.05  |
| 2019-10-22 | <0.05   |
| 2020-10-19 | <0.05   |
| 2021-10-27 | <0.05   |
| 2022-10-26 | <0.05   |
| 2023-10-12 | <0.05   |

Ground Water Quality - Pesticides

| Parameters        | Alpha-BHC          | Aldrin             | Alpha-Chlordane | Beta BHC | Delta BHC | Dieldrin | Endosulfan I | Endosulfan II     | Endosulfan Sulphate | Endrin  | Gamma-Chlordane | Gamma-BHC | Heptachlor |
|-------------------|--------------------|--------------------|-----------------|----------|-----------|----------|--------------|-------------------|---------------------|---------|-----------------|-----------|------------|
| Units             | µg/L               | µg/L               | µg/L            | µg/L     | µg/L      | µg/L     | µg/L         | µg/L              | µg/L                | µg/L    | µg/L            | µg/L      | µg/L       |
| ODWS              |                    |                    |                 |          |           |          |              |                   |                     |         |                 |           |            |
| Monitoring Well 7 |                    |                    |                 |          |           |          |              |                   |                     |         |                 |           |            |
| 2009-06-04        | <0.004             | <0.005             | <0.003          | <0.002   | <0.001    | <0.001   | <0.003       | <0.003            | <0.013              | <0.002  | <0.003          | <0.005    | <0.001     |
| 2010-05-12        | < 0.004            | < 0.005            | < 0.003         | < 0.002  | 0.003     | 0.002    | < 0.003      | < 0.003           | < 0.013             | < 0.002 | < 0.003         | < 0.005   | < 0.001    |
| 2011-06-08        | < 0.005            | < 0.005            | < 0.005         | < 0.005  | < 0.005   | < 0.005  | < 0.005      | < 0.005           | < 0.005             | < 0.005 | < 0.003         | < 0.005   | < 0.005    |
| 2017-04-17        | <0.4               | <0.001             | <0.005          | <0.4     | --        | <0.05    | <0.05        | <0.005            | <0.005              | <0.005  | <0.005          | --        | <0.1       |
| 2018-04-25        | --                 | --                 | --              | --       | --        | --       | --           | --                | --                  | --      | --              | --        | --         |
| 2019-04-11        | <0.4               | <0.02              | <b>0.08</b>     | <0.4     |           | <0.05    | <0.05        | <0.05             | <0.05               | <0.05   | <b>0.08</b>     |           | <0.1       |
| 2020-04-28        | <0.4               | <0.01              | <0.05           | <0.4     |           | <0.05    | <0.05        | <0.05             | <0.05               | <0.05   | <0.05           |           | <0.1       |
| 2021-04-19        |                    | <0.01              | <0.05           |          |           | <0.05    | <0.05        | <0.05             |                     | <0.05   | <0.05           |           | <0.01      |
| 2022-04-21        |                    | <0.01              | <0.05           |          |           | <0.05    | <0.05        | <0.05             |                     | <0.05   | <0.05           |           | <0.004     |
| 2023-04-19        |                    | <0.01              | <0.05           |          |           | <0.05    | <0.05        | <0.05             |                     | <0.05   | <0.05           |           | <0.004     |
| Monitoring Well 7 |                    |                    |                 |          |           |          |              |                   |                     |         |                 |           |            |
|                   | Heptachlor Epoxide | Hexachloro benzene | Mirex           | op'-DDT  | pp'-DDD   | pp'DDE   | pp'DDT       | pp'-Methoxy chlor | Chlordane (Total)   |         |                 |           |            |
|                   | µg/L               | µg/L               | µg/L            | µg/L     | µg/L      | µg/L     | µg/L         | µg/L              | µg/L                |         |                 |           |            |
| 2009-06-04        | <0.001             | <0.006             | <0.001          | <0.003   | <0.003    | <0.003   | <0.003       | <0.008            | --                  |         |                 |           |            |
| 2010-05-12        | < 0.001            | < 0.006            | < 0.001         | < 0.003  | < 0.003   | < 0.003  | < 0.003      | < 0.008           | --                  |         |                 |           |            |
| 2011-06-08        | < 0.005            | < 0.005            | < 0.005         | < 0.005  | < 0.005   | < 0.005  | < 0.005      | < 0.01            | < 0.005             |         |                 |           |            |
| 2017-04-17        | <0.1               | --                 | <1              | <0.005   | <0.05     | <0.01    | <0.005       | <0.1              | <0.05               |         |                 |           |            |
| 2018-04-25        | --                 | --                 | --              | --       | --        | --       | --           | --                | --                  |         |                 |           |            |
| 2019-04-11        | <0.1               |                    | <1              | <0.05    | <0.05     | <0.01    | <0.05        | <0.1              | <0.04               |         |                 |           |            |
| 2020-04-28        | <0.1               |                    | <1              | <0.05    | <0.05     | <0.01    | <0.05        | <0.1              | <0.04               |         |                 |           |            |
| 2021-04-19        | <0.01              | <0.01              |                 | <0.05    | <0.05     | <0.01    | <0.05        | <0.05             | <0.05               |         |                 |           |            |
| 2022-04-21        | <0.006             | <0.01              | <0.009          | <0.05    | <0.05     | <0.01    | <0.05        | <0.05             | <0.05               |         |                 |           |            |
| 2023-04-19        | <0.006             |                    |                 | <0.05    | <0.05     | <0.01    | <0.05        | <0.05             | <0.05               |         |                 |           |            |



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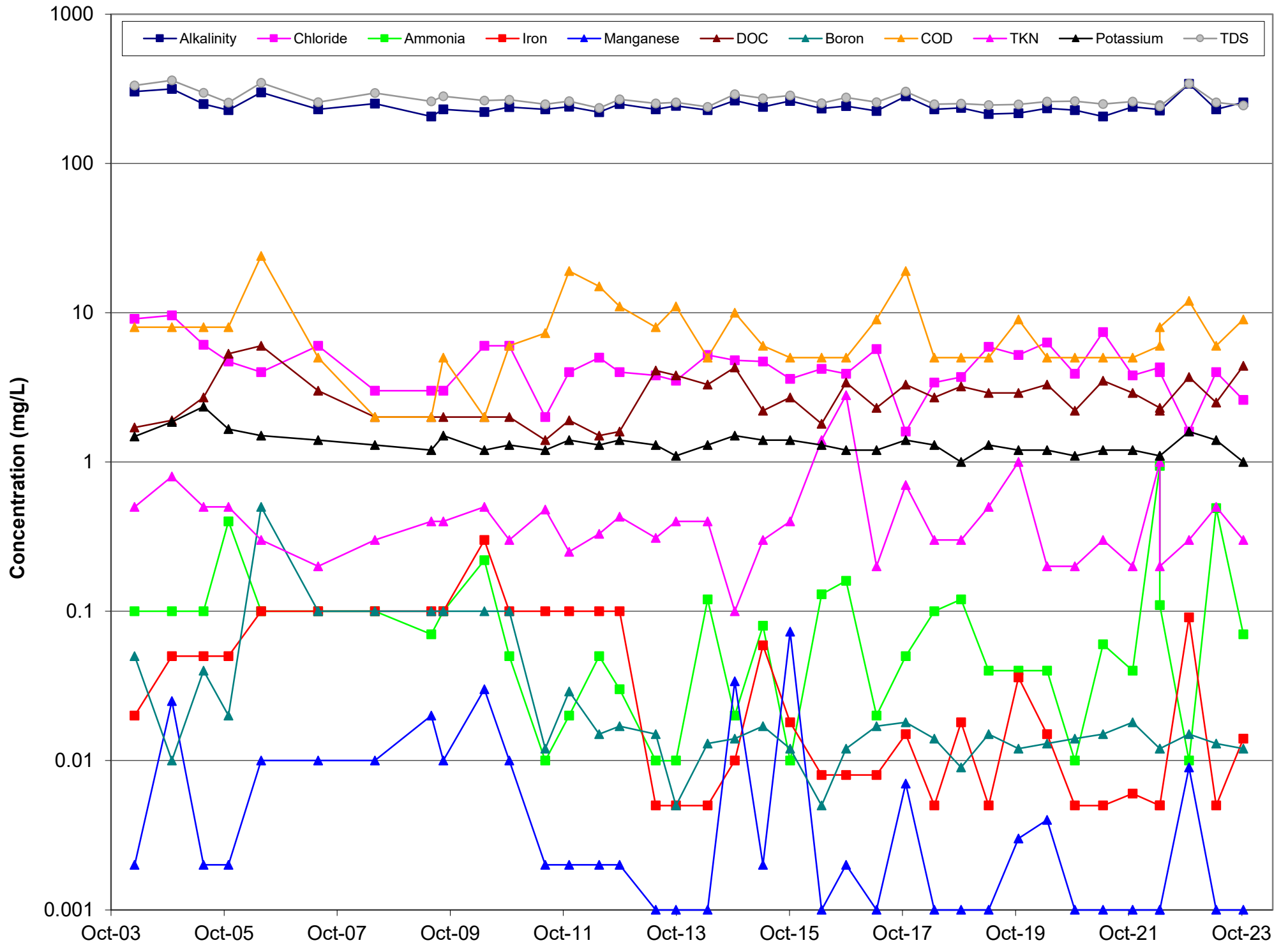
## **APPENDIX C**

### **Chemistry Over Time Graphs**

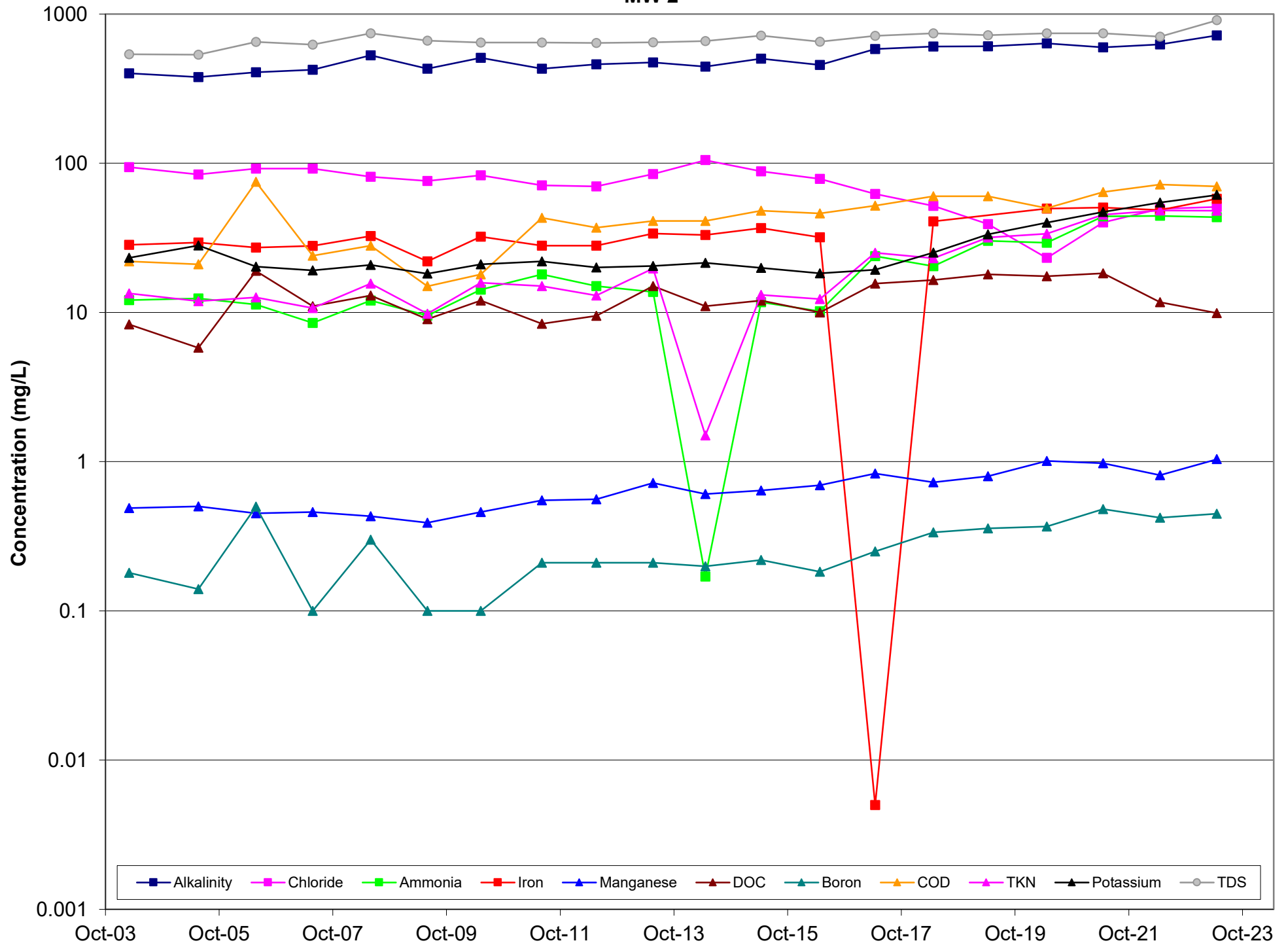
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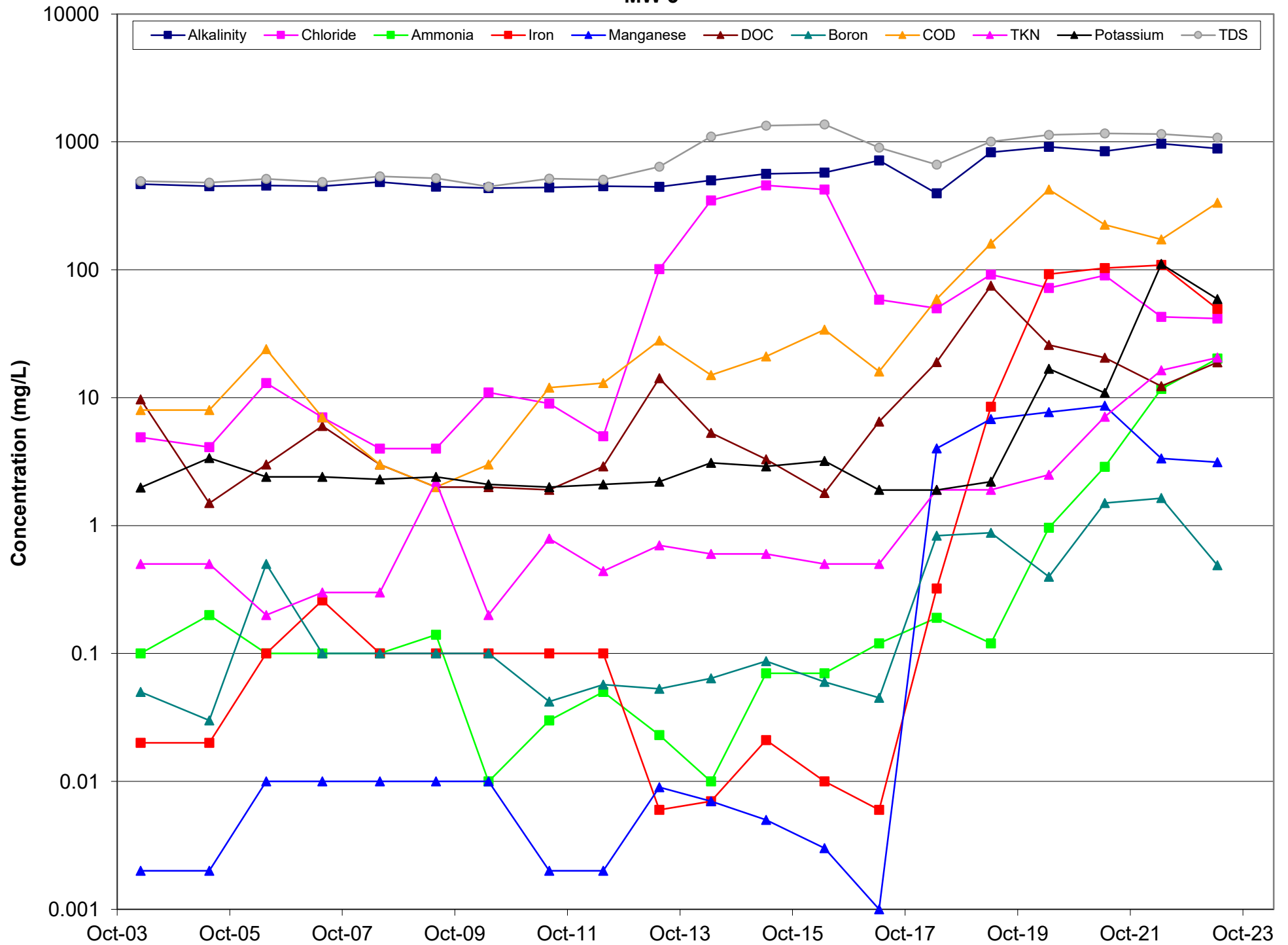
# MW 12



MW 2

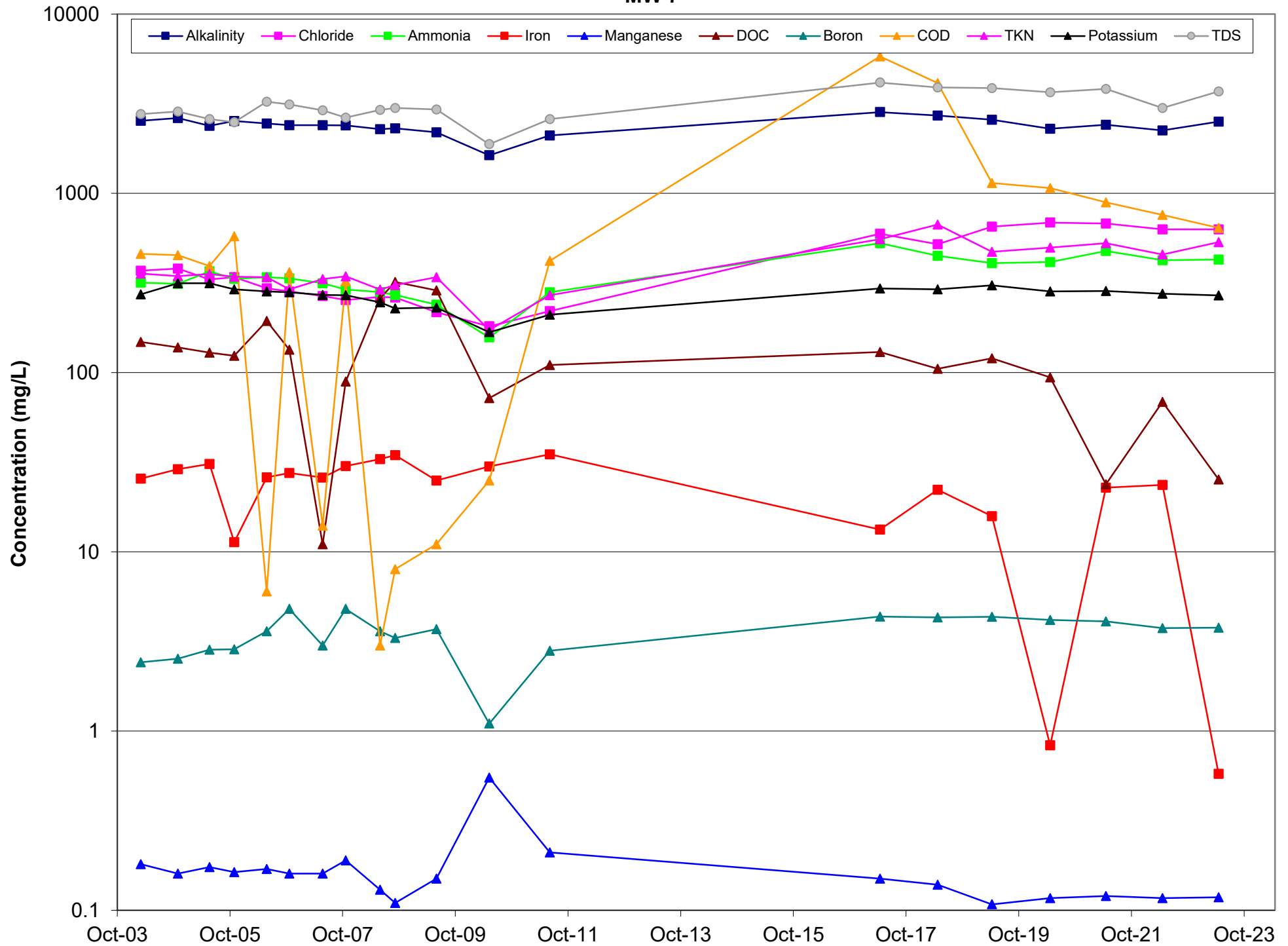


MW 5

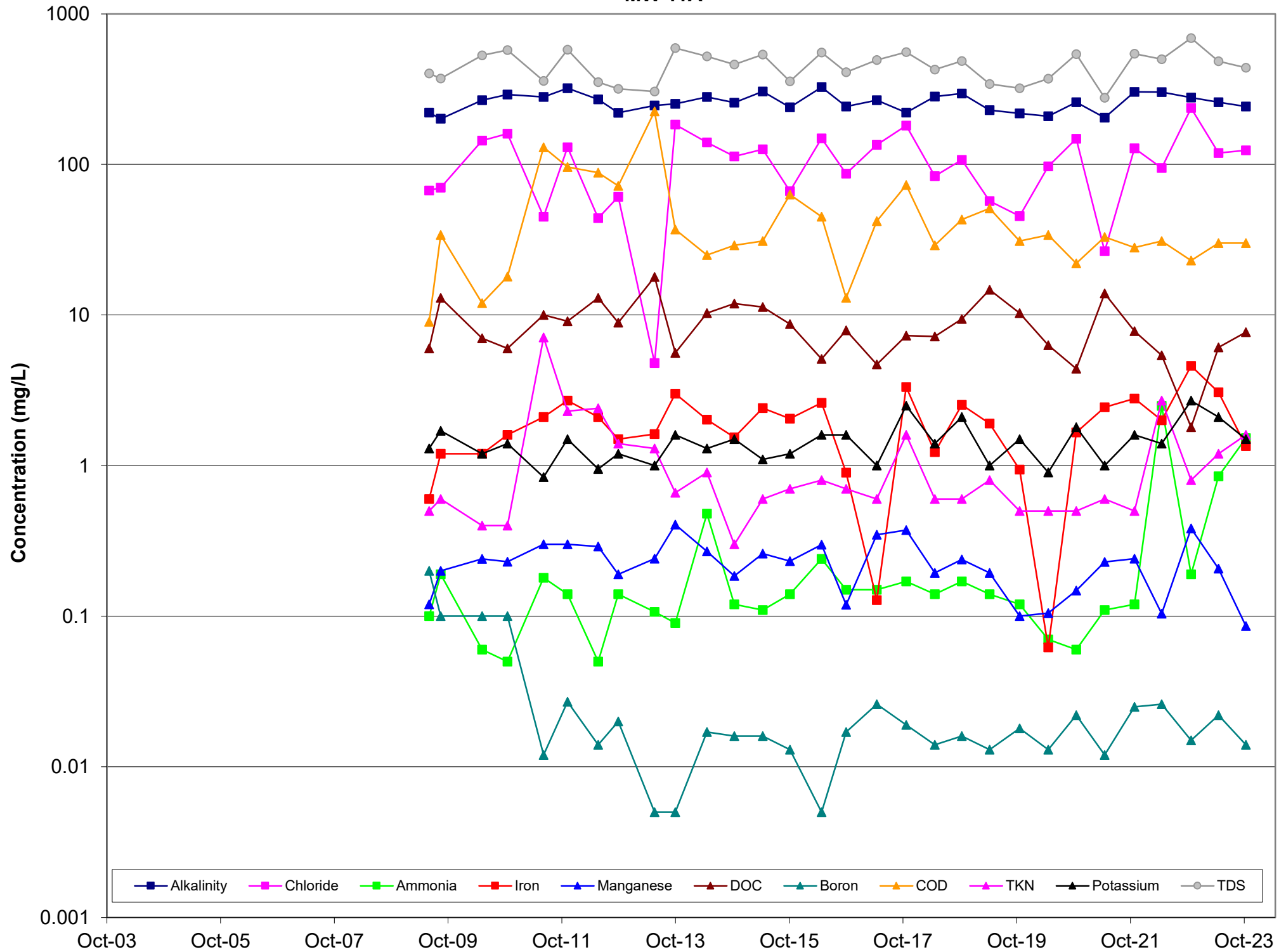




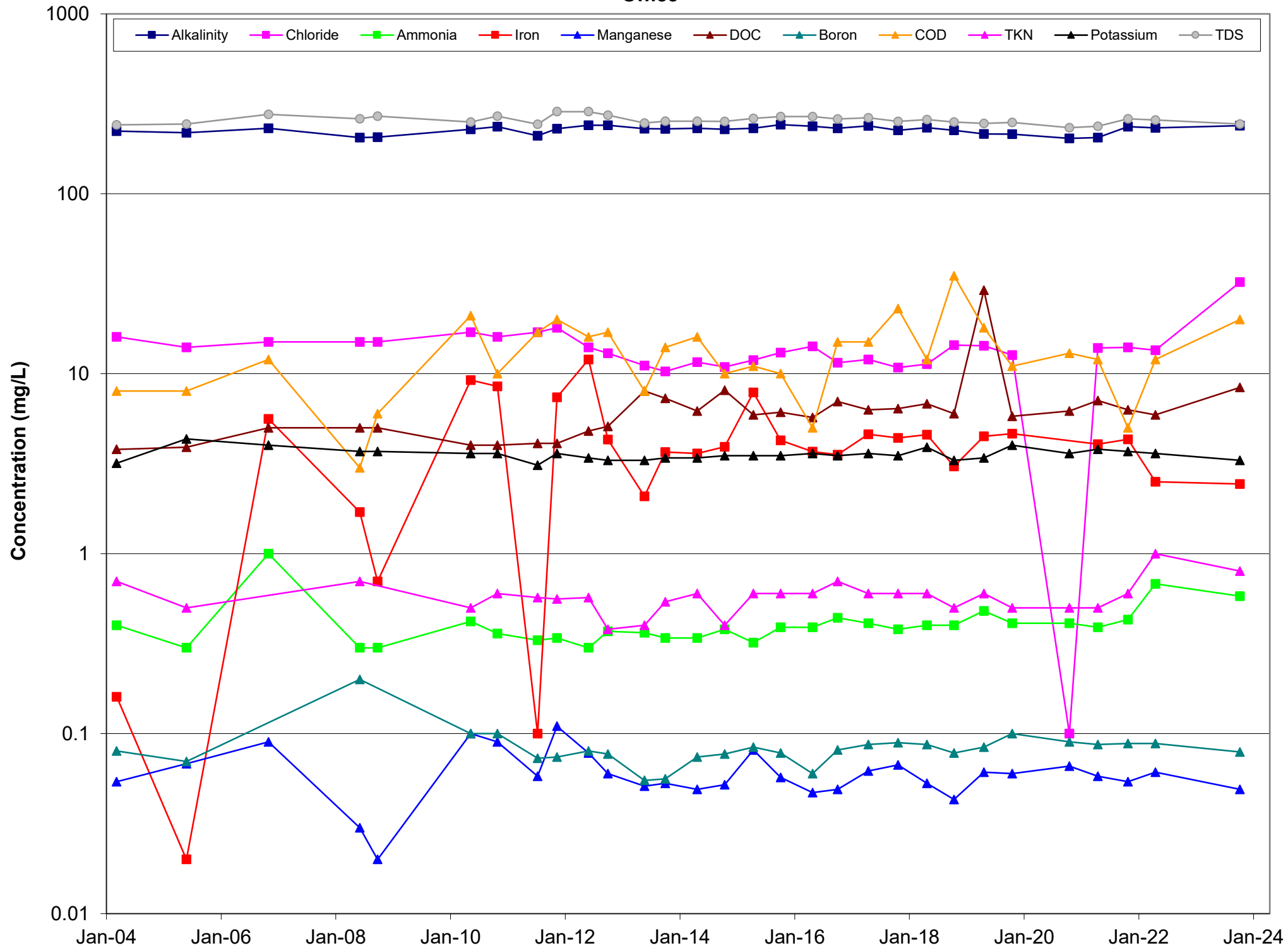
MW 7



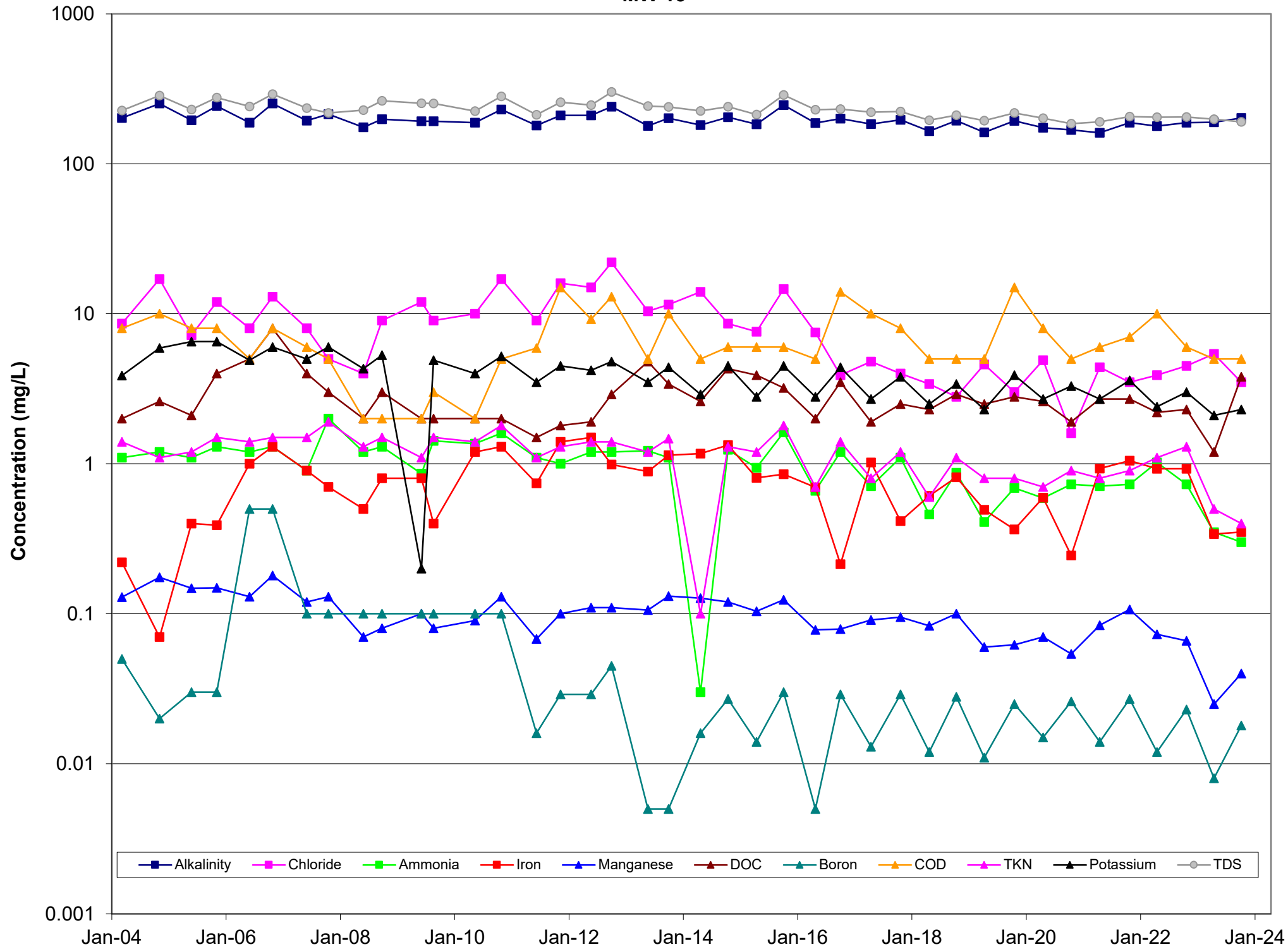
# MW 11A



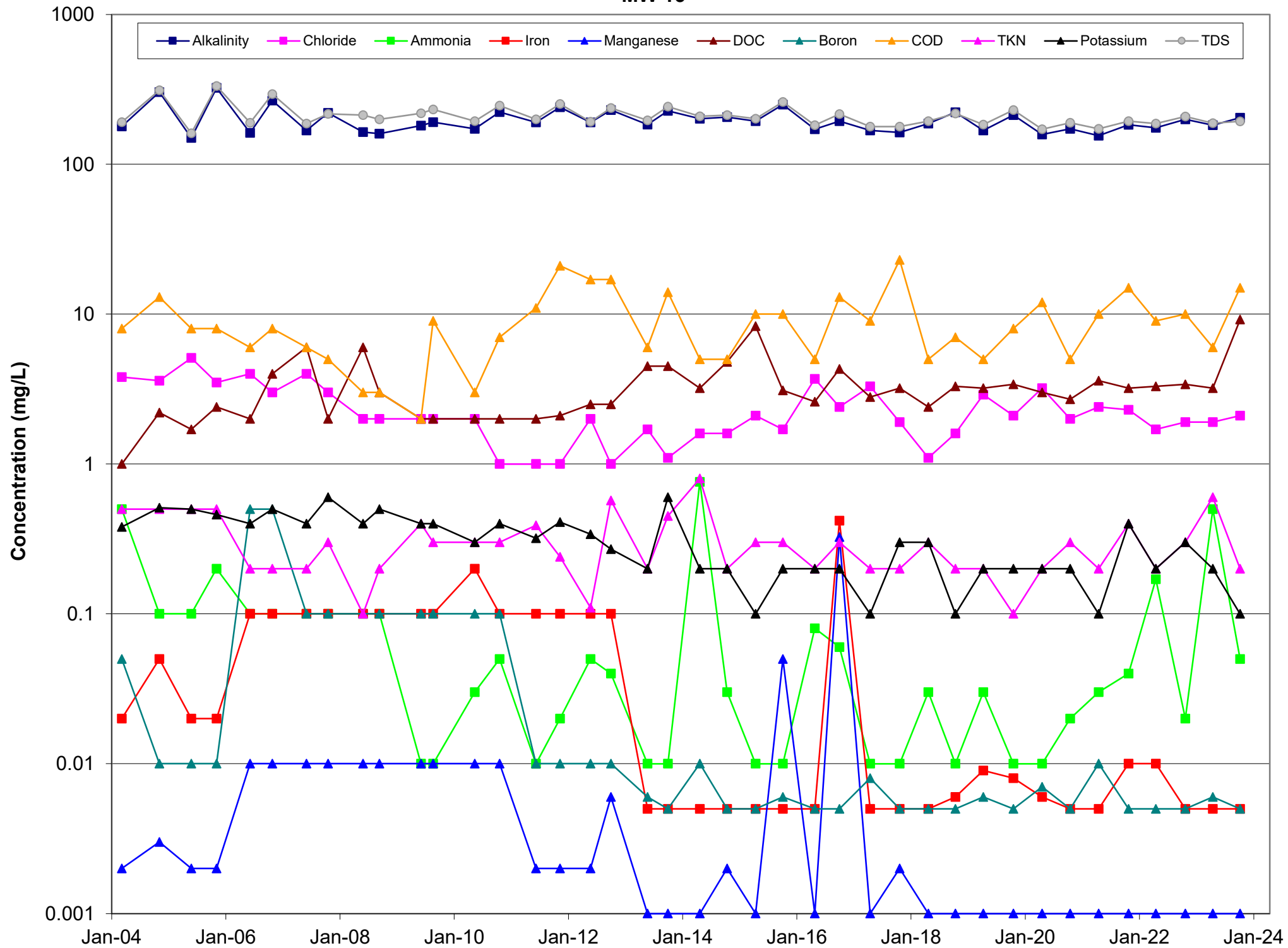
# Office



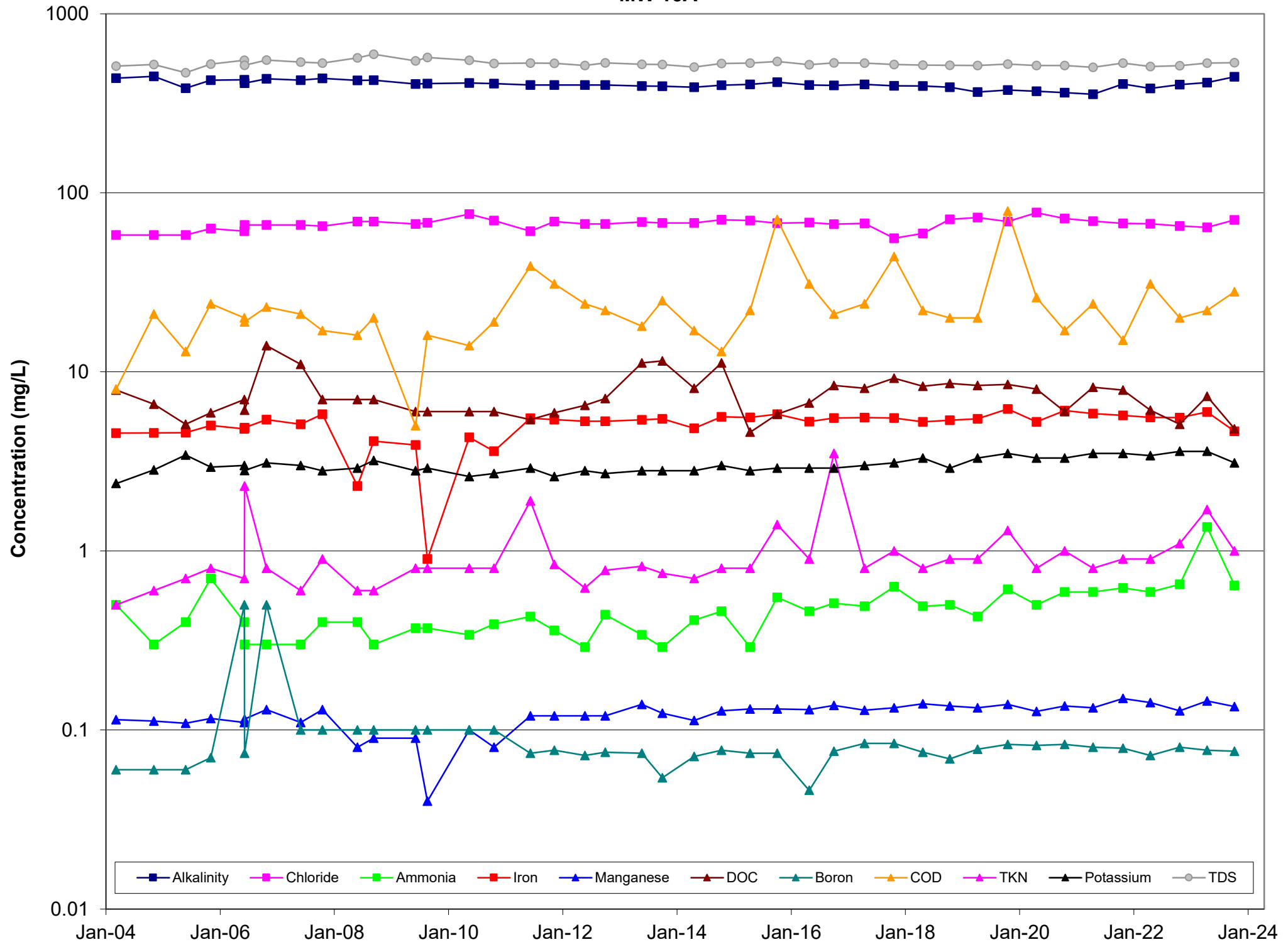
MW 13



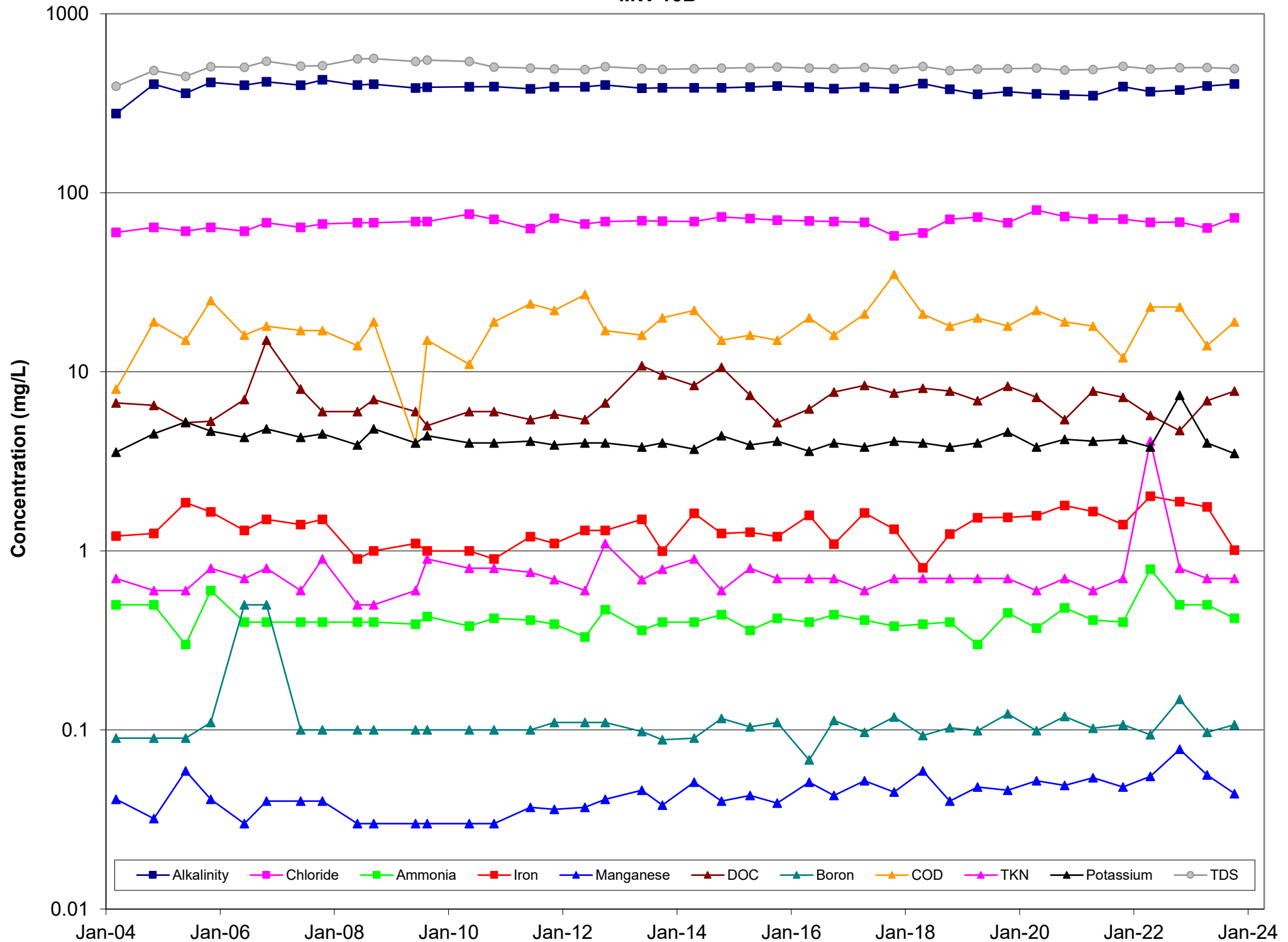
# MW 15



# MW 15A

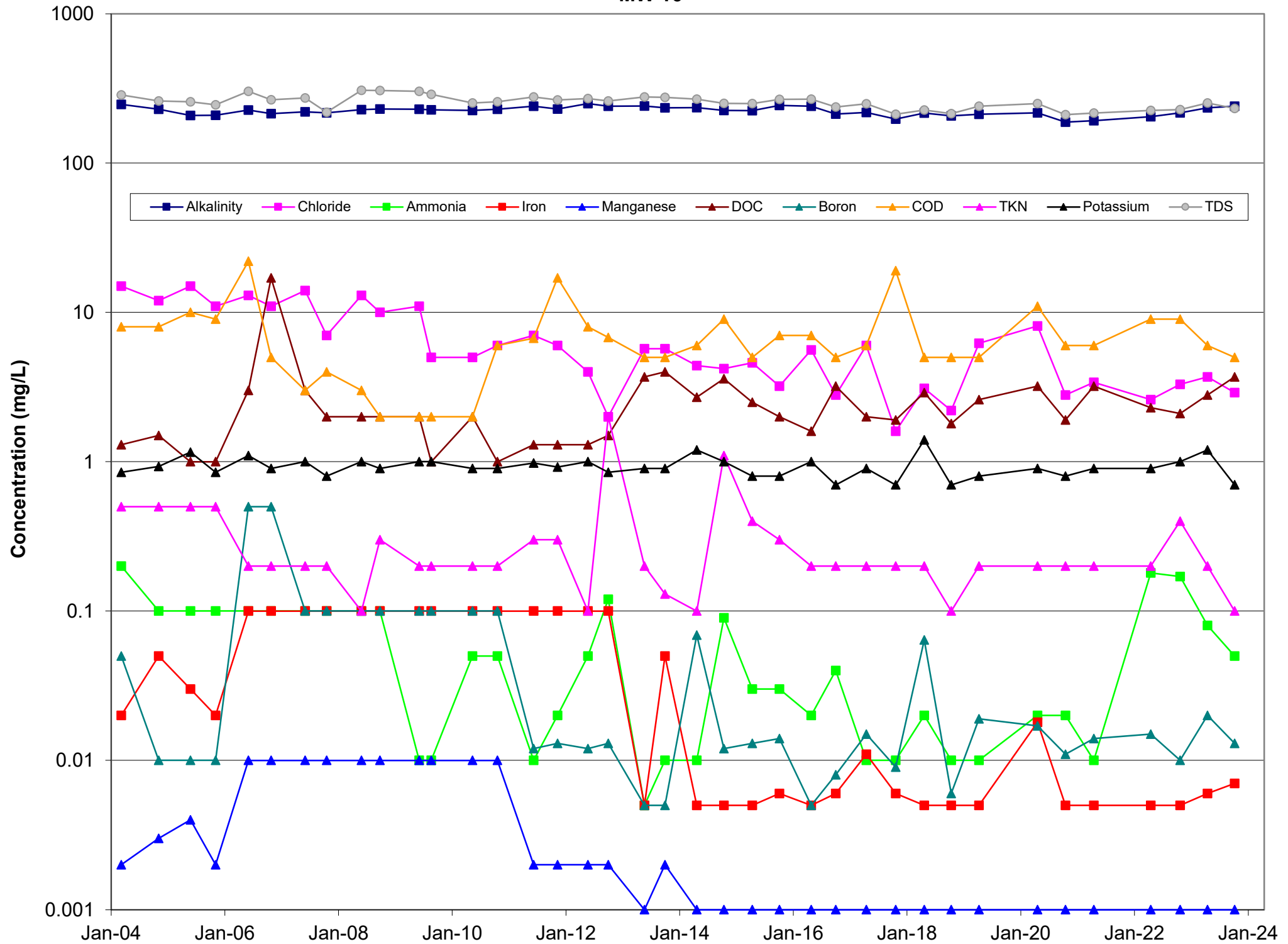


# MW 15B

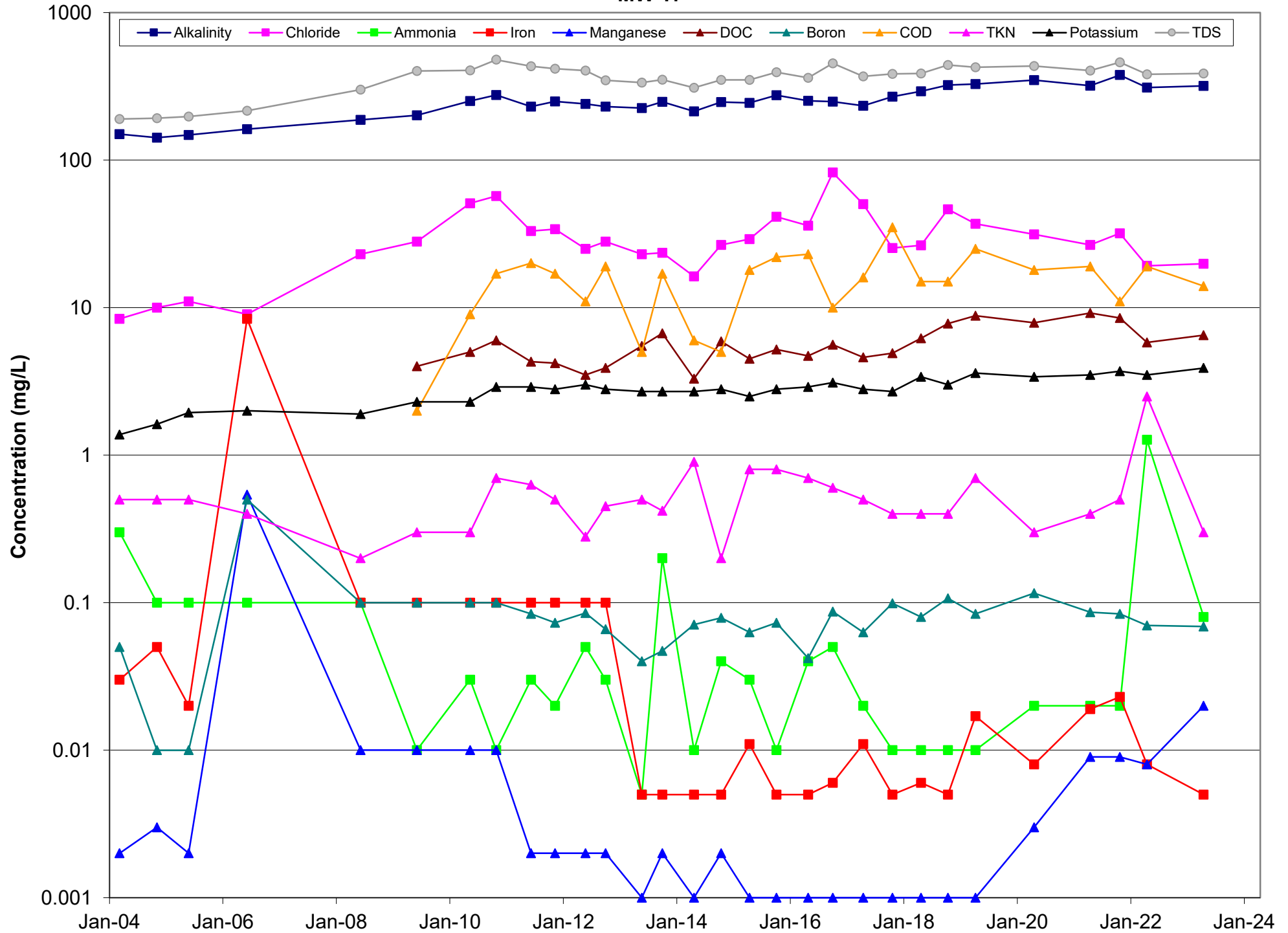




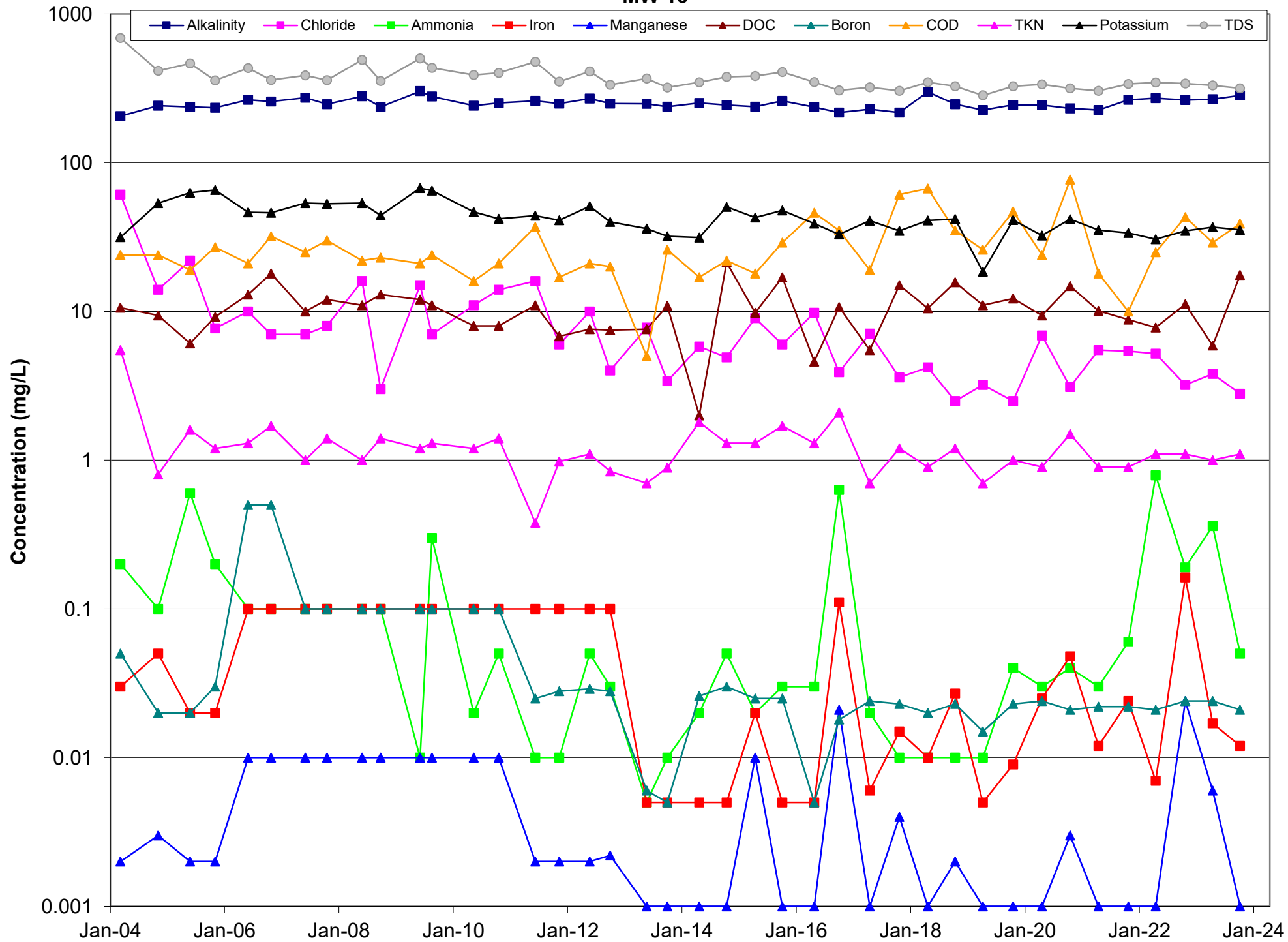
MW 16



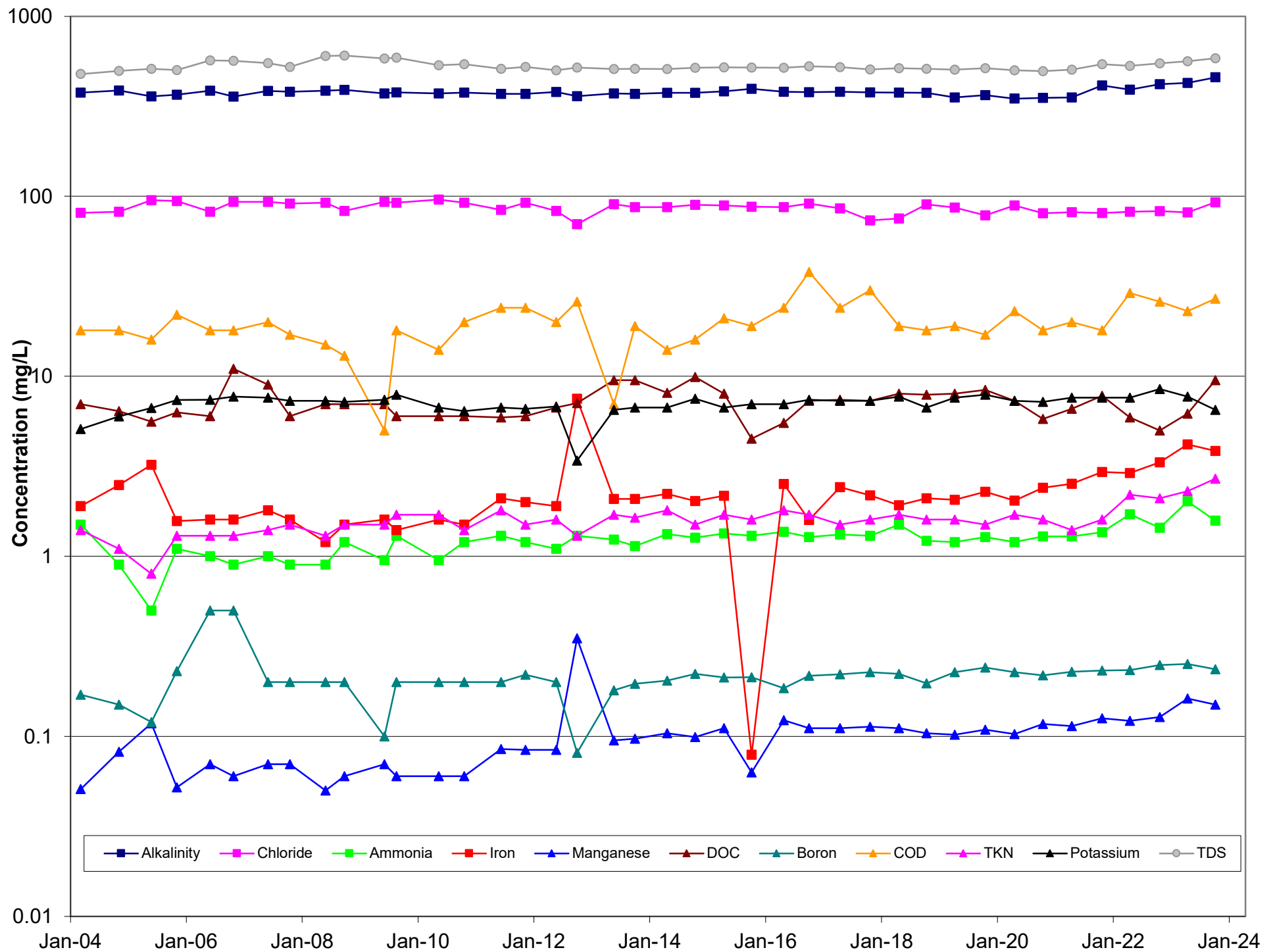
MW 17



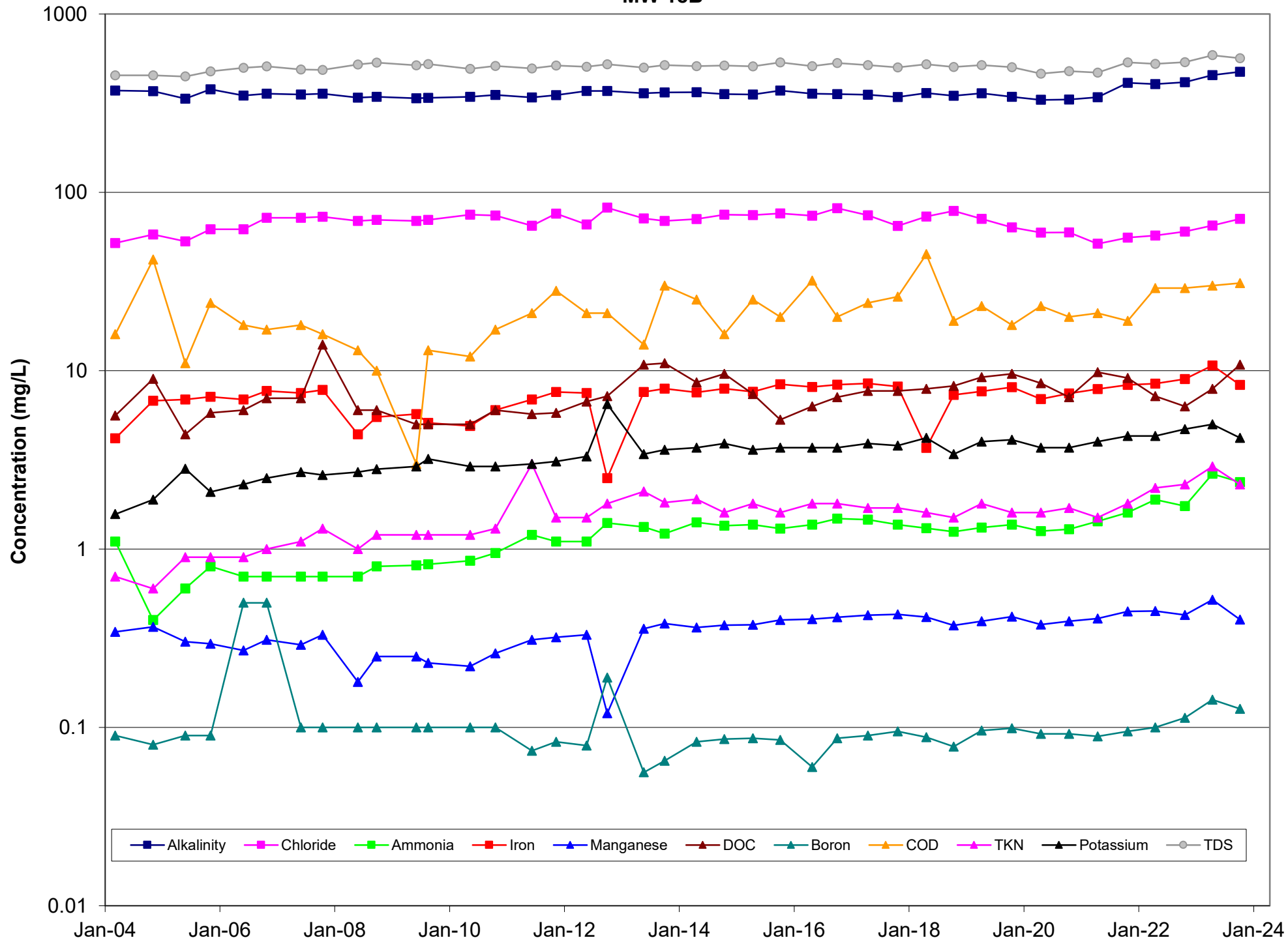
MW 18



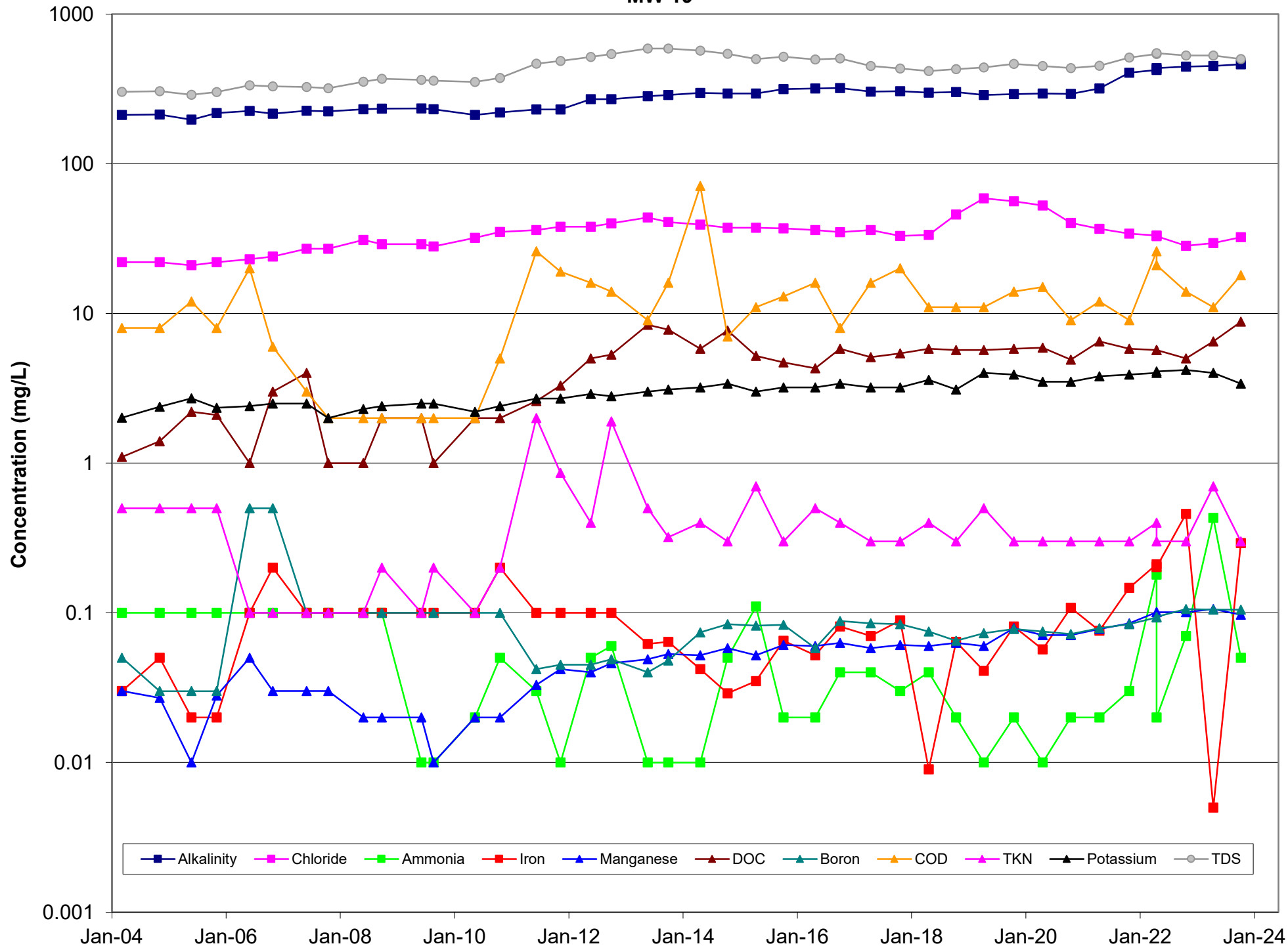
# MW 18A



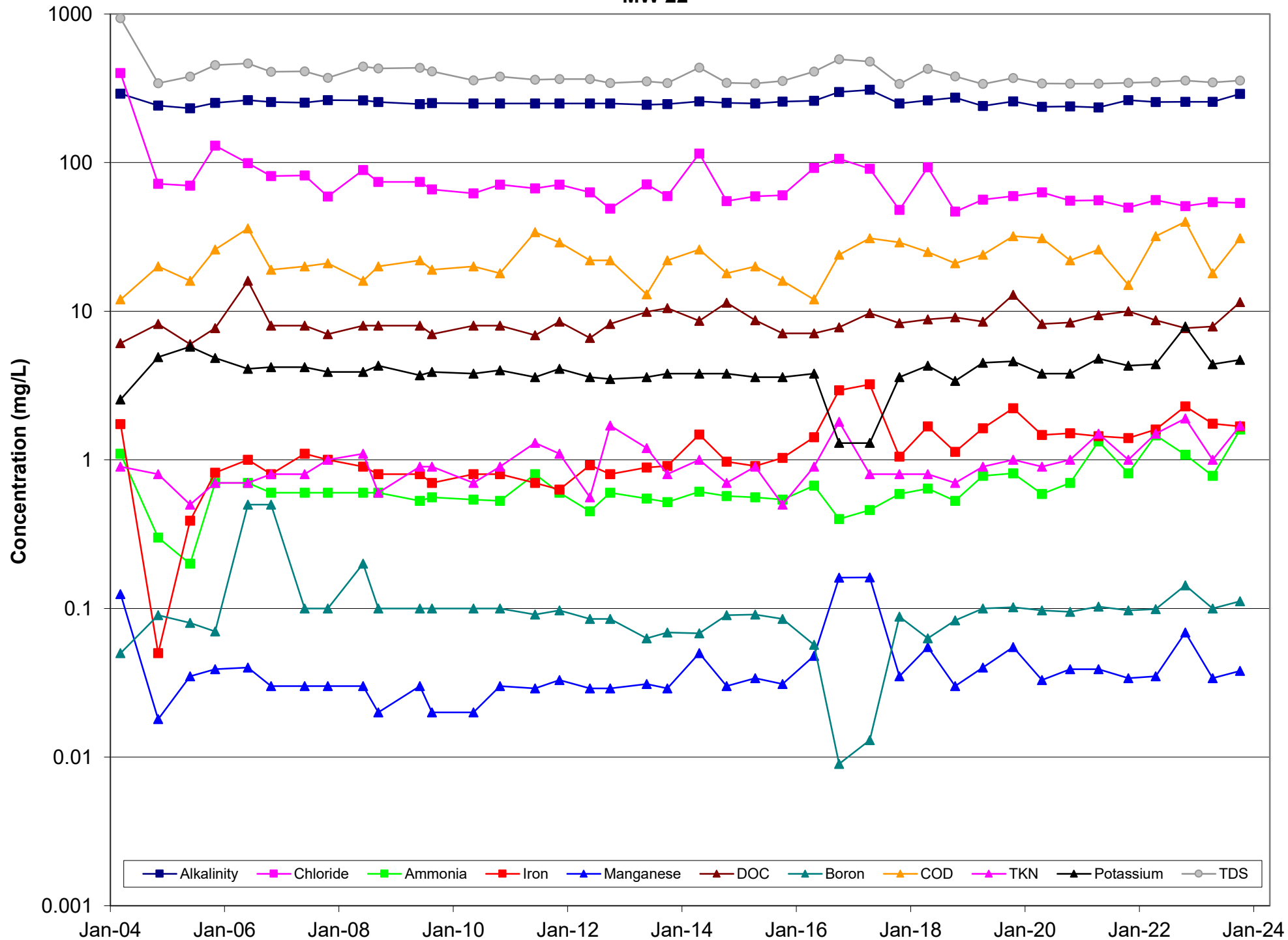
MW 18B



MW 19

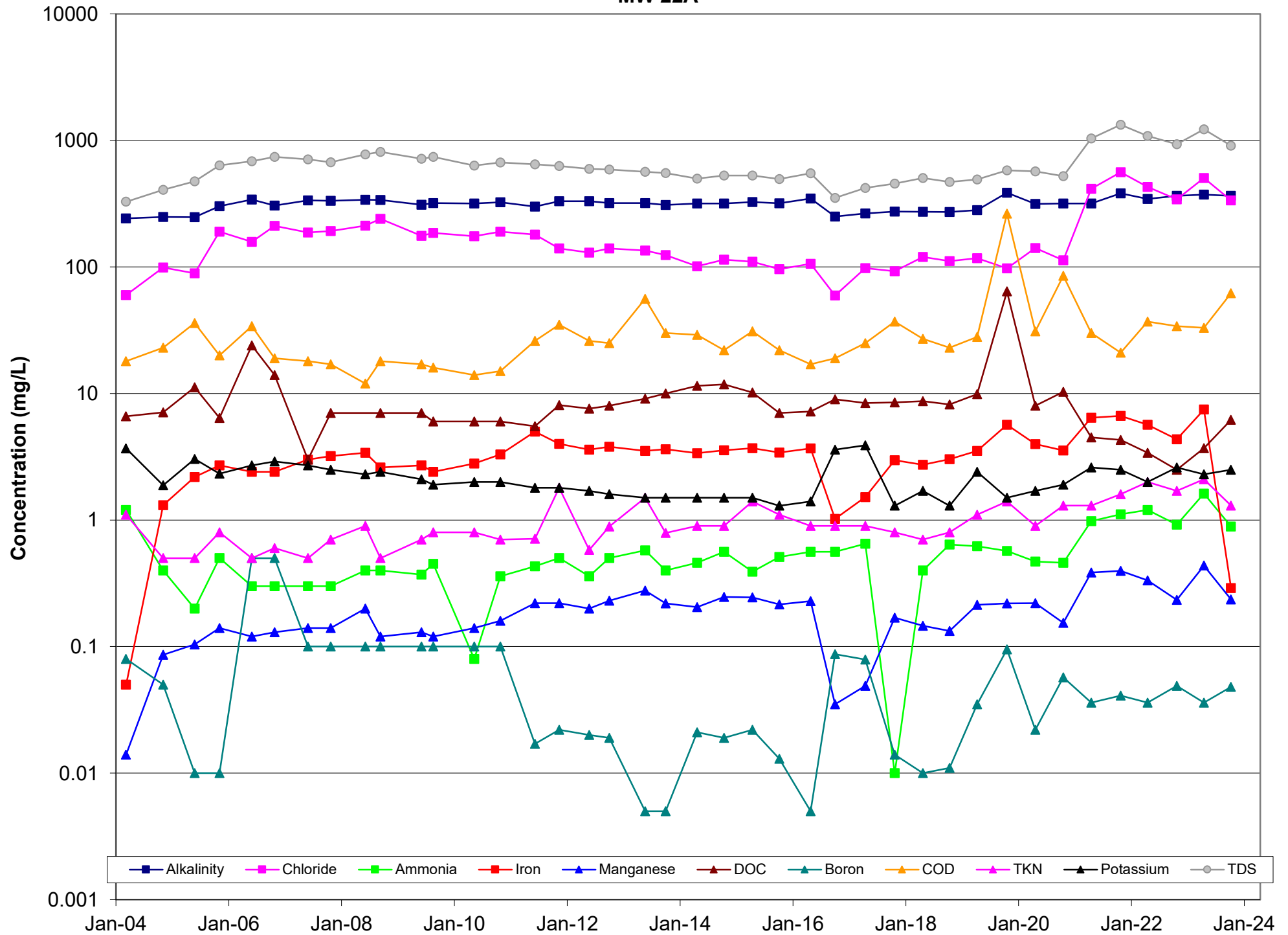


MW 22

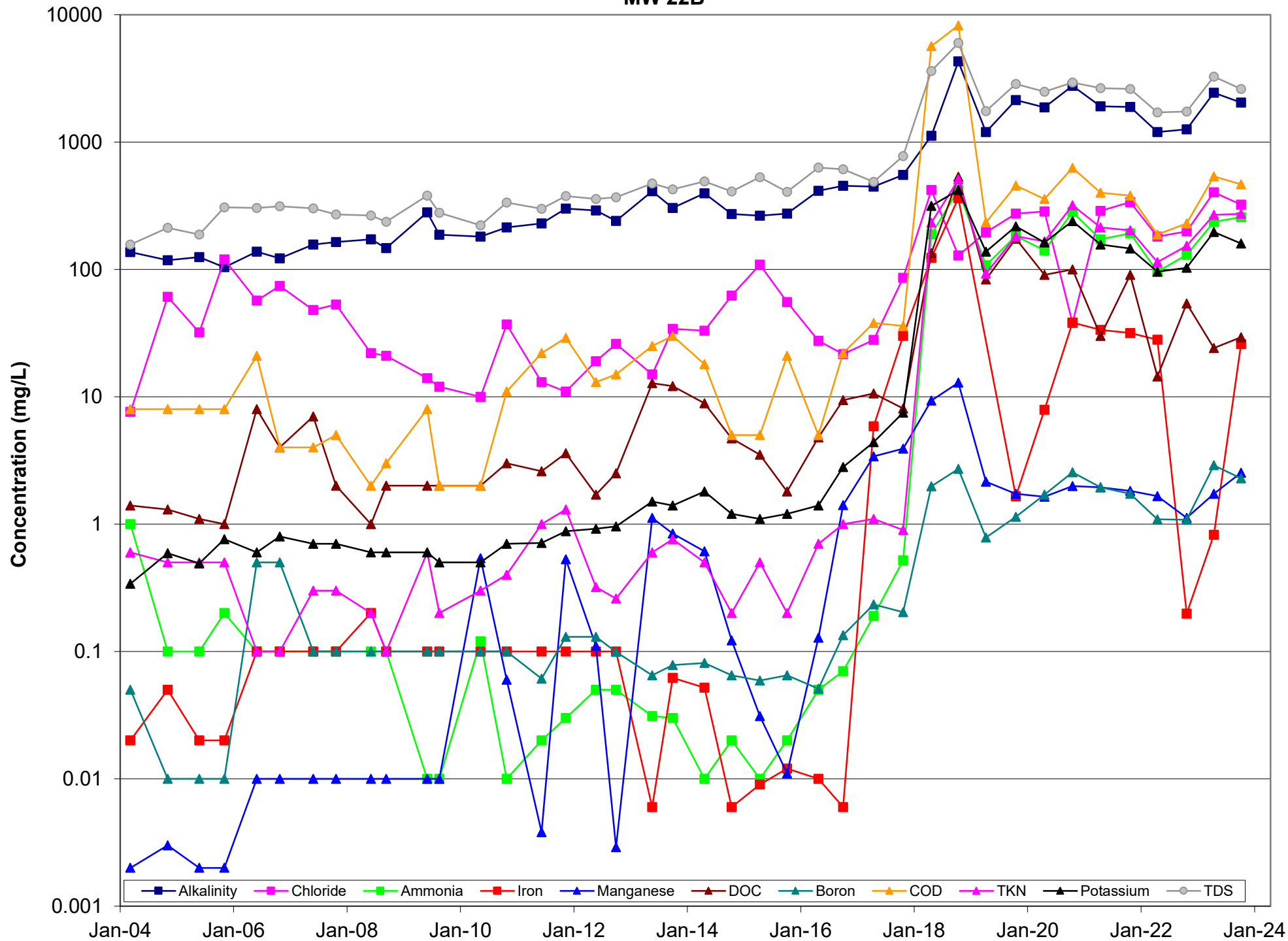




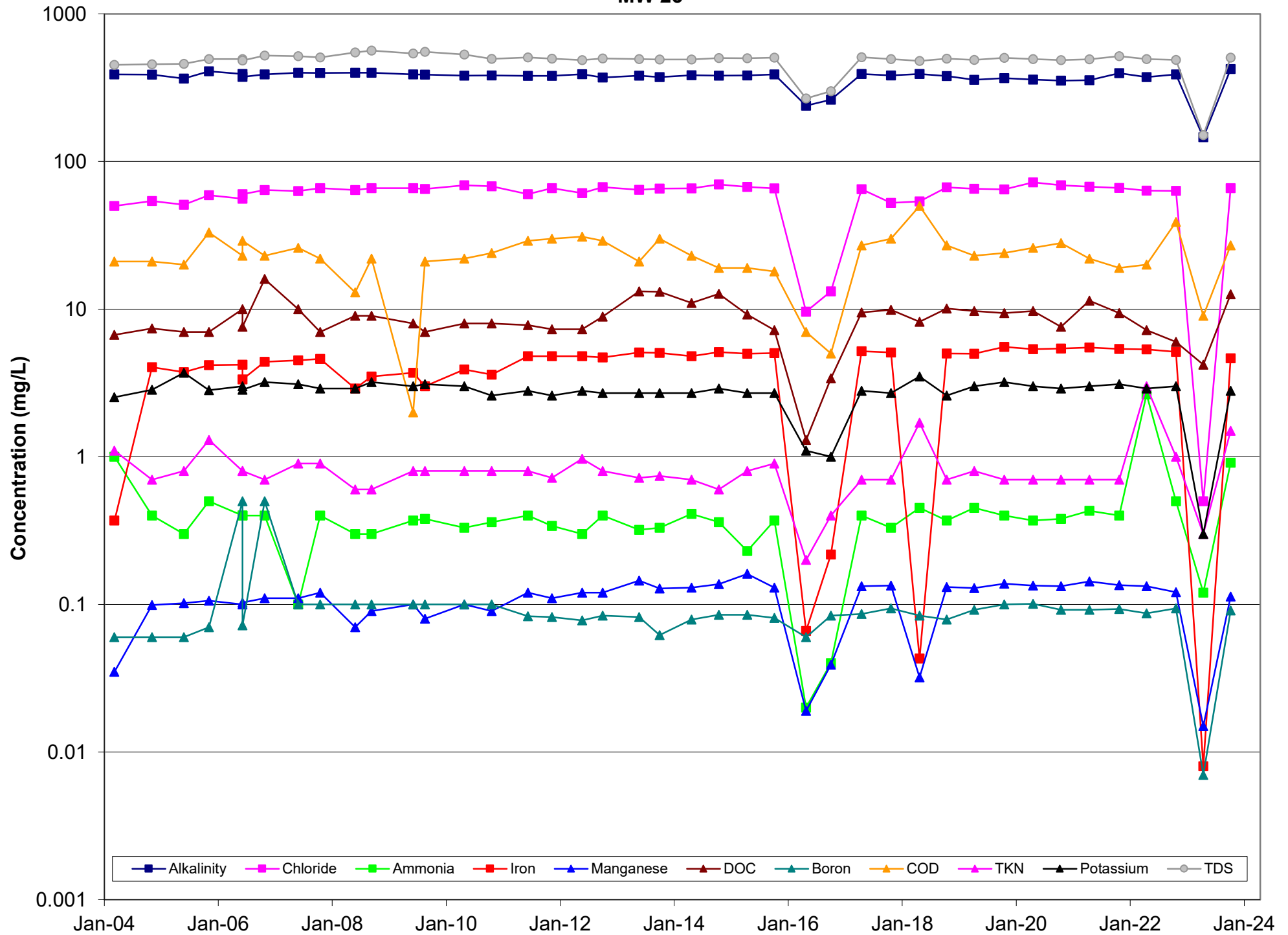
MW 22A



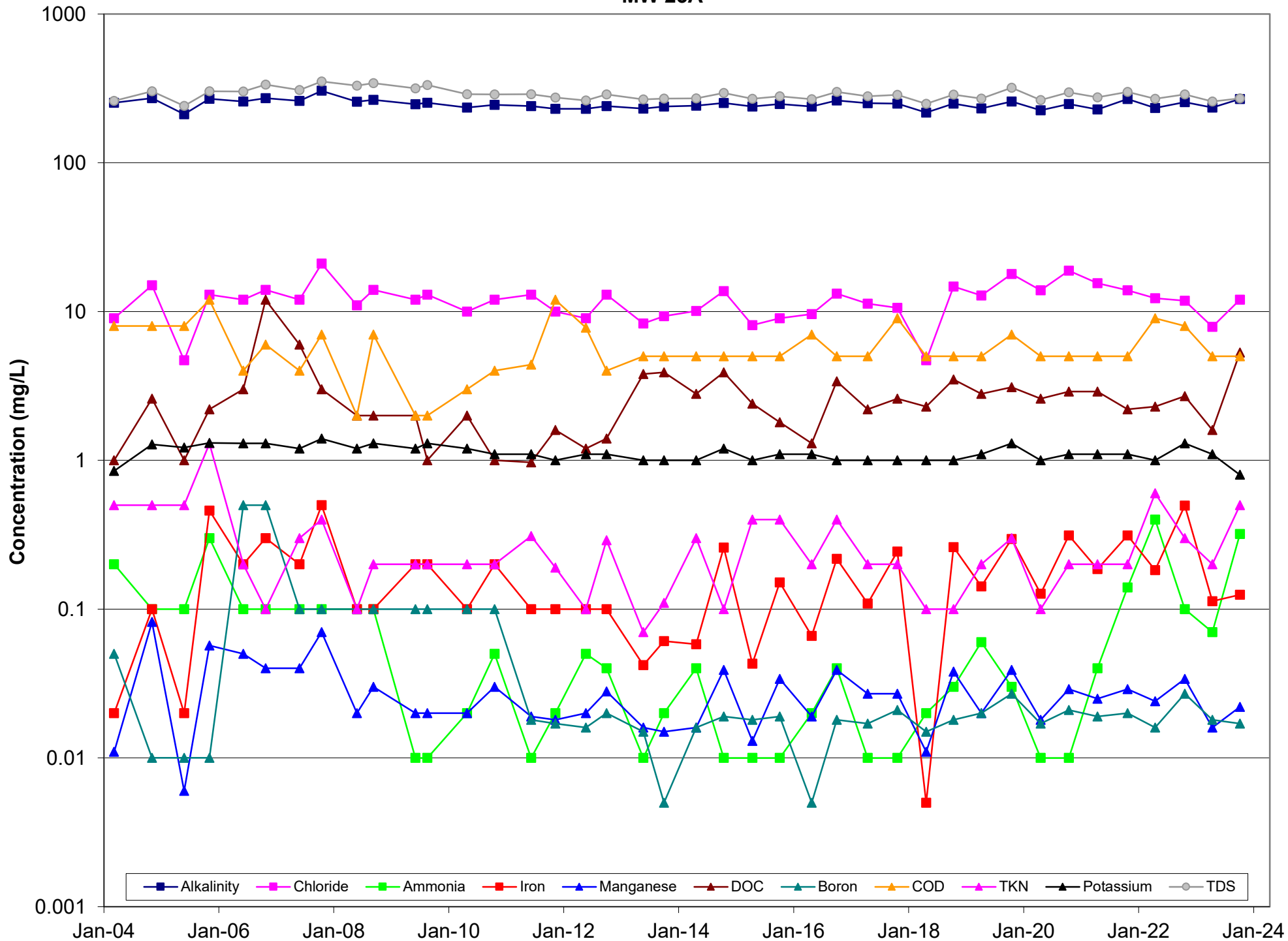
MW 22B



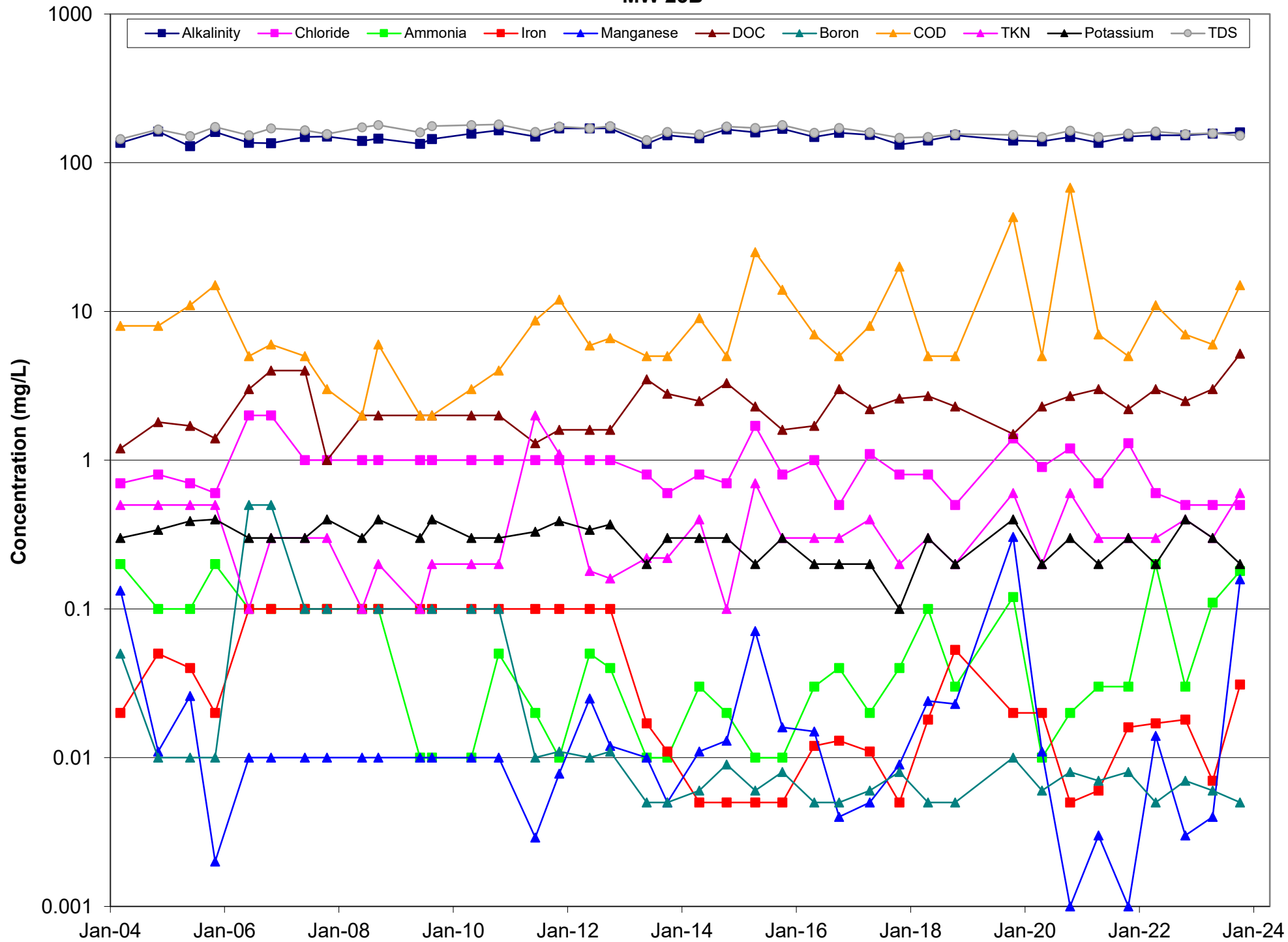
MW 23



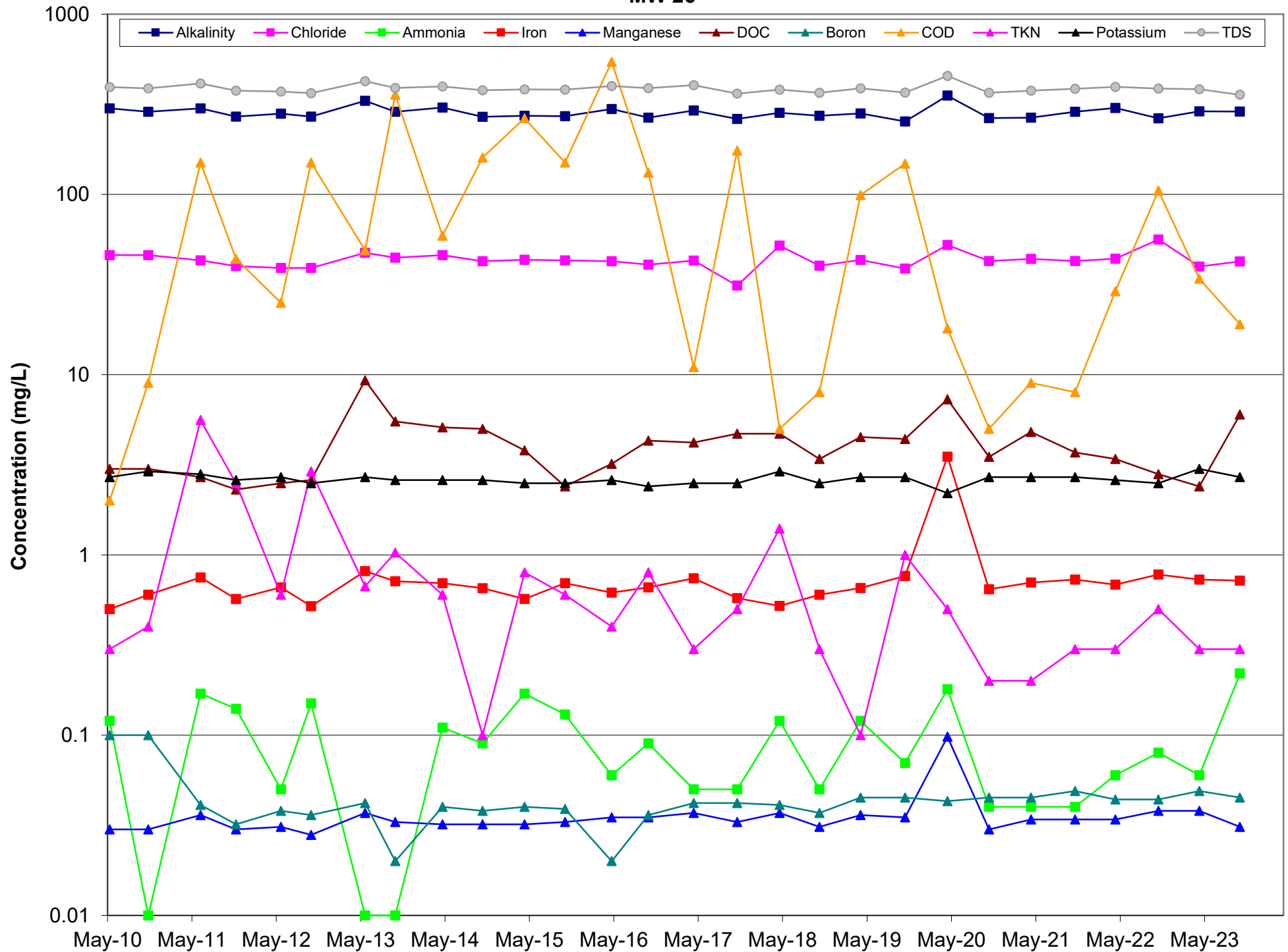
MW 23A



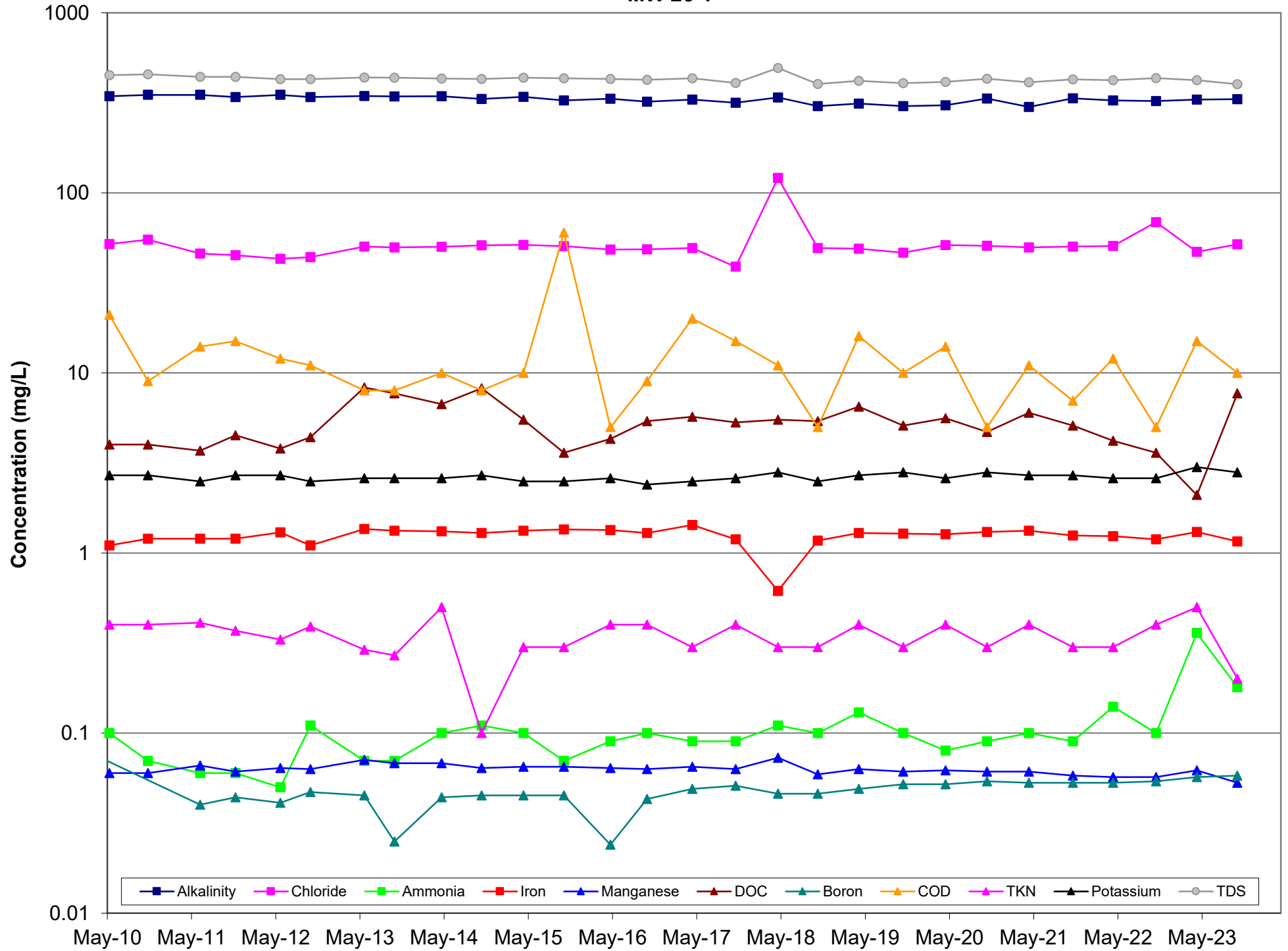
MW 23B



MW 26

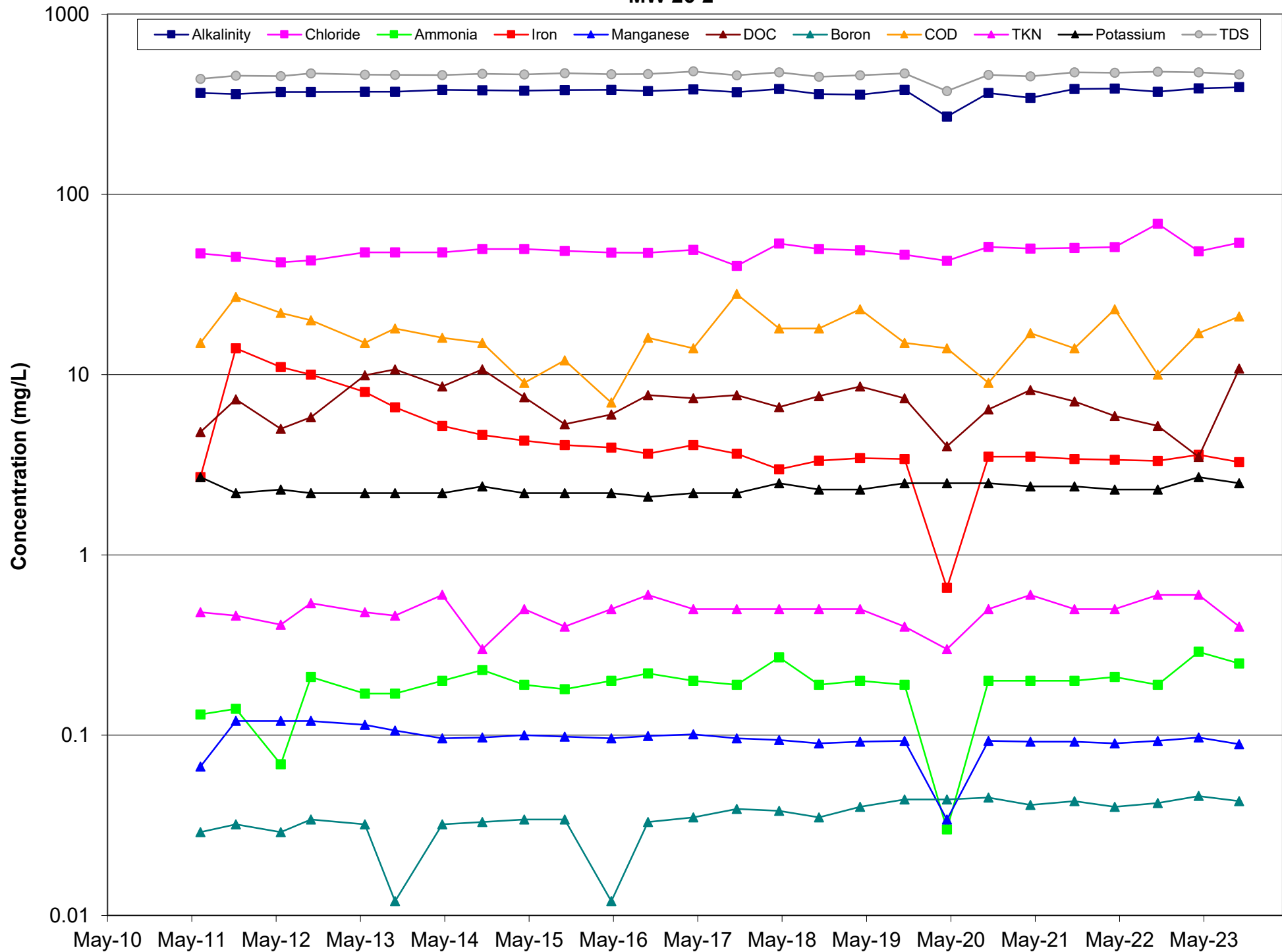


MW 26-1

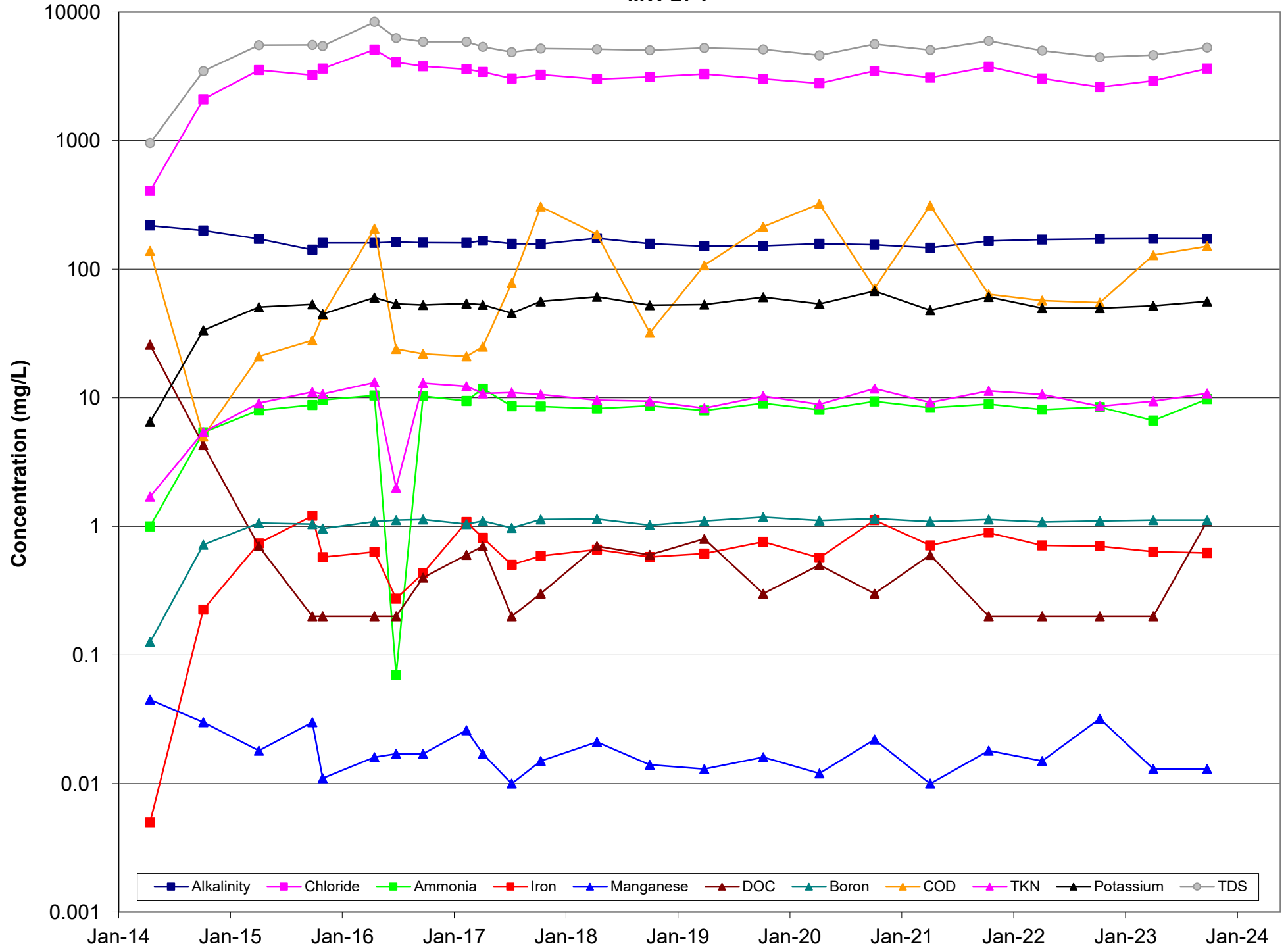




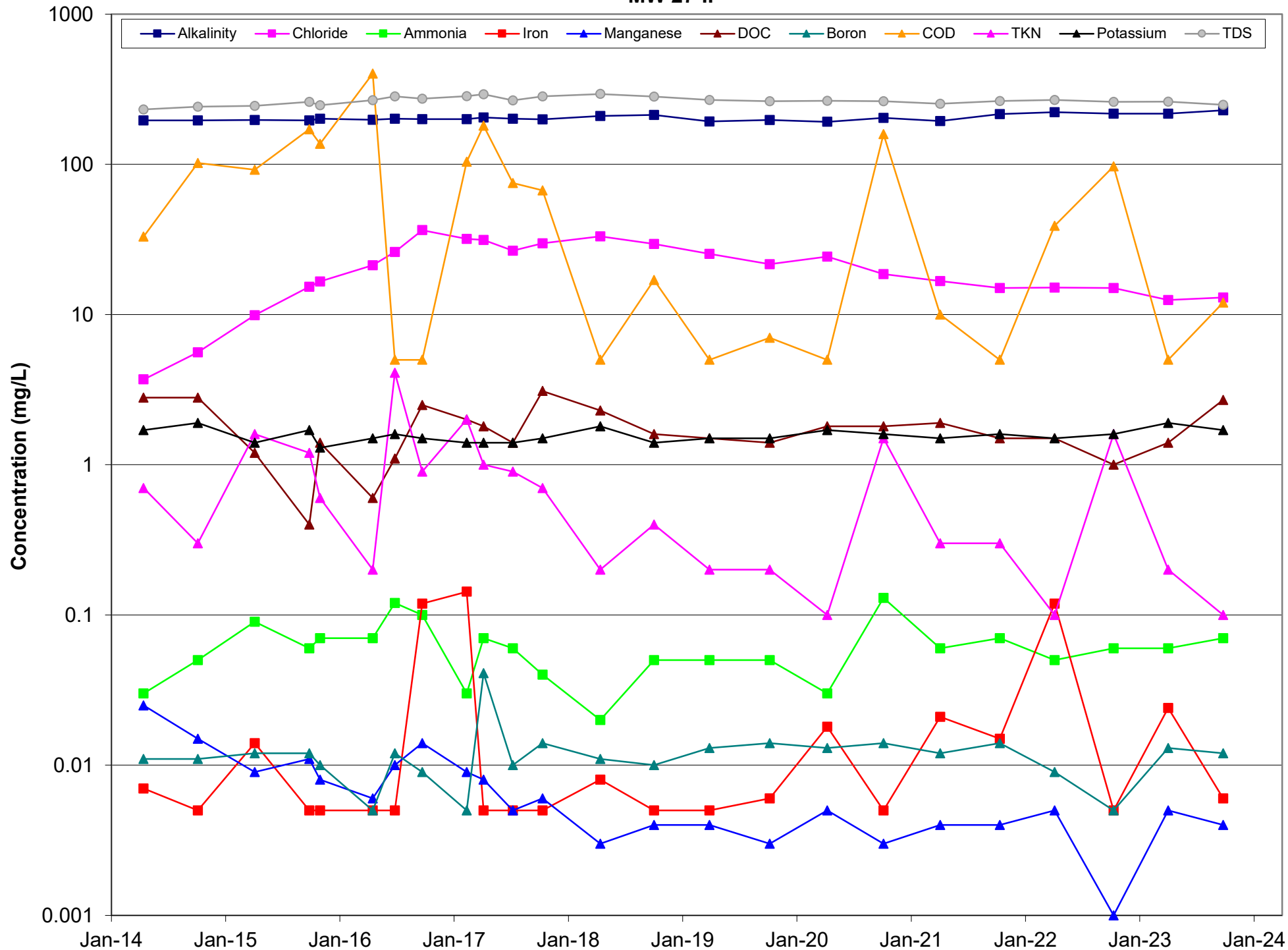
# MW 26-2



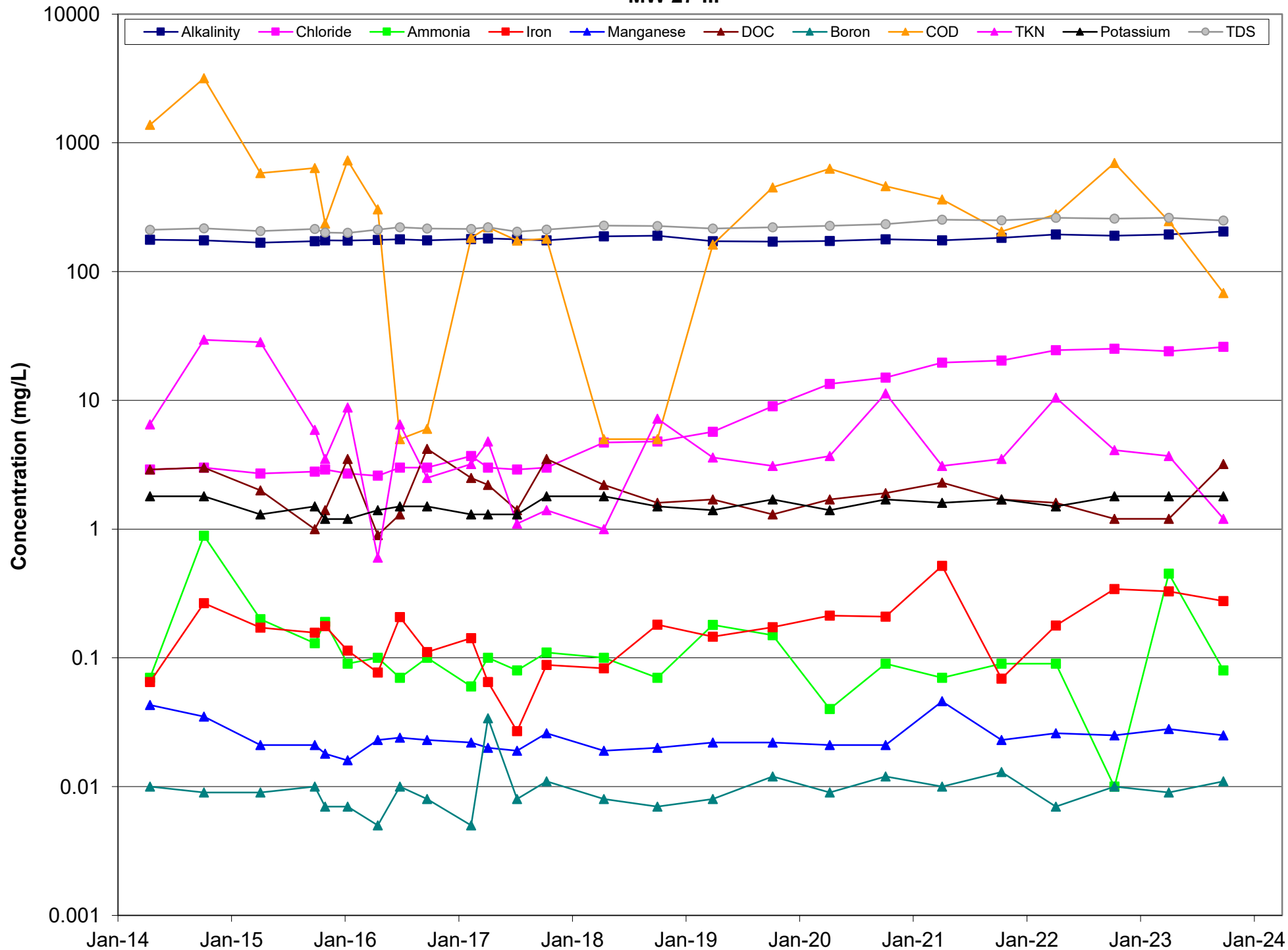
MW 27-I



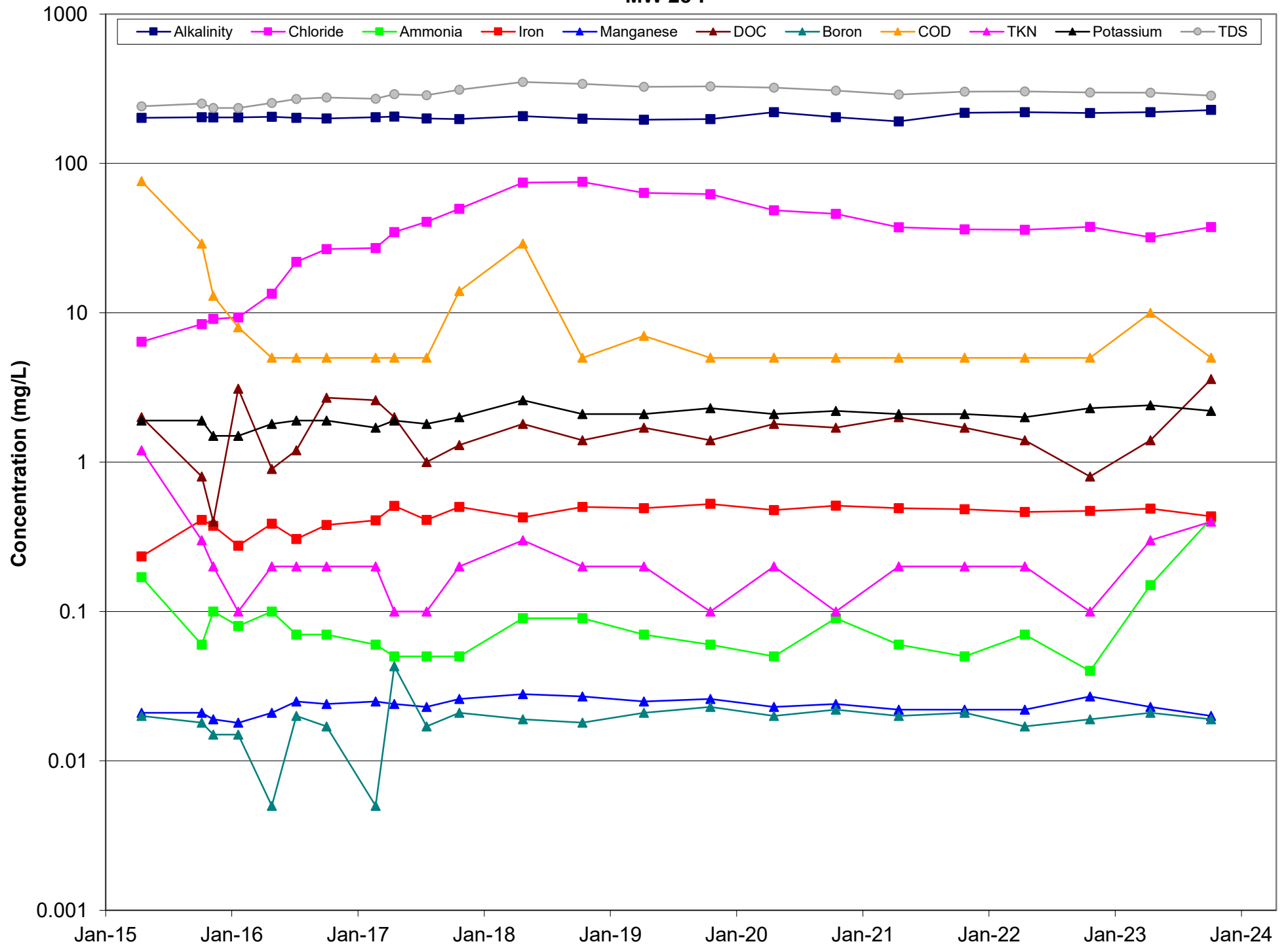
MW 27-II



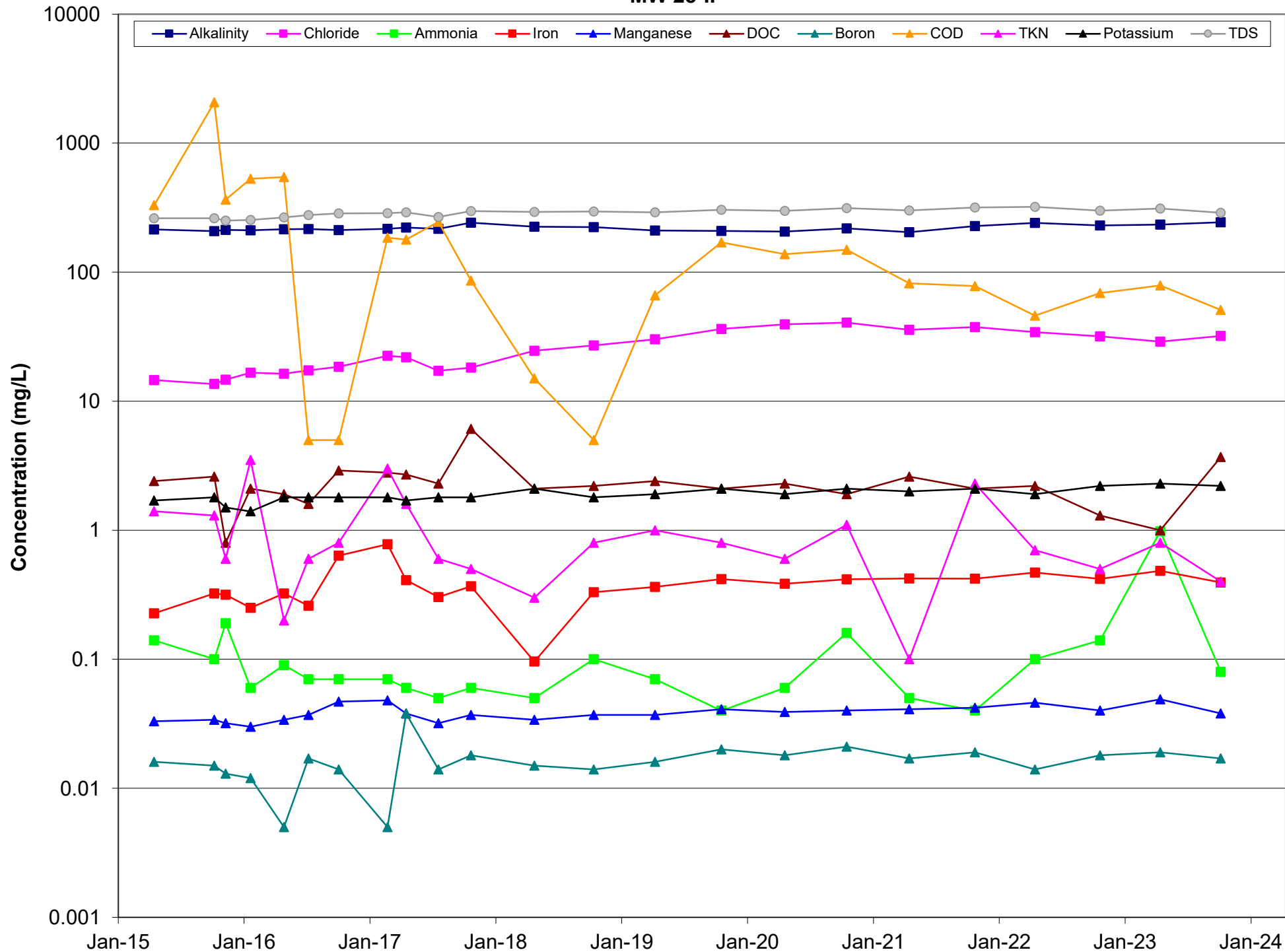
MW 27-III



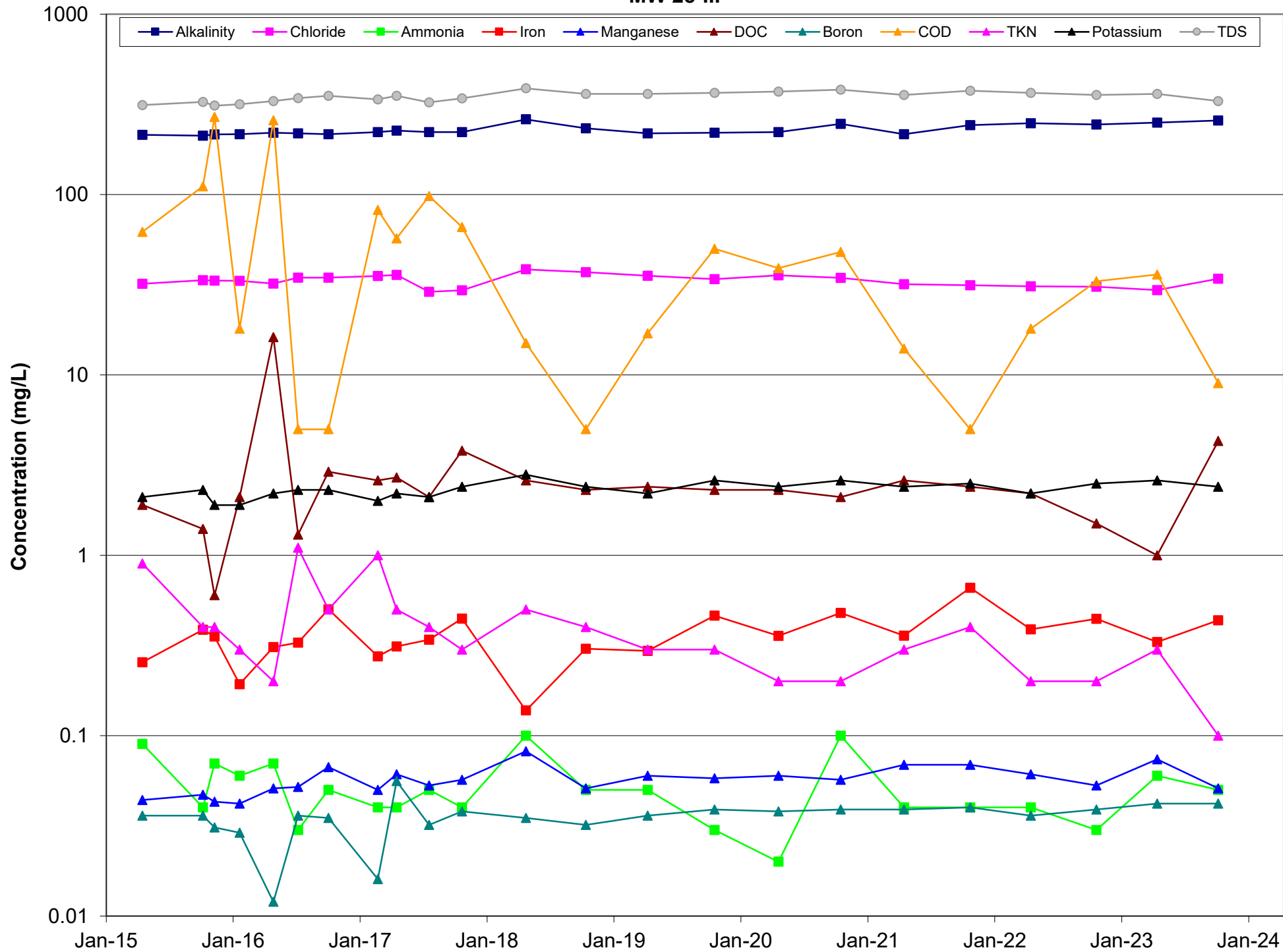
MW 28-I



# MW 28-II

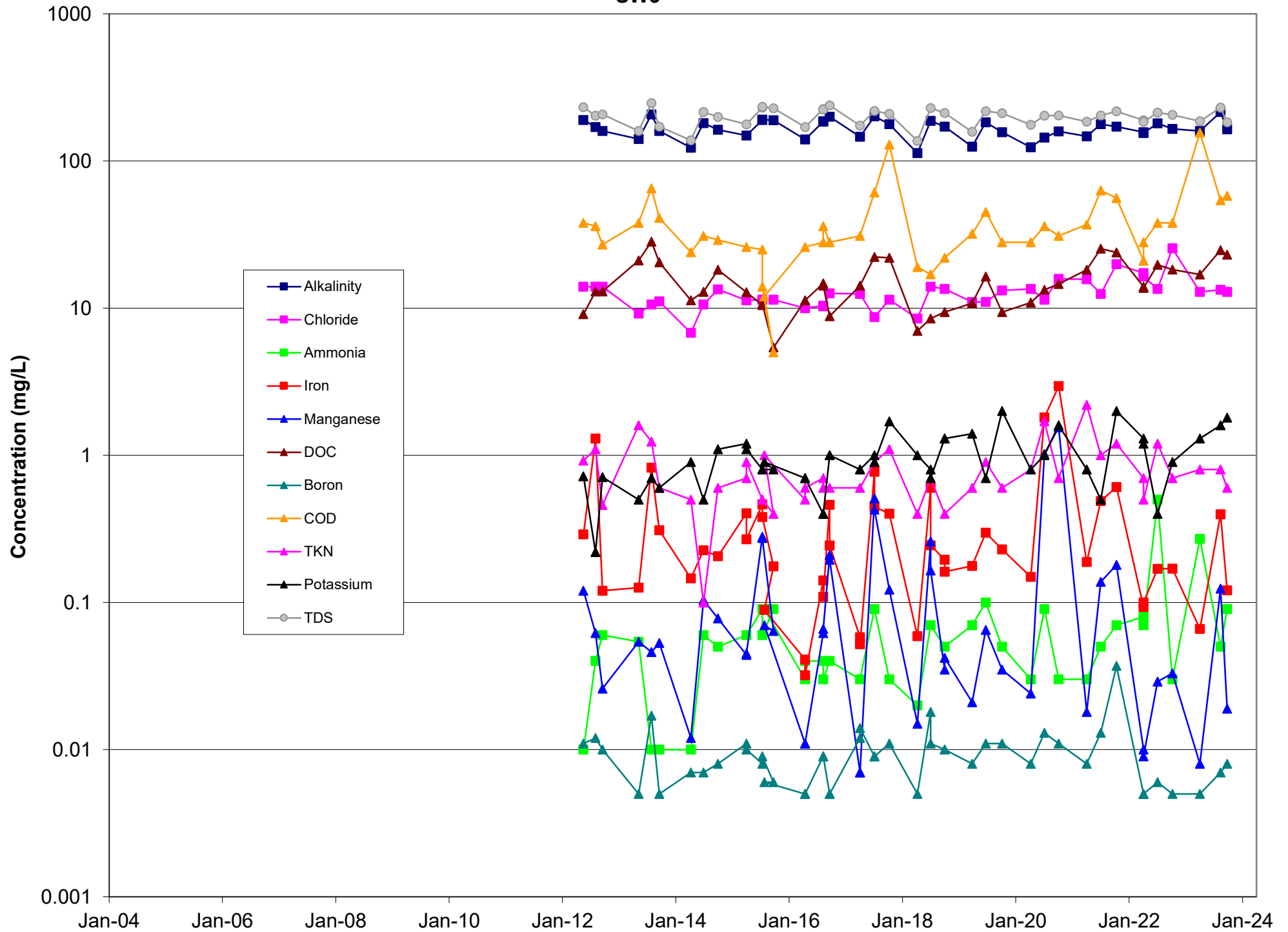


MW 28-III

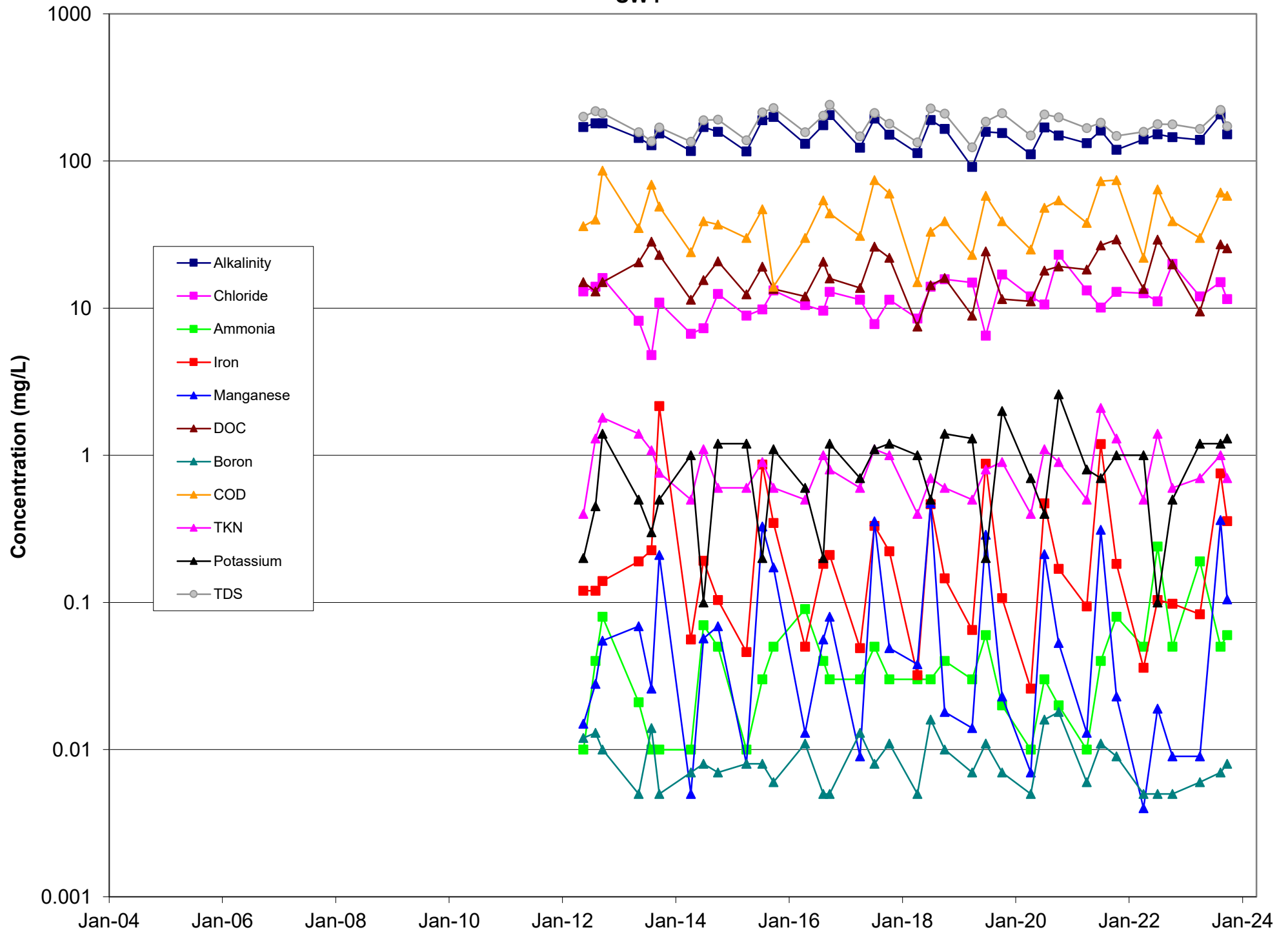




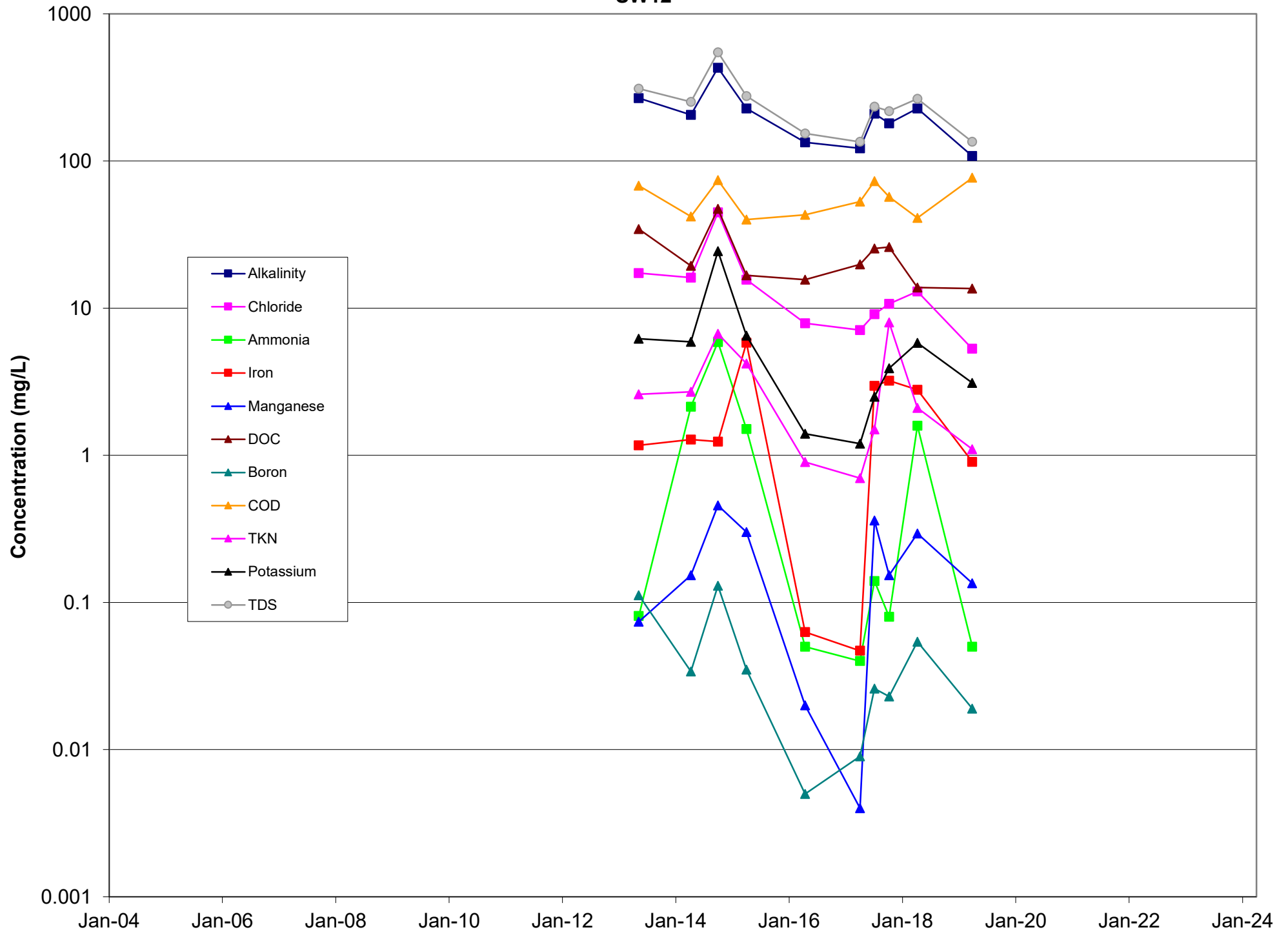
# SW3



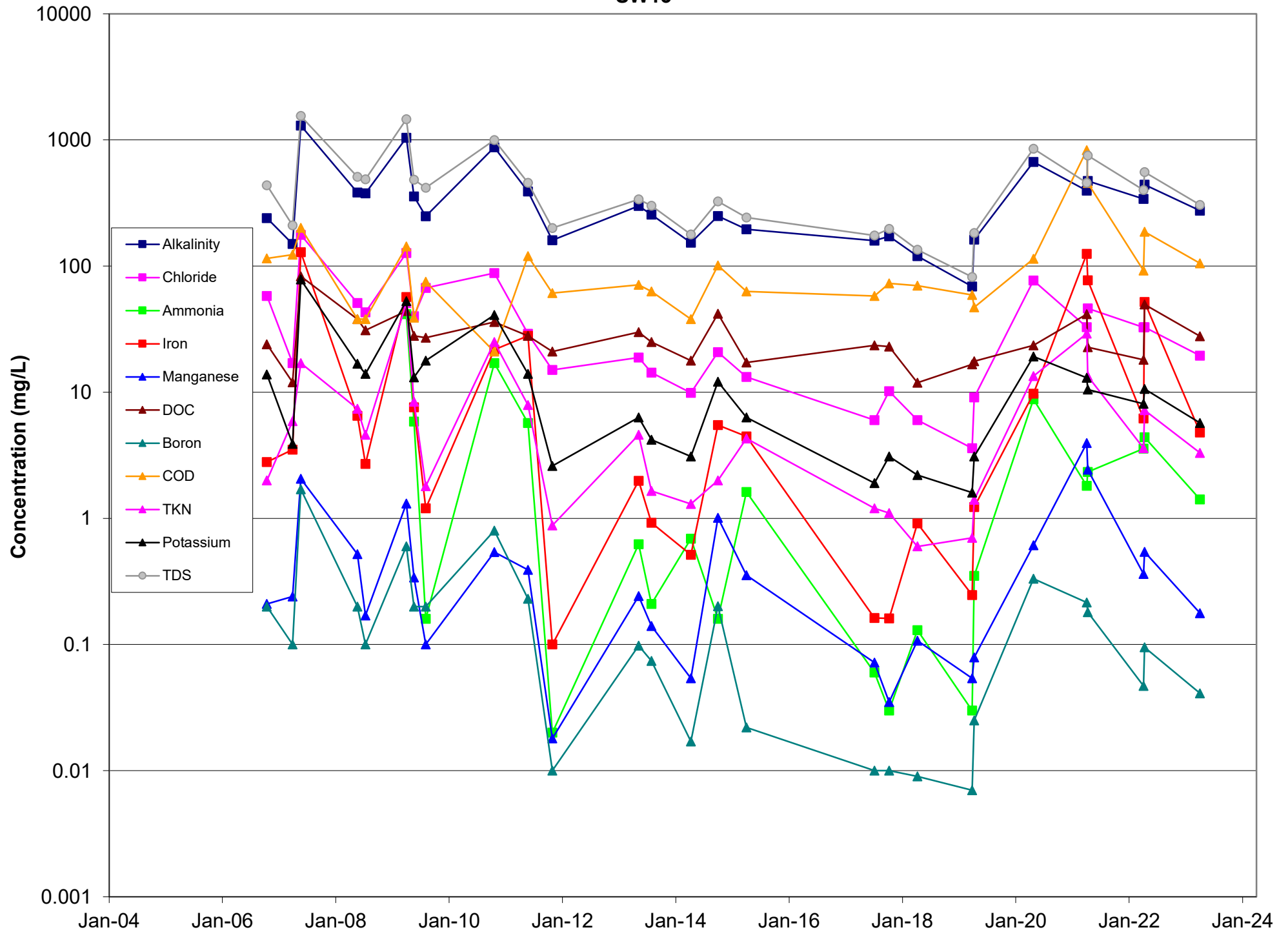
# SW4



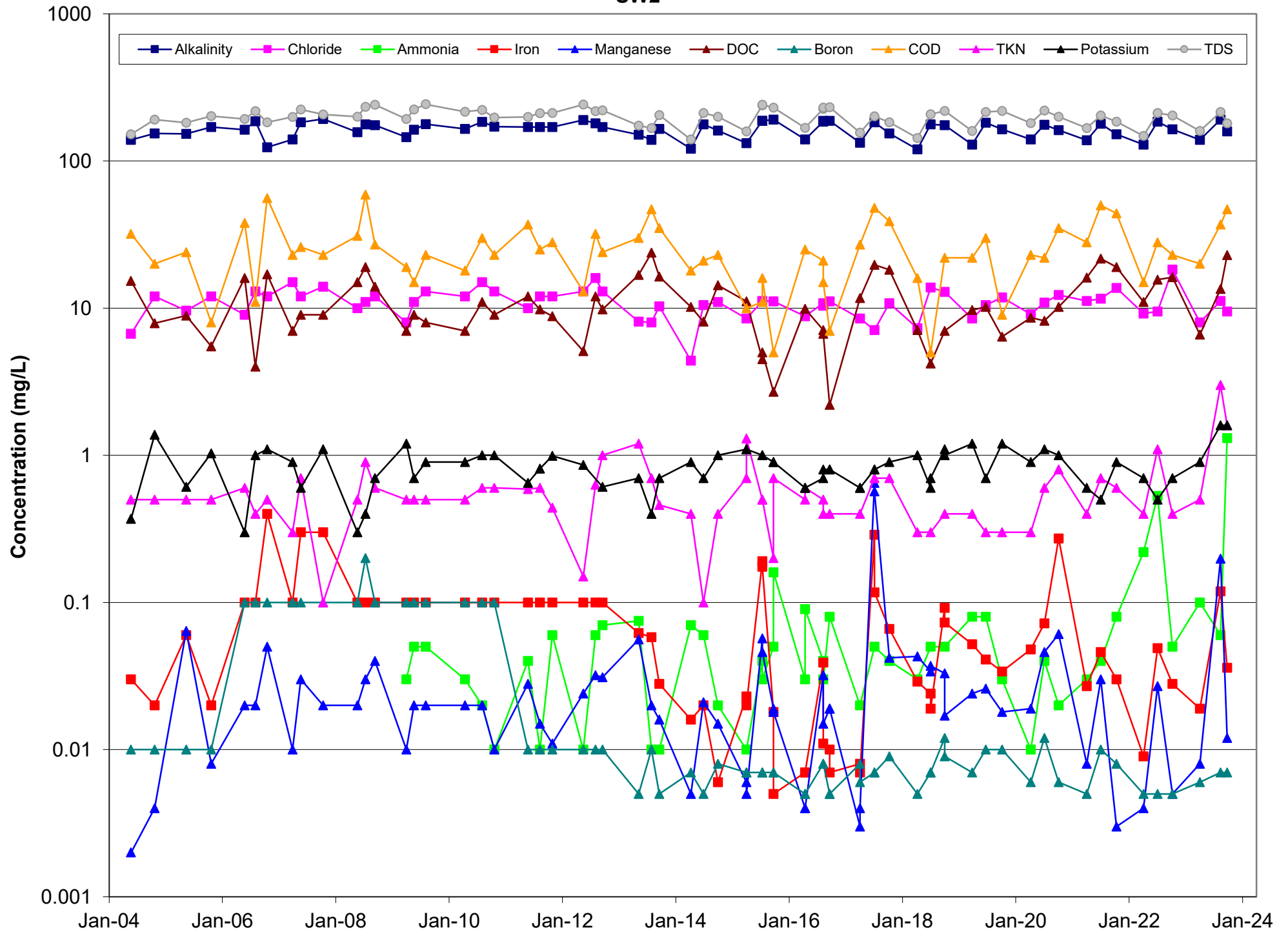
SW12



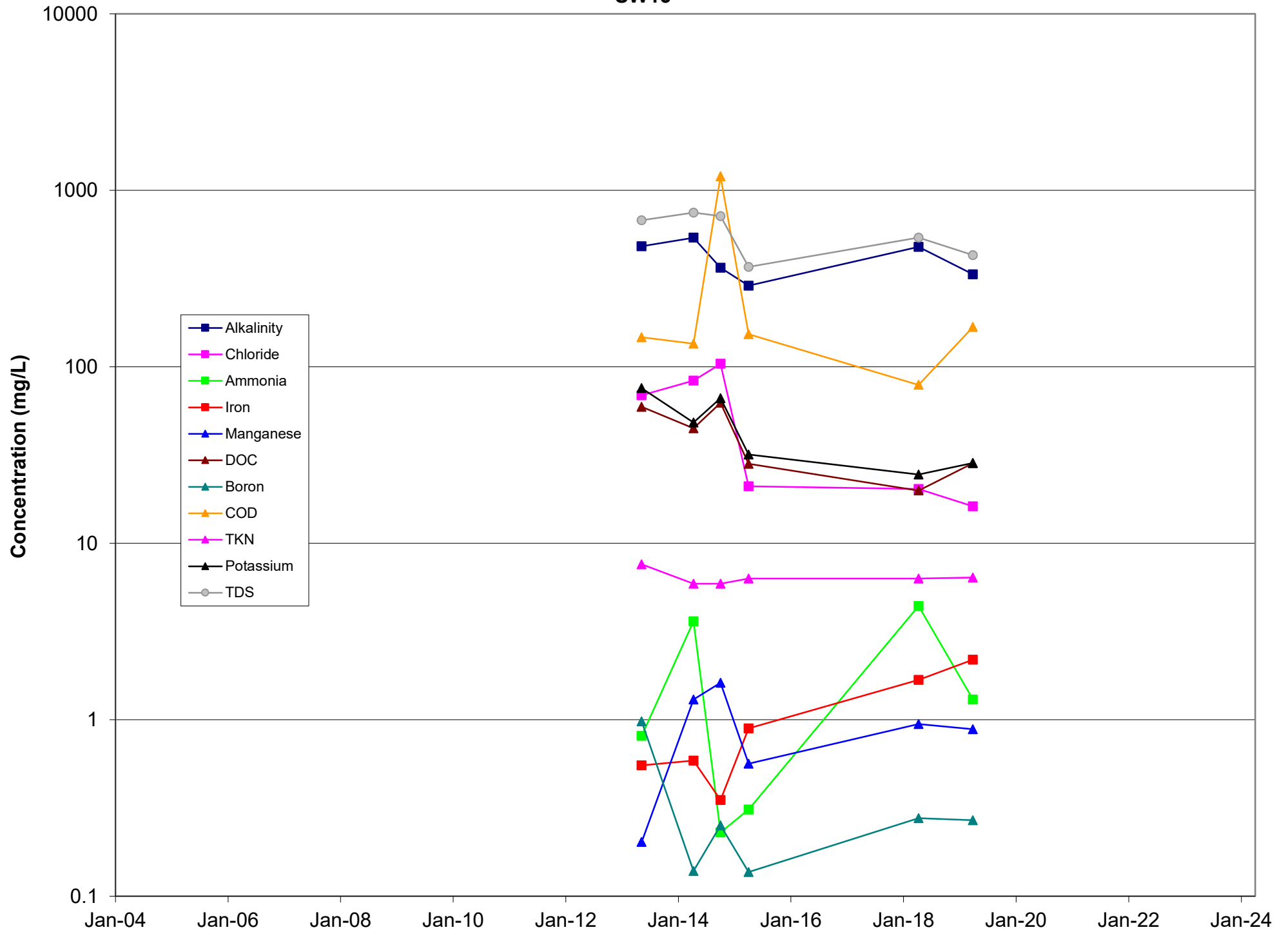
SW13



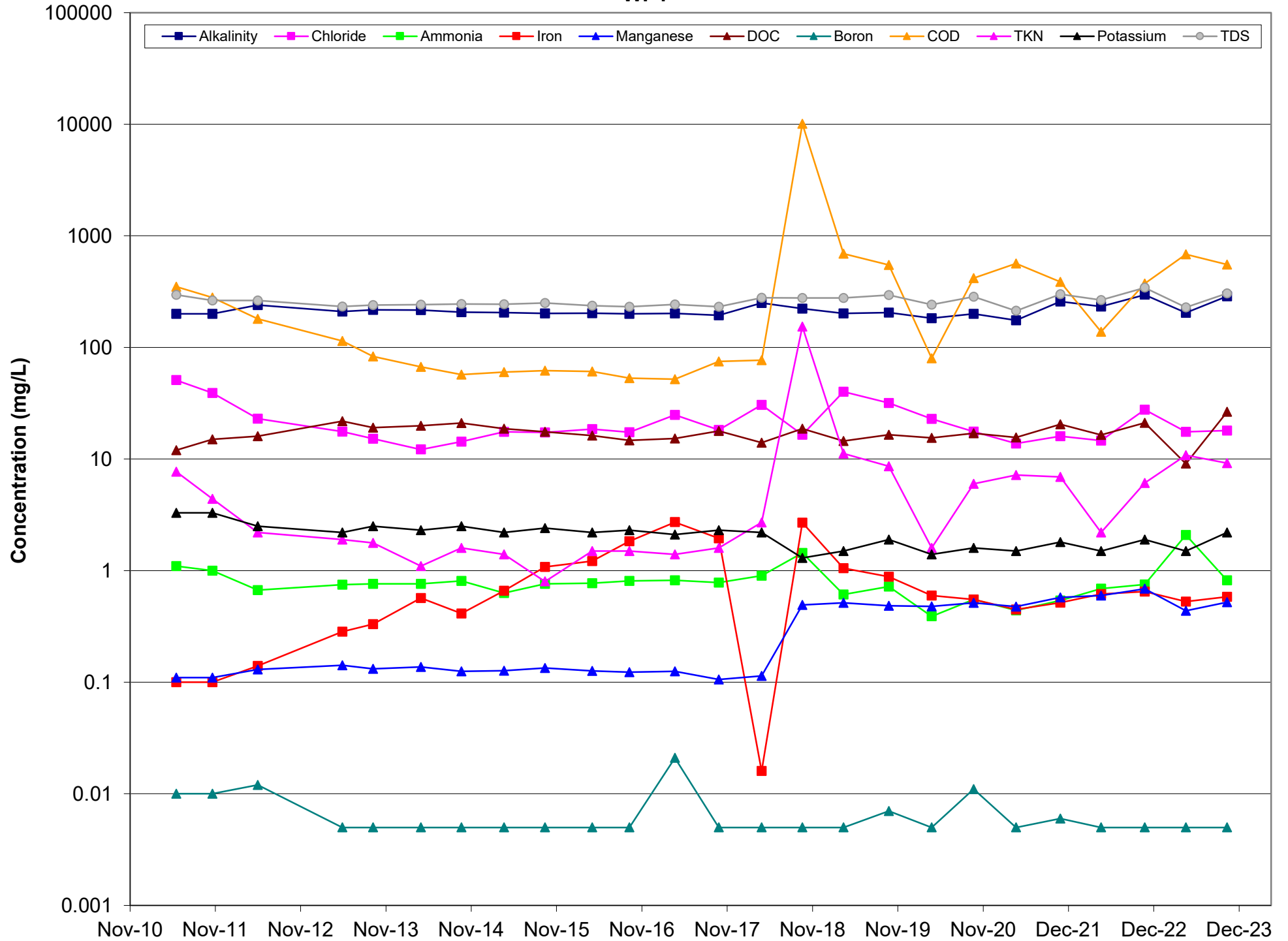
# SW2



# SW15

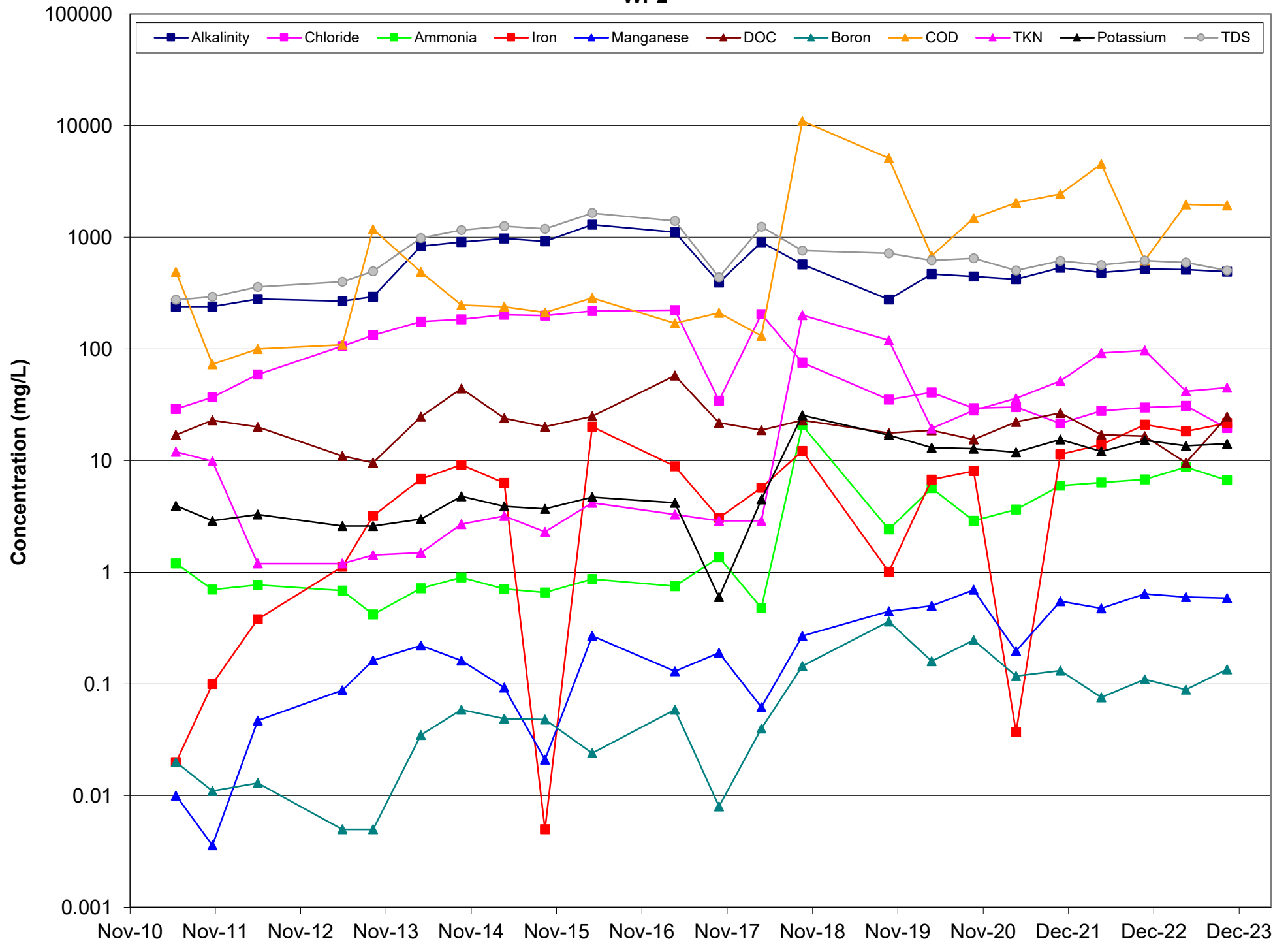


# WP1

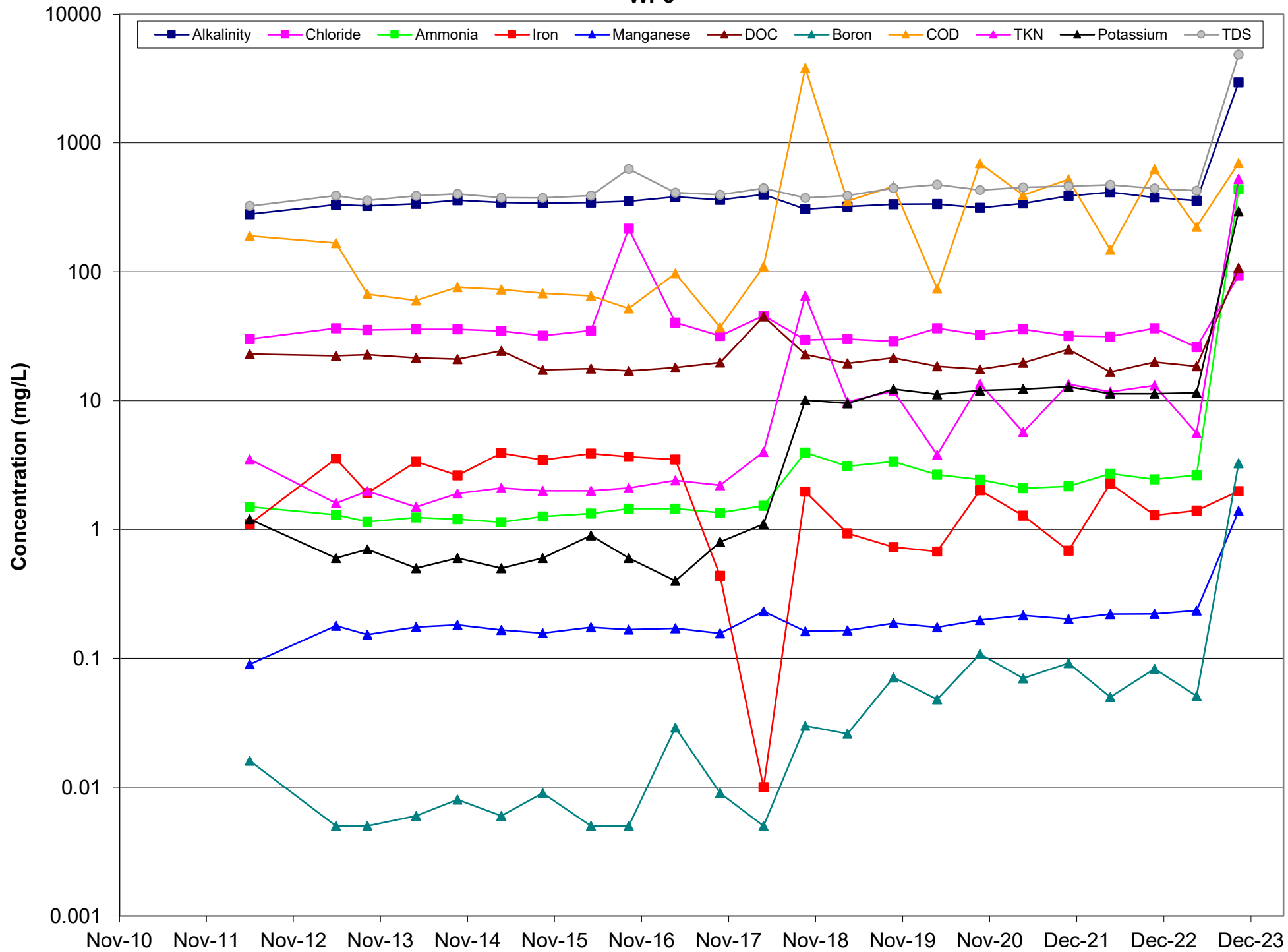




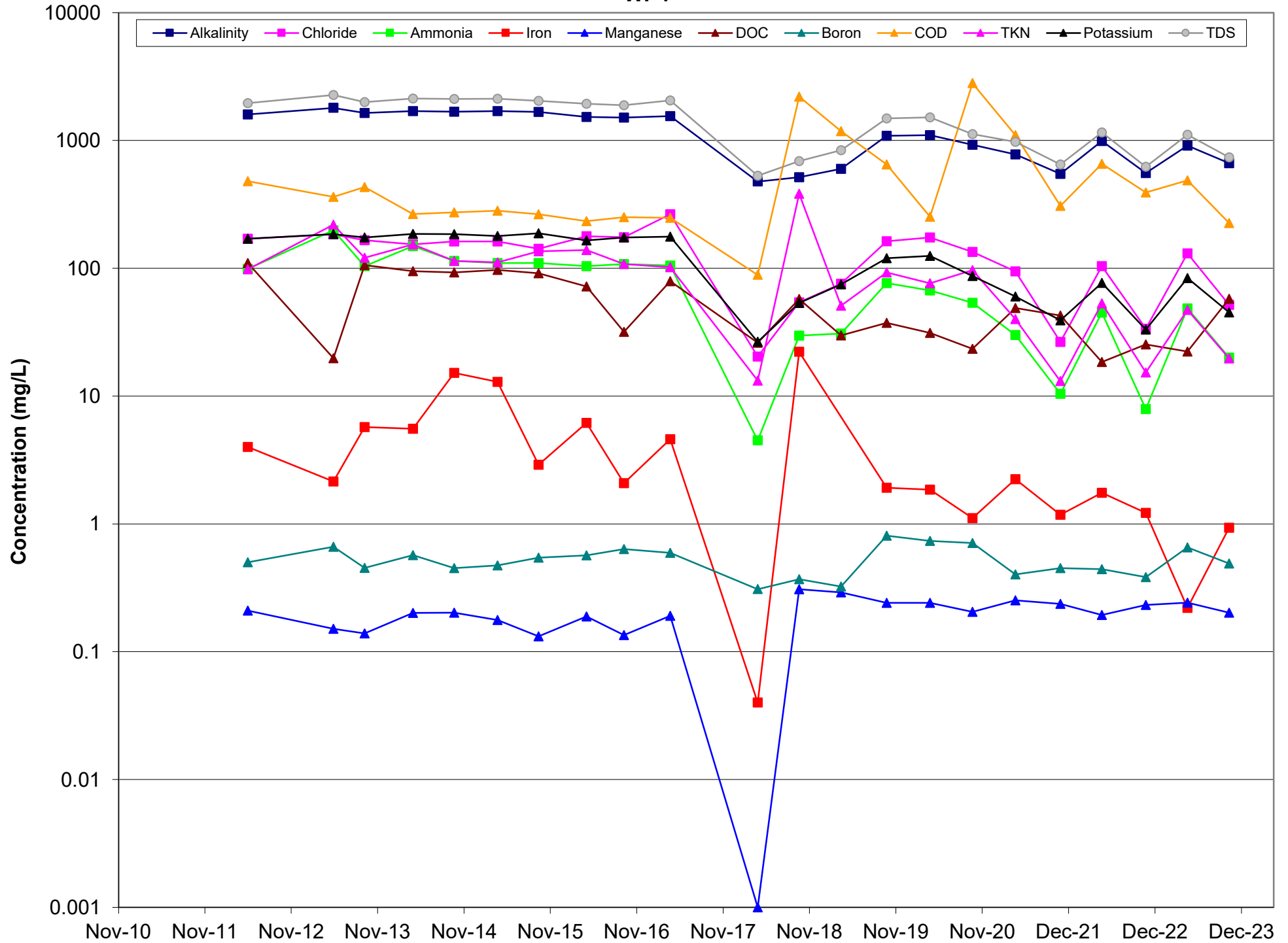
# WP2



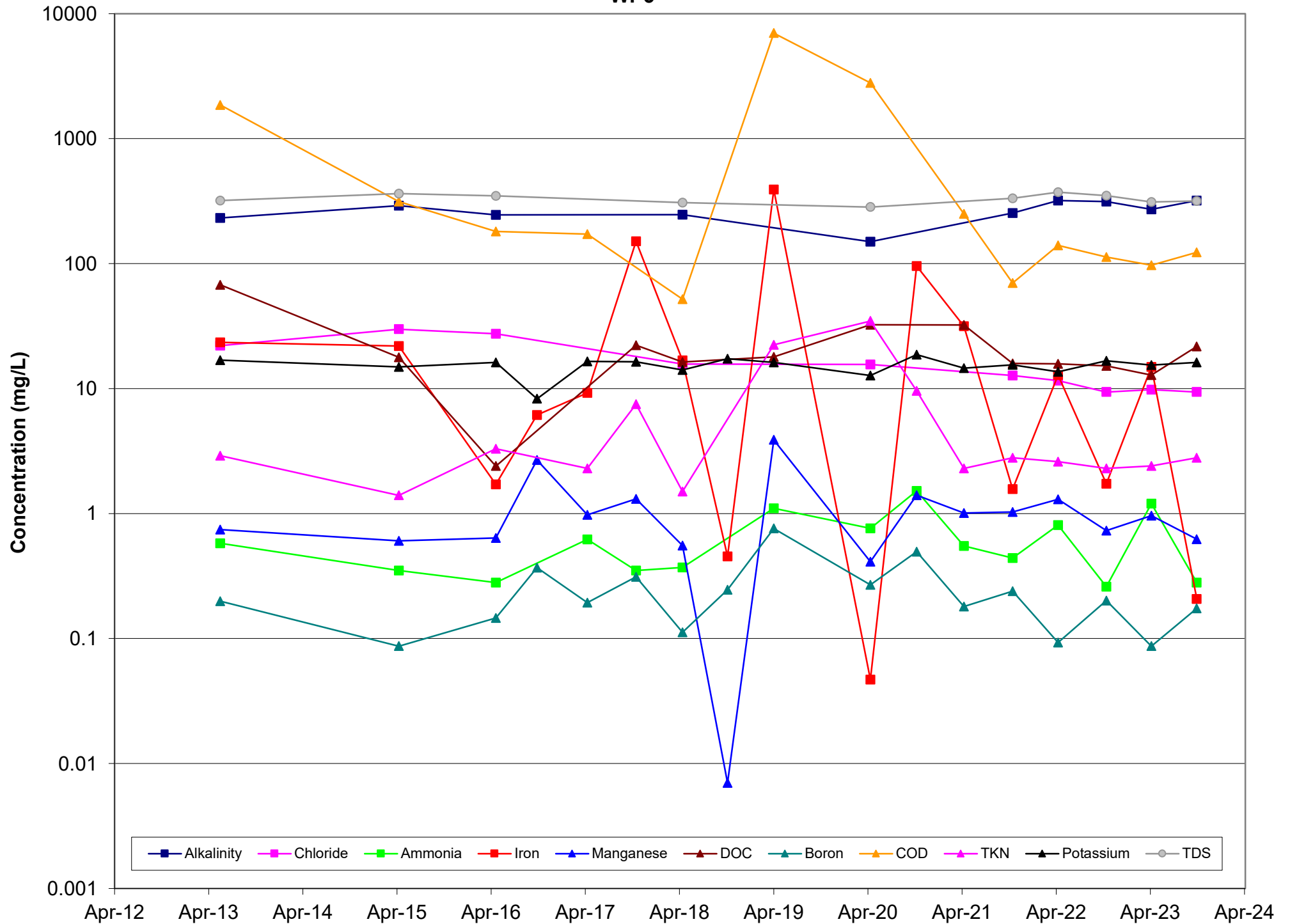
# WP3



# WP4



# WP5





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## **APPENDIX D**

### **BoreholeLogs**

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| DRILLING RIG: MOBILE B40<br>CONTRACTOR: SIR SANDFORD FLEMING COLLEGE<br>GEOLOGIST: W. ABBOTT<br>DATE DRILLED: 15-16 APRIL 1991                               |                                 |                 | GROUND ELEVATION (MASL): 271.8<br>STATIC WATER ELEVATION (19MAY92, MASL): 260.18 |      |     |         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------|----------------------------------------------------------------------------------|------|-----|---------|
| DEPTH (m)                                                                                                                                                    | DESCRIPTION                     | MONITOR DETAILS | SAMPLE NO.                                                                       | TYPE | 'N' | REMARKS |
| HOLLOW STEM AUGERS                                                                                                                                           | 3.4                             |                 | 2                                                                                | SS   | 13  |         |
|                                                                                                                                                              |                                 |                 | 3                                                                                | SS   | 23  |         |
|                                                                                                                                                              | 7.0                             |                 | 4                                                                                | SS   | 35  |         |
|                                                                                                                                                              |                                 |                 | 5                                                                                | SS   | 70  |         |
|                                                                                                                                                              |                                 |                 | 6                                                                                | SS   | 33  |         |
|                                                                                                                                                              |                                 |                 | 7                                                                                | SS   | 68  |         |
|                                                                                                                                                              |                                 |                 | 8                                                                                | SS   | 81  |         |
|                                                                                                                                                              |                                 |                 | 9                                                                                | SS   | 30  |         |
|                                                                                                                                                              |                                 |                 | 10                                                                               | SS   | 29  |         |
|                                                                                                                                                              | END OF BOREHOLE AT 14.0 m DEPTH |                 |                                                                                  |      |     |         |
| <div style="display: flex; justify-content: space-between;"> <div> </div> <div> <b>Ted Rannie, M.Sc.</b><br/>           Hydrogeologist         </div> </div> |                                 |                 |                                                                                  |      |     |         |
| BOREHOLE LOG                                                                                                                                                 |                                 |                 | HYDROGEOLOGICAL STUDY                                                            |      |     |         |
| BOREHOLE NO. 1                                                                                                                                               |                                 |                 | FENELON TOWNSHIP LANDFILL SITE                                                   |      |     |         |

| DRILLING RIG: MOBILE B40<br>CONTRACTOR: SIR SANDFORD FLEMING COLLEGE<br>GEOLOGIST: W. ABBOTT<br>DATE DRILLED: 16-19 APRIL 1991                               |             |                 | GROUND ELEVATION (MASL): 268.4<br>STATIC WATER ELEVATION (19MAY92, MASL): 260.00 |      |     |         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------|----------------------------------------------------------------------------------|------|-----|---------|
| DEPTH (m)                                                                                                                                                    | DESCRIPTION | MONITOR DETAILS | SAMPLE NO.                                                                       | TYPE | 'N' | REMARKS |
| HOLLOW STEM AUGERS                                                                                                                                           | 8.6         |                 | 1                                                                                | SS   | 22  |         |
|                                                                                                                                                              |             |                 | 2                                                                                | SS   | 20  |         |
|                                                                                                                                                              | 3           |                 | SS                                                                               | 22   |     |         |
|                                                                                                                                                              | 4           |                 | SS                                                                               | 29   |     |         |
|                                                                                                                                                              | 5           |                 | SS                                                                               | 20   |     |         |
|                                                                                                                                                              | 6           |                 | SS                                                                               | 22   |     |         |
|                                                                                                                                                              | 7           |                 | SS                                                                               | 32   |     |         |
|                                                                                                                                                              | 8           |                 | SS                                                                               | 11   |     |         |
|                                                                                                                                                              | 9           |                 | SS                                                                               | -    |     |         |
|                                                                                                                                                              | 10          |                 | SS                                                                               | -    |     |         |
|                                                                                                                                                              | 11          |                 | SS                                                                               | -    |     |         |
| END OF BOREHOLE AT 16.6 m DEPTH                                                                                                                              |             |                 |                                                                                  |      |     |         |
| <div style="display: flex; justify-content: space-between;"> <div> </div> <div> <b>Ted Rannie, M.Sc.</b><br/>           Hydrogeologist         </div> </div> |             |                 |                                                                                  |      |     |         |
| BOREHOLE LOG                                                                                                                                                 |             |                 | HYDROGEOLOGICAL STUDY                                                            |      |     |         |
| BOREHOLE NO. 2                                                                                                                                               |             |                 | FENELON TOWNSHIP LANDFILL SITE                                                   |      |     |         |

DRILLING RIG: (1) MOBILE B40 (2) CME 75  
 CONTRACTOR: (1) SIR SANDFORD FLEMING COLLEGE  
 (2) EASTERN SOILS INVESTIGATION LTD.  
 GEOLOGIST: (1) W. ABBOTT (2) T. RANNIE  
 DATE DRILLED: (1) 15-16 APRIL 1991 (2) 6 SEPTEMBER 1991

GROUND ELEVATION (MASL): 261.8  
 STATIC WATER ELEVATION (19MAY92, MASL): 3A 280.00  
 3 259.95

| DEPTH (m)                       | DESCRIPTION                                                                                                                                                                             | MONITOR DETAILS                                                                                                                                                        | SAMPLE NO. | TYPE | 'N' | REMARKS                                                                                                        |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------|-----|----------------------------------------------------------------------------------------------------------------|
| 6.0                             | MEDIUM SAND: Medium brown to grey, stratified, compact, saturated below about 2.3 m.<br><br>SANDY GRAVEL: Medium grey, stratified, alternating sand and sandy gravel layers, saturated. |                                                                                                                                                                        | 1          | SS   | 10  | Heaving sand starts about 6 m.                                                                                 |
|                                 |                                                                                                                                                                                         |                                                                                                                                                                        | 2          | HP   | -   |                                                                                                                |
|                                 |                                                                                                                                                                                         |                                                                                                                                                                        | 3          | GS   | -   |                                                                                                                |
|                                 |                                                                                                                                                                                         |                                                                                                                                                                        | 4          | HP   | -   |                                                                                                                |
|                                 |                                                                                                                                                                                         |                                                                                                                                                                        | 5          | GS   | -   |                                                                                                                |
|                                 |                                                                                                                                                                                         |                                                                                                                                                                        | 6          | SS   | 80  |                                                                                                                |
|                                 |                                                                                                                                                                                         |                                                                                                                                                                        | 7          | SS   | -   |                                                                                                                |
|                                 |                                                                                                                                                                                         |                                                                                                                                                                        | 8          | SS   | 76  |                                                                                                                |
|                                 |                                                                                                                                                                                         |                                                                                                                                                                        | 9          | SS   | 64  |                                                                                                                |
|                                 |                                                                                                                                                                                         |                                                                                                                                                                        | 10         | SS   | 63  |                                                                                                                |
|                                 |                                                                                                                                                                                         |                                                                                                                                                                        | 11         | SS   | 63  |                                                                                                                |
| 12.8                            | SILT TILL:                                                                                                                                                                              |                                                                                                                                                                        | 12         | SS   | -   | All monitors installed in separate boreholes.<br>Drilled to refusal with solid stem augers - probably bedrock. |
|                                 |                                                                                                                                                                                         |                                                                                                                                                                        | 13         | SS   | -   |                                                                                                                |
| END OF BOREHOLE AT 14.3 m DEPTH |                                                                                                                                                                                         | <div style="border: 1px solid black; padding: 2px;">             --- MONITOR SCREEN --- SAND PACK<br/>             --- BENTONITE SEAL --- CEMENT SEAL           </div> |            |      |     |                                                                                                                |

BOREHOLE LOG  
 BOREHOLE NO. **3**

HYDROGEOLOGICAL STUDY  
 FENELON TOWNSHIP LANDFILL SITE

Ted Rannie, M.Sc.  
 Hydrogeologist

DRILLING RIG: MOBILE B40  
 CONTRACTOR: SIR SANDFORD FLEMING COLLEGE  
 GEOLOGIST: W. ABBOTT  
 DATE DRILLED: 23 APRIL 1991

GROUND ELEVATION (MASL): 267.6  
 STATIC WATER ELEVATION (19MAY92, MASL): 280.09

| DEPTH (m)                       | DESCRIPTION                                                                                                                                                                                                           | MONITOR DETAILS                                                                                                                                                        | SAMPLE NO. | TYPE | 'N' | REMARKS |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------|-----|---------|
| 7.2                             | REFUSE:                                                                                                                                                                                                               |                                                                                                                                                                        | 1          | SS   | 29  |         |
|                                 |                                                                                                                                                                                                                       |                                                                                                                                                                        | 2          | SS   | -   |         |
|                                 |                                                                                                                                                                                                                       |                                                                                                                                                                        | 3          | SS   | 61  |         |
|                                 |                                                                                                                                                                                                                       |                                                                                                                                                                        | 4          | SS   | 15  |         |
| 9.0                             | FILL: Silty Fine Sand grey, blackish lense at 9.4 m, dense, saturated below about 8.0 m, strong leachate odour.<br><br>MEDIUM TO COARSE SAND: Medium grey, stratified, trace coarse round gravel, compact, saturated. |                                                                                                                                                                        | 1          | SS   | 29  |         |
|                                 |                                                                                                                                                                                                                       |                                                                                                                                                                        | 2          | SS   | -   |         |
| 9.0                             | MEDIUM TO COARSE SAND: Medium grey, stratified, trace coarse round gravel, compact, saturated.                                                                                                                        |                                                                                                                                                                        | 3          | SS   | 61  |         |
|                                 |                                                                                                                                                                                                                       |                                                                                                                                                                        | 4          | SS   | 15  |         |
| END OF BOREHOLE AT 11.3 m DEPTH |                                                                                                                                                                                                                       | <div style="border: 1px solid black; padding: 2px;">             --- MONITOR SCREEN --- SAND PACK<br/>             --- BENTONITE SEAL --- CEMENT SEAL           </div> |            |      |     |         |

BOREHOLE LOG  
 BOREHOLE NO. **4**

HYDROGEOLOGICAL STUDY  
 FENELON TOWNSHIP LANDFILL SITE

Ted Rannie, M.Sc.  
 Hydrogeologist



| DRILLING RIG: (1) MOBILE B40 (2) CME 75<br>CONTRACTOR: (1) SIR SANDFORD FLEMING COLLEGE<br>(2) EASTERN SOILS INVESTIGATION LTD.<br>GEOLOGIST: (1) W. ABBOTT (2) T. RANNIE<br>DATE DRILLED: (1) 23 APRIL 1991 (2) 5 SEPTEMBER 1991 |                                                                                             | GROUND ELEVATION (MASL): 265.0<br>STATIC WATER ELEVATION (19MAY92, MASL): 5 260.11<br>5A 260.03 |                     |                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| DEPTH (m)                                                                                                                                                                                                                         | DESCRIPTION                                                                                 | MONITOR DETAILS                                                                                 | SAMPLE NO. TYPE 'N' | REMARKS                                                                                                                                |
| 5.0                                                                                                                                                                                                                               | FINE SAND: Light brown, stratified, compact to very dense, dry.                             |                                                                                                 | 1 SS 28             | Heaving sand starts about 10 m.<br><br>Drilling harder at 14 m. Wash out augers at 15 m. All monitors installed in separate boreholes. |
|                                                                                                                                                                                                                                   |                                                                                             |                                                                                                 | 2 SS 38             |                                                                                                                                        |
|                                                                                                                                                                                                                                   |                                                                                             |                                                                                                 | 3 SS 46             |                                                                                                                                        |
|                                                                                                                                                                                                                                   | MEDIUM SAND: Medium brown to grey, stratified, very dense, saturated below about 5.0 m.     |                                                                                                 | 4 SS 54             |                                                                                                                                        |
|                                                                                                                                                                                                                                   |                                                                                             |                                                                                                 | 5 SS 57             |                                                                                                                                        |
|                                                                                                                                                                                                                                   |                                                                                             |                                                                                                 | 6 SS 92             |                                                                                                                                        |
|                                                                                                                                                                                                                                   |                                                                                             |                                                                                                 | 7 GS -              |                                                                                                                                        |
| 14.0                                                                                                                                                                                                                              | SILT TILL: Medium grey, massive, unsorted subround gravel in silty matrix, hard, saturated. |                                                                                                 | 8 GS -              |                                                                                                                                        |
|                                                                                                                                                                                                                                   |                                                                                             |                                                                                                 | 9 SS >100           |                                                                                                                                        |
| END OF BOREHOLE AT 15.7 m DEPTH                                                                                                                                                                                                   |                                                                                             |                                                                                                 |                     |                                                                                                                                        |
| BOREHOLE LOG<br>BOREHOLE NO. <b>5</b>                                                                                                                                                                                             |                                                                                             | HYDROGEOLOGICAL STUDY<br>FENNEL TOWNSHIP LANDFILL SITE                                          |                     | Ted Rannie, M.Sc.<br>Hydrogeologist                                                                                                    |

| DRILLING RIG: (1) MOBILE B40 (2) CME 75<br>CONTRACTOR: (1) SIR SANDFORD FLEMING COLLEGE<br>(2) EASTERN SOILS INVESTIGATION LTD.<br>GEOLOGIST: (1) W. ABBOTT (2) T. RANNIE<br>DATE DRILLED: (1) 23 APRIL 1991 (2) 5 SEPTEMBER 1991 |                                                                | GROUND ELEVATION (MASL): 261.5<br>STATIC WATER ELEVATION (19MAY92, MASL): 6A 260.61<br>6 260.11 |                     |                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------|
| DEPTH (m)                                                                                                                                                                                                                         | DESCRIPTION                                                    | MONITOR DETAILS                                                                                 | SAMPLE NO. TYPE 'N' | REMARKS                                                                                                               |
| HOLLOW STEM AUGERS                                                                                                                                                                                                                | FILL: Fine Sand.                                               |                                                                                                 | 1 SS 19             | Heaving sand starts about 6 m. Wash out augers with water from wetland. All monitors installed in separate boreholes. |
|                                                                                                                                                                                                                                   | PEAT: Dark brown to black, compact, saturated below about 1 m. |                                                                                                 | 2 SS 4              |                                                                                                                       |
|                                                                                                                                                                                                                                   | SILTY FINE SAND: Medium grey, compact, saturated.              |                                                                                                 | 3 SS -              |                                                                                                                       |
|                                                                                                                                                                                                                                   |                                                                |                                                                                                 | 4 SS 13             |                                                                                                                       |
|                                                                                                                                                                                                                                   |                                                                |                                                                                                 | 5 SS 9              |                                                                                                                       |
| END OF BOREHOLE AT 6.6 m DEPTH                                                                                                                                                                                                    |                                                                |                                                                                                 |                     |                                                                                                                       |
| BOREHOLE LOG<br>BOREHOLE NO. <b>6</b>                                                                                                                                                                                             |                                                                | HYDROGEOLOGICAL STUDY<br>FENNEL TOWNSHIP LANDFILL SITE                                          |                     | Ted Rannie, M.Sc.<br>Hydrogeologist                                                                                   |

RILLING RIG: CME 75  
 CONTRACTOR: EASTERN SOIL INVESTIGATION LTD  
 GEOLOGIST: T. RANNIE  
 DATE DRILLED: 3 SEPTEMBER 1991

GROUND ELEVATION (MASL): 268.0  
 STATIC WATER ELEVATION (19MAY92, MASL): 261.26

| DEPTH<br>(m)                                                                                                                                                                            | DESCRIPTION                                                                                                                                     | MONITOR<br>DETAILS | SAMPLE<br>NO. TYPE 'N' | REMARKS                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|------------------------------------|
|                                                                                                                                                                                         | REFUSE:                                                                                                                                         |                    |                        |                                    |
| 7.0                                                                                                                                                                                     |                                                                                                                                                 |                    | 1 SS 25                |                                    |
|                                                                                                                                                                                         |                                                                                                                                                 |                    | 2 SS 9                 |                                    |
| 8.5                                                                                                                                                                                     | FILL: Medium to coarse sand, medium grey, some silt or clay, compact, moist to wet, compact.                                                    |                    | 3 SS 16                |                                    |
|                                                                                                                                                                                         | PEAT: Dark brown to black, trace fine sand, compact, saturated.                                                                                 |                    | 4 SS 13                |                                    |
| 10.1                                                                                                                                                                                    |                                                                                                                                                 |                    | 5 SS 12                | Heaving sand starts about 12 m.    |
|                                                                                                                                                                                         | FINE SAND: Medium grey to brown, finely stratified, homogeneous, well-sorted, trace gravel, loose to compact, saturated, strong leachate odour. |                    | 6 SS 9                 |                                    |
|                                                                                                                                                                                         |                                                                                                                                                 |                    | 7 GS -                 |                                    |
|                                                                                                                                                                                         |                                                                                                                                                 |                    | 8 SS -                 | Stop drilling due to heaving sand. |
| END OF BOREHOLE AT 15.6 m DEPTH                                                                                                                                                         |                                                                                                                                                 |                    |                        |                                    |
| <div style="border: 1px solid black; padding: 5px; display: inline-block;">           --- MONITOR SCREEN --- SAND PACK<br/>           --- BENTONITE SEAL --- CEMENT SEAL         </div> |                                                                                                                                                 |                    |                        |                                    |

BOREHOLE LOG  
 BOREHOLE NO. 7

HYDROGEOLOGICAL STUDY  
 FENELON TOWNSHIP LANDFILL SITE

Ted Rannie, M.Sc.  
 Hydrogeologist

DRILLING RIG: (1) MOBILE B40 (2) CME 75  
 CONTRACTOR: (1) EASTERN SOILS INVESTIGATION LTD.  
 (2) G. HART & SONS WELL DRILLING LTD. (RW)  
 GEOLOGIST: T. RANNIE  
 DATE DRILLED: 4 SEPTEMBER 1991, 18 NOVEMBER 1991

GROUND ELEVATION (MASL): 261.1  
 STATIC WATER ELEVATION (19MAY92, MASL): 8A 260.32  
 B 259.97  
 RW 260.03

| DEPTH<br>(m)                                                                                                                                                                            | DESCRIPTION                                                                                                      | MONITOR<br>DETAILS | SAMPLE<br>NO. TYPE 'N' | REMARKS                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|---------------------------------------------------------|
|                                                                                                                                                                                         | FILL: Fine sand, medium grey, minor gravel and silt, burnt layer at the base, loose, dry.                        |                    | 1 SS 15                |                                                         |
|                                                                                                                                                                                         |                                                                                                                  |                    | 2 SS 22                |                                                         |
| 1.4                                                                                                                                                                                     | PEAT: Dark brown, decayed wood chips with trace sand, loose, thin (10-20 cm) grey clay layer at base, saturated. |                    | 3 SS 3                 |                                                         |
|                                                                                                                                                                                         |                                                                                                                  |                    | 4 SS 2                 |                                                         |
| 2.0                                                                                                                                                                                     |                                                                                                                  |                    | 5 SS 19                |                                                         |
|                                                                                                                                                                                         | SILTY FINE SAND: Medium grey, homogeneous, well sorted, poorly stratified, loose, saturated.                     |                    | 6 SS 4                 |                                                         |
|                                                                                                                                                                                         |                                                                                                                  |                    | 7 SS 7                 |                                                         |
|                                                                                                                                                                                         |                                                                                                                  |                    | 8 SS 6                 |                                                         |
| 8.8                                                                                                                                                                                     | TILL: Medium grey, unsorted gravel in silty sand matrix, hard, saturated, exact thickness unknown.               |                    | 9 SS 09                | Heaving sand starts at 9.5 m.                           |
| 9.4                                                                                                                                                                                     |                                                                                                                  |                    | 10 GS -                | Drill to refusal with solid stem from 10.7 m to 11.6 m. |
| 11.6                                                                                                                                                                                    | SILTY FINE SAND: Medium grey, homogeneous, well sorted, trace of fine gravel, poorly stratified, saturated.      |                    |                        |                                                         |
|                                                                                                                                                                                         | SILT TILL:                                                                                                       |                    |                        |                                                         |
| 14.6                                                                                                                                                                                    |                                                                                                                  |                    |                        |                                                         |
|                                                                                                                                                                                         | LIMESTONE: Dark brown, aphanitic.                                                                                |                    |                        |                                                         |
| END OF BOREHOLE AT 20.1 m DEPTH                                                                                                                                                         |                                                                                                                  |                    |                        |                                                         |
| <div style="border: 1px solid black; padding: 5px; display: inline-block;">           --- MONITOR SCREEN --- SAND PACK<br/>           --- BENTONITE SEAL --- CEMENT SEAL         </div> |                                                                                                                  |                    |                        |                                                         |

BOREHOLE LOG  
 BOREHOLE NO. 8

HYDROGEOLOGICAL STUDY  
 FENELON TOWNSHIP LANDFILL SITE

Ted Rannie, M.Sc.  
 Hydrogeologist

All monitors installed in separate boreholes.

**Pinchin Environmental**  
204-160 Charlotte Street  
Peterborough, Ontario, K9J 2T8

# **Stratigraphic and Instrumentation Log: MW-7 (2013)**

**Project No.:** 81838

**Project:** Fenelon Landfill

**Client:** City of Kawatha Lakes

**Location:** 341 Mark Road, Fenelon Falls, Ontario

**Logged By:** C. Moose

**Entered By:** L. DiAngelo

**Project Manager:** C. Moose

**Drill Date:** August 22, 2013

| SUBSURFACE PROFILE |                                                                                    |                                                                                        |                     | SAMPLE |      |        |         |              | Vapour Reading (ppm)<br><div>△ 50   ppm 100 150 200 △</div> |  |  |  | Monitoring Well |
|--------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------|--------|------|--------|---------|--------------|-------------------------------------------------------------|--|--|--|-----------------|
| Depth (m)          | Symbol                                                                             | Description                                                                            | Elevation           | Number | Type | Sample | N-Value | Recovery (%) |                                                             |  |  |  |                 |
| 0                  |  | Ground Surface      268.384                                                            | 0.0                 |        |      |        |         |              |                                                             |  |  |  |                 |
|                    |                                                                                    | <b>Fill - Sand and Gravel</b><br>Domestic refuse, moist, brown, fine to coarse grained |                     |        | NA   | NA     | NA      | NA           | NA                                                          |  |  |  |                 |
| 1                  |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 2                  |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 3                  |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 4                  |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 5                  |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 6                  |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 7                  |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 8                  |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 9                  |                                                                                    |                                                                                        | Wet below 9 m depth |        |      |        |         |              |                                                             |  |  |  |                 |
| 10                 |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 11                 |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 12                 |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 13                 |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 14                 |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 15                 |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 16                 |                                                                                    |                                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |
| 17                 |                                                                                    |                                                                                        | -17.1               |        |      |        |         |              |                                                             |  |  |  |                 |
|                    |                                                                                    | End of Borehole                                                                        |                     |        |      |        |         |              |                                                             |  |  |  |                 |

**Drilled By:** Strata Drilling

**Drill Method:** GeoProbe 7822 DT

**Vapour Instrument:** NA

**Well Casing Size:** 5.1 cm

**Datum:** NA

**Casing Elevation:** NA

**Ground Elevation:** NA **268.384**

**Sheet:** 1 of 1

DRILLING RIG: CME 75  
 CONTRACTOR: EASTERN SOIL INVESTIGATION LTD  
 GEOLOGIST: T. RANNIE  
 DATE DRILLED: 4-5 SEPTEMBER 1991  
 DATE:

GROUND ELEVATION (MASL): 261.3  
 STATIC WATER ELEVATION (19MAY92, MASL): 9 260.34  
 9A 260.28

| DEPTH<br>(m)                                     | DESCRIPTION                                                                                                 | MONITOR<br>DETAILS | NO. | SAMPLE<br>TYPE | 'N' | REMARKS |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------|-----|----------------|-----|---------|
| 1.8<br>2.2<br><br><br><br><br>6.8<br>9.3<br>10.6 | FILL: Fine sand and gravel, grey to black, charred wood chips and plastic, compact, dry.                    |                    | 1   | SS             | 15  |         |
|                                                  |                                                                                                             |                    | 2   | SS             | 11  |         |
|                                                  |                                                                                                             |                    | 3   | SS             | 2   |         |
|                                                  | PEAT: Dark reddish brown, loose, saturated; greenish grey silt layer at base.                               |                    | 4   | SS             | 4   |         |
|                                                  |                                                                                                             |                    | 5   | SS             | 13  |         |
|                                                  | SILTY FINE SAND: Medium grey, homogeneous, well sorted, trace of fine gravel, poorly stratified, saturated. |                    | 6   | SS             | 8   |         |
|                                                  |                                                                                                             |                    | 7   | SS             | 19  |         |
|                                                  | TILL?: Medium grey, unsorted gravel in silty sand matrix, hard, saturated, exact thickness unknown.         |                    | 8   | SS             | 19  |         |
|                                                  | SILTY FINE SAND: Medium grey.                                                                               |                    | 9A  | GS             | -   |         |
|                                                  | SILT TILL: Medium grey, unsorted gravel in silty matrix, hard, saturated.                                   |                    |     |                |     |         |
|                                                  | END OF BOREHOLE AT 11.7 m DEPTH                                                                             |                    |     |                |     |         |

--- MONITOR SCREEN --- SAND PACK  
 --- BENTONITE SEAL --- CEMENT SEAL

BOREHOLE LOG  
 BOREHOLE NO. **9**

HYDROGEOLOGICAL STUDY  
 FENELON TOWNSHIP LANDFILL SITE

Ted Rannie, M.Sc.  
 Hydrogeologist

DRILLING RIG: CME 75  
 CONTRACTOR: EASTERN SOIL INVESTIGATION LTD  
 GEOLOGIST: B. GERRY  
 DATE DRILLED: 6 SEPTEMBER 1991

GROUND ELEVATION (MASL): 261.4  
 STATIC WATER ELEVATION (19MAY92, MASL): 260.00

| DEPTH<br>(m) | DESCRIPTION                                                                                                        | MONITOR<br>DETAILS | NO. | SAMPLE<br>TYPE | 'N' | REMARKS |
|--------------|--------------------------------------------------------------------------------------------------------------------|--------------------|-----|----------------|-----|---------|
| 0.2          | REFUSE:                                                                                                            |                    |     |                |     |         |
|              | SILTY FINE SAND: Dark brown, homogeneous, well sorted, poorly stratified, loose, saturated, strong leachate odour. |                    | 1   | GS             | -   |         |
|              | END OF BOREHOLE AT 4.6 m DEPTH                                                                                     |                    |     |                |     |         |

BOREHOLE LOG  
 BOREHOLE NO. **10**

HYDROGEOLOGICAL STUDY  
 FENELON TOWNSHIP LANDFILL SITE

Ted Rannie, M.Sc.  
 Hydrogeologist

DRILLING RIG: MOBILE B40  
 CONTRACTOR: SIR SANDFORD FLEMING COLLEGE  
 GEOLOGIST: J. PRESLIE  
 DATE DRILLED: 23 APRIL 1992  
 DATE:

GROUND ELEVATION (MASL): 266.4  
 STATIC WATER ELEVATION (19MAY92, MASL): 260.80

| DEPTH<br>(m) | DESCRIPTION                                                     | MONITOR<br>DETAILS                                                                 | SAMPLE<br>NO. | TYPE | 'N' | REMARKS |
|--------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------|---------------|------|-----|---------|
|              | FINE SAND: Light brown, uniform,<br>saturated below about 11 m. |  | 1             | SS   | 31  |         |
|              |                                                                 |                                                                                    | 2             | SS   | 29  |         |
|              |                                                                 |                                                                                    | 3             | SS   | 24  |         |
|              |                                                                 |                                                                                    | 4             | SS   | -   |         |
|              |                                                                 |                                                                                    | 5             | SS   | -   |         |
|              | END OF BOREHOLE AT 7.6 m DEPTH                                  |                                                                                    |               |      |     |         |

--- MONITOR SCREEN     SAND PACK  
 ■■■ BENTONITE SEAL    ■■■ CEMENT SEAL

BOREHOLE LOG  
 BOREHOLE NO. **11**

HYDROGEOLOGICAL STUDY  
 FENELON TOWNSHIP LANDFILL SITE

Ted Rennie, M.Sc.  
 Hydrogeologist

DRILLING RIG: MOBILE B40  
 CONTRACTOR: SIR SANDFORD FLEMING COLLEGE  
 GEOLOGIST: J. PRESLIE  
 DATE DRILLED: 23 APRIL 1992

GROUND ELEVATION (MASL): 264.3  
 STATIC WATER ELEVATION (19MAY92, MASL): 259.76

| DEPTH<br>(m) | DESCRIPTION                                                                                                 | MONITOR<br>DETAILS                                                                  | SAMPLE<br>NO. | TYPE | 'N' | REMARKS |
|--------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------|------|-----|---------|
|              | FINE SAND: Light brown, uniform, some<br>thin layers of silt and fine gravel,<br>saturated below about 9 m. |  | 1             | SS   | 19  |         |
|              |                                                                                                             |                                                                                     | 2             | SS   | 42  |         |
|              |                                                                                                             |                                                                                     | 3             | SS   | 43  |         |
|              |                                                                                                             |                                                                                     | 4             | SS   | -   |         |
|              |                                                                                                             |                                                                                     | 5             | SS   | -   |         |
|              | END OF BOREHOLE AT 7.3 m DEPTH                                                                              |                                                                                     |               |      |     |         |

BOREHOLE LOG  
 BOREHOLE NO. **12**

HYDROGEOLOGICAL STUDY  
 FENELON TOWNSHIP LANDFILL SITE

Ted Rennie, M.Sc.  
 Hydrogeologist

BOREHOLE NUMBER

13

FIGURE

F-1

|          |                        |            |             |                        |       |
|----------|------------------------|------------|-------------|------------------------|-------|
| Project  | Fenelon Landfill       | Drill Type | Acker AD II | Ground Elevation       | 260.8 |
| Location | lot 15, con 4, Fenelon | Technician | J. Preslie  | Static Water Elevation | -     |
| Date     | November 26, 1992      | Contractor | SSF College | Elevation Datum        | mASL  |

| DEPTH<br>(m) | INFERRED STRATIGRAPHY                                                  |        | MONITOR                                                                           | SAMPLE |      |    | REMARKS |
|--------------|------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|--------|------|----|---------|
|              | Description                                                            | Symbol |                                                                                   | #      | type | N° |         |
| 0            | FINE TO COARSE SAND<br>trace silt<br>grey to brown<br>compact to dense |        |  | 1      | SS   | 27 |         |
| 1            |                                                                        |        |                                                                                   | 2      | SS   | 35 |         |
| 2            | end of borehole (2.2 metres)                                           |        |                                                                                   |        |      |    |         |
| 3            |                                                                        |        |                                                                                   |        |      |    |         |
| 4            |                                                                        |        |                                                                                   |        |      |    |         |
| 5            |                                                                        |        |                                                                                   |        |      |    |         |
| 6            |                                                                        |        |                                                                                   |        |      |    |         |
| 7            |                                                                        |        |                                                                                   |        |      |    |         |
| 8            |                                                                        |        |                                                                                   |        |      |    |         |
| 9            |                                                                        |        | See Table 4<br>for<br>installation<br>details                                     |        |      |    |         |

20-Nov-95

Fenelon

See Table 4  
for  
installation  
details

20-Nov-95

fenlog

COUNTY OF VICTORIA

TRANSPORTATION AND PUBLIC WORKS DEPARTMENT

BOREHOLE NUMBER

14

FIGURE

F-1

|          |                        |            |             |                        |       |
|----------|------------------------|------------|-------------|------------------------|-------|
| Project  | Fenelon Landfill       | Drill Type | Acker AD II | Ground Elevation       | 260.0 |
| Location | lot 15, con 4, Fenelon | Technician | J. Preslie  | Static Water Elevation | -     |
| Date     | November 26, 1992      | Contractor | SSF College | Elevation Datum        | mASL  |

| DEPTH | INFERRED STRATIGRAPHY |                                                      | MONITOR | SAMPLE |    |      | REMARKS |
|-------|-----------------------|------------------------------------------------------|---------|--------|----|------|---------|
|       | (m)                   | Description                                          |         | Symbol | #  | type |         |
| 0     |                       | ORGANICS<br>black, moist<br>very loose               |         |        |    |      |         |
| 1     |                       | SILTY FINE SAND & GRAVEL<br>grey to brown<br>compact |         | 1      | SS | 4    |         |
| 2     |                       | 0.3 m seam of clayey silt<br>beginning at 1.2 metres |         | 2      | SS | 22   |         |
| 3     |                       | end of borehole (2.2 metres)                         |         |        |    |      |         |
| 4     |                       |                                                      |         |        |    |      |         |
| 5     |                       |                                                      |         |        |    |      |         |
| 6     |                       |                                                      |         |        |    |      |         |
| 7     |                       |                                                      |         |        |    |      |         |
| 8     |                       |                                                      |         |        |    |      |         |
| 9     |                       |                                                      |         |        |    |      |         |

See Table 4  
for  
installation  
details

20-Nov-95  
fenelon

See Table 4  
for  
installation  
details

20-Nov-95

fenlog

COUNTY OF VICTORIA

TRANSPORTATION AND PUBLIC WORKS DEPARTMENT

BOREHOLE NUMBER

15

FIGURE

F-1

|          |                              |            |             |                        |       |
|----------|------------------------------|------------|-------------|------------------------|-------|
| Project  | Fenelon Landfill             | Drill Type | Acker AD II | Ground Elevation       | 262.3 |
| Location | lot 15, con 4, Fenelon       | Technician | J. Preslie  | Static Water Elevation | -     |
| Date     | Nov. 26, 1992 & Dec. 2, 1993 | Contractor | SSF College | Elevation Datum        | mASL  |

| DEPTH | INFERRED STRATIGRAPHY                                | MONITOR | SAMPLE |     |   | REMARKS |      |                                                                                                         |
|-------|------------------------------------------------------|---------|--------|-----|---|---------|------|---------------------------------------------------------------------------------------------------------|
|       |                                                      |         | 15     | 15A | # |         | type | N'                                                                                                      |
| (m)   | Description                                          | Symbol  |        |     |   |         |      |                                                                                                         |
| 0     | ORGANICS<br>brown, dry<br>very loose                 |         |        |     | 1 | SS      | 2    |                                                                                                         |
| 1     | SILTY FINE SAND<br>grey to brown<br>compact to dense |         |        |     | 2 | SS      | 21   |                                                                                                         |
| 2     | fine black striations in SA#2                        |         |        |     |   |         |      |                                                                                                         |
| 3     |                                                      |         |        |     | 3 | SS      | 39   | shooting" sands below water table<br>use water to flush inside of augers<br>during monitor installation |
| 4     |                                                      |         |        |     |   |         |      |                                                                                                         |
| 5     |                                                      |         |        |     |   |         |      | unable to sample because of<br>shooting" sands<br>no change in auger cuttings                           |
| 6     |                                                      |         |        |     |   |         |      | no change in auger cuttings                                                                             |
| 7     |                                                      |         |        |     |   |         |      | no change in auger cuttings                                                                             |
| 8     |                                                      |         |        |     |   |         |      | no change in auger cuttings                                                                             |
| 9     |                                                      |         |        |     | 4 | SS      | 14   | shooting" sands<br>use water to flush inside of augers<br>0 % recovery of sample                        |

continued on next page

20-Nov-95

Fenelon

continued on next page

20-Nov-95

fenlog

COUNTY OF VICTORIA

TRANSPORTATION AND PUBLIC WORKS DEPARTMENT

BOREHOLE NUMBER

15

FIGURE

F-1a

|          |                              |            |             |                        |       |
|----------|------------------------------|------------|-------------|------------------------|-------|
| Project  | Fenelon Landfill             | Drill Type | Acker AD II | Ground Elevation       | 262.3 |
| Location | lot 15, con 4, Fenelon       | Technician | J. Preslie  | Static Water Elevation | -     |
| Date     | Nov. 26, 1992 & Dec. 2, 1993 | Contractor | SSF College | Elevation Datum        | mASL  |

| DEPTH | INFERRED STRATIGRAPHY                                                                                                    | MONITOR | SAMPLE |   |      | REMARKS |
|-------|--------------------------------------------------------------------------------------------------------------------------|---------|--------|---|------|---------|
|       |                                                                                                                          |         | 15A    | # | type |         |
| (m)   | Description                                                                                                              | Symbol  |        |   |      |         |
| 10    | SILTY FINE SAND<br>grey to brown<br>compact to dense                                                                     |         |        |   |      |         |
| 11    |                                                                                                                          |         |        |   |      |         |
| 12    |                                                                                                                          |         |        |   |      |         |
| 13    |                                                                                                                          |         |        |   |      |         |
| 14    | trace to some gravel in top<br>portion of SA#5<br>SILTY SAND TILL<br>grey<br>very dense<br>end of borehole (14.5 metres) |         |        | 5 | SS   | 65      |
| 15    |                                                                                                                          |         |        |   |      |         |
| 16    |                                                                                                                          |         |        |   |      |         |
| 17    |                                                                                                                          |         |        |   |      |         |
| 18    |                                                                                                                          |         |        |   |      |         |
| 19    |                                                                                                                          |         |        |   |      |         |

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20-Nov-95

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COUNTY OF VICTORIA

TRANSPORTATION AND PUBLIC WORKS DEPARTMENT



Sir Sandford Fleming College  
School of Natural Resources

SOIL PROFILE and TEST DATA FIELD SHEET

JOB NAME: F&E (100) LANDFILL DATE: 98/04/20  
CLIENT: VICTORIA COUNTY LOCATION: F&E (100) LANDFILL SITE  
DRILLING FIRM: SSFC DRILLER: SSFC  
BORE HOLE: 15B Page 1 of 4 WEATHER: SUNNY 15°C

| SAMPLE type | SAMPLE no. | S.P.T drops/6" | DEPTH from | DEPTH to | Cone Blows | Depth Profile | SOIL DESCRIPTION                                      |
|-------------|------------|----------------|------------|----------|------------|---------------|-------------------------------------------------------|
|             |            |                |            |          |            | 1             | 1.5 ft TOPSOIL (ORGANICS LOAM)                        |
|             |            |                |            |          |            | 2             |                                                       |
|             |            |                |            |          |            | 3             |                                                       |
|             |            |                |            |          |            | 4             |                                                       |
| SS          | 1          | 12, 20, 29     | 5.0        | 6.5      |            | 5             | SS #1 (5.0'-6.5')                                     |
|             |            |                |            |          |            | 6             | DENSE LIGHT GRAY BROWN MEDIUM SAND WITH TRACE OF SILT |
|             |            |                |            |          |            | 7             |                                                       |
| SS          | 4          |                |            |          |            | 8             |                                                       |
|             |            |                |            |          |            | 9             |                                                       |
| SS          | 2          | 8, 14, 17      | 10         | 11.5     |            | 10            | WATER TABLE (10')                                     |
|             |            |                |            |          |            | 11            | SS #2 (10'-11.5')                                     |
|             |            |                |            |          |            | 12            | DENSE LIGHT GRAY BROWN MEDIUM SAND WITH TRACE OF SILT |
|             |            |                |            |          |            | 13            |                                                       |
|             |            |                |            |          |            | 14            |                                                       |
|             |            |                |            |          |            | 15            |                                                       |
|             |            |                |            |          |            | 16            |                                                       |
|             |            |                |            |          |            | 17            |                                                       |
|             |            |                |            |          |            | 18            |                                                       |

Remarks:

Groundwater Record

| date     | grnd el. | depth to | water el. |
|----------|----------|----------|-----------|
| 98/04/20 |          | 10'      |           |

Sir Sandford Fleming College  
School of Natural Resources

SOIL PROFILE and TEST DATA FIELD SHEET

JOB NAME: F&E (100) LANDFILL DATE: 98/04/20  
CLIENT: VICTORIA COUNTY LOCATION: F&E (100) LANDFILL SITE  
DRILLING FIRM: SSFC DRILLER: SSFC  
BORE HOLE: 15B Page 2 of 4 WEATHER: SUNNY 15°C

| SAMPLE type | SAMPLE no. | S.P.T drops/6" | DEPTH from | DEPTH to | Cone Blows | Depth Profile | SOIL DESCRIPTION                                      |
|-------------|------------|----------------|------------|----------|------------|---------------|-------------------------------------------------------|
|             |            |                |            |          |            | 19            |                                                       |
| G           | 3          |                | 19         | 21       |            | 20            | G #3 (20'-21')                                        |
|             |            |                |            |          |            | 21            | DENSE LIGHT GRAY BROWN MEDIUM SAND WITH TRACE OF SILT |
|             |            |                |            |          |            | 22            |                                                       |
|             |            |                |            |          |            | 23            |                                                       |
|             |            |                |            |          |            | 24            |                                                       |
|             |            |                |            |          |            | 25            |                                                       |
| SS          | 11         |                |            |          |            | 26            |                                                       |
|             |            |                |            |          |            | 27            |                                                       |
|             |            |                |            |          |            | 28            |                                                       |
|             |            |                |            |          |            | 29            |                                                       |
|             |            |                |            |          |            | 30            |                                                       |
|             |            |                |            |          |            | 31            |                                                       |
|             |            |                |            |          |            | 32            |                                                       |
|             |            |                |            |          |            | 33            |                                                       |
|             |            |                |            |          |            | 34            |                                                       |
|             |            |                |            |          |            | 35            |                                                       |
|             |            |                |            |          |            | 18            |                                                       |

Remarks:

Groundwater Record

| date | grnd el. | depth to | water el. |
|------|----------|----------|-----------|
|      |          |          |           |

Sir Sandford Fleming College  
School of Natural Resources

SOIL PROFILE and TEST DATA FIELD SHEET

JOB NAME: FLEWLOW LANDFILL WELLS DATE: 28/04/23  
CLIENT: VICTORIA COUNTY LOCATION: FLEWLOW LANDFILL  
DRILLING FIRM: SSKC DRILLING DRILLER: SSKC DRILLING STUDENTS  
BORE HOLE: 5-B Page 4 of 4 WEATHER: SUNNY (77°C)

| SAMPLE type | no. | S.P.T drops/6" | DEPTH from | to | Cone Blows | Depth Profile | SOIL DESCRIPTION                      |
|-------------|-----|----------------|------------|----|------------|---------------|---------------------------------------|
|             |     |                |            |    |            | 54            | 0'0"                                  |
|             |     |                |            |    |            | 55            | 0'0"                                  |
|             |     |                |            |    |            | 56            | 55'3" ACTUAL BEDROCK                  |
|             |     |                |            |    |            | 57            | 11'11" CEMENT CASING DRILLED TO 58'8" |
|             |     |                |            |    |            | 58            |                                       |
|             |     |                |            |    |            | 59            |                                       |
|             |     |                |            |    |            | 60            |                                       |
|             |     |                |            |    |            | 61            |                                       |
|             |     |                |            |    |            | 62            |                                       |
|             |     |                |            |    |            | 63            |                                       |
|             |     |                |            |    |            | 64            |                                       |
|             |     |                |            |    |            | 65            |                                       |
|             |     |                |            |    |            | 66            |                                       |
|             |     |                |            |    |            | 67            |                                       |
|             |     |                |            |    |            | 68            |                                       |
|             |     |                |            |    |            | 69            |                                       |
|             |     |                |            |    |            | 70            |                                       |
|             |     |                |            |    |            | 71            |                                       |
|             |     |                |            |    |            | 72            |                                       |
|             |     |                |            |    |            | 73            |                                       |
|             |     |                |            |    |            | 74            |                                       |
|             |     |                |            |    |            | 75            |                                       |
|             |     |                |            |    |            | 76            |                                       |
|             |     |                |            |    |            | 77            |                                       |
|             |     |                |            |    |            | 78            |                                       |
|             |     |                |            |    |            | 79            |                                       |
|             |     |                |            |    |            | 80            |                                       |
|             |     |                |            |    |            | 81            |                                       |
|             |     |                |            |    |            | 82            |                                       |
|             |     |                |            |    |            | 83            |                                       |
|             |     |                |            |    |            | 84            |                                       |
|             |     |                |            |    |            | 85            |                                       |
|             |     |                |            |    |            | 86            |                                       |
|             |     |                |            |    |            | 87            |                                       |
|             |     |                |            |    |            | 88            |                                       |
|             |     |                |            |    |            | 89            |                                       |
|             |     |                |            |    |            | 90            |                                       |
|             |     |                |            |    |            | 91            |                                       |
|             |     |                |            |    |            | 92            |                                       |
|             |     |                |            |    |            | 93            |                                       |
|             |     |                |            |    |            | 94            |                                       |
|             |     |                |            |    |            | 95            |                                       |
|             |     |                |            |    |            | 96            |                                       |
|             |     |                |            |    |            | 97            |                                       |
|             |     |                |            |    |            | 98            |                                       |
|             |     |                |            |    |            | 99            |                                       |
|             |     |                |            |    |            | 100           |                                       |

Remarks: 1

| Groundwater Record |          |          |           |
|--------------------|----------|----------|-----------|
| date               | grnd el. | depth to | water el. |
|                    |          |          |           |
|                    |          |          |           |
|                    |          |          |           |

Sir Sandford Fleming College  
School of Natural Resources

SOIL PROFILE and TEST DATA FIELD SHEET

JOB NAME: FLEWLOW LANDFILL WELLS DATE: 28/04/23  
CLIENT: VICTORIA COUNTY LOCATION: FLEWLOW LANDFILL  
DRILLING FIRM: SSKC DRILLER: SSKC  
BORE HOLE: 5-B Page 7 of 4 WEATHER: SUNNY 15°C

| SAMPLE type | no. | S.P.T drops/6" | DEPTH from | to | Cone Blows | Depth Profile | SOIL DESCRIPTION |
|-------------|-----|----------------|------------|----|------------|---------------|------------------|
|             |     |                |            |    |            | 36            |                  |
|             |     |                |            |    |            | 37            |                  |
|             |     |                |            |    |            | 38            |                  |
|             |     |                |            |    |            | 39            |                  |
|             |     |                |            |    |            | 40            |                  |
|             |     |                |            |    |            | 41            |                  |
|             |     |                |            |    |            | 42            |                  |
|             |     |                |            |    |            | 43            |                  |
|             |     |                |            |    |            | 44            |                  |
|             |     |                |            |    |            | 45            |                  |
|             |     |                |            |    |            | 46            |                  |
|             |     |                |            |    |            | 47            |                  |
|             |     |                |            |    |            | 48            |                  |
|             |     |                |            |    |            | 49            |                  |
|             |     |                |            |    |            | 50            |                  |
|             |     |                |            |    |            | 51            |                  |
|             |     |                |            |    |            | 52            |                  |
|             |     |                |            |    |            | 53            |                  |
|             |     |                |            |    |            | 54            |                  |
|             |     |                |            |    |            | 55            |                  |
|             |     |                |            |    |            | 56            |                  |
|             |     |                |            |    |            | 57            |                  |
|             |     |                |            |    |            | 58            |                  |
|             |     |                |            |    |            | 59            |                  |
|             |     |                |            |    |            | 60            |                  |
|             |     |                |            |    |            | 61            |                  |
|             |     |                |            |    |            | 62            |                  |
|             |     |                |            |    |            | 63            |                  |
|             |     |                |            |    |            | 64            |                  |
|             |     |                |            |    |            | 65            |                  |
|             |     |                |            |    |            | 66            |                  |
|             |     |                |            |    |            | 67            |                  |
|             |     |                |            |    |            | 68            |                  |
|             |     |                |            |    |            | 69            |                  |
|             |     |                |            |    |            | 70            |                  |
|             |     |                |            |    |            | 71            |                  |
|             |     |                |            |    |            | 72            |                  |
|             |     |                |            |    |            | 73            |                  |
|             |     |                |            |    |            | 74            |                  |
|             |     |                |            |    |            | 75            |                  |
|             |     |                |            |    |            | 76            |                  |
|             |     |                |            |    |            | 77            |                  |
|             |     |                |            |    |            | 78            |                  |
|             |     |                |            |    |            | 79            |                  |
|             |     |                |            |    |            | 80            |                  |
|             |     |                |            |    |            | 81            |                  |
|             |     |                |            |    |            | 82            |                  |
|             |     |                |            |    |            | 83            |                  |
|             |     |                |            |    |            | 84            |                  |
|             |     |                |            |    |            | 85            |                  |
|             |     |                |            |    |            | 86            |                  |
|             |     |                |            |    |            | 87            |                  |
|             |     |                |            |    |            | 88            |                  |
|             |     |                |            |    |            | 89            |                  |
|             |     |                |            |    |            | 90            |                  |
|             |     |                |            |    |            | 91            |                  |
|             |     |                |            |    |            | 92            |                  |
|             |     |                |            |    |            | 93            |                  |
|             |     |                |            |    |            | 94            |                  |
|             |     |                |            |    |            | 95            |                  |
|             |     |                |            |    |            | 96            |                  |
|             |     |                |            |    |            | 97            |                  |
|             |     |                |            |    |            | 98            |                  |
|             |     |                |            |    |            | 99            |                  |
|             |     |                |            |    |            | 100           |                  |

Remarks:

| Groundwater Record |          |          |           |
|--------------------|----------|----------|-----------|
| date               | grnd el. | depth to | water el. |
|                    |          |          |           |
|                    |          |          |           |
|                    |          |          |           |

THIS  
SM  
IN  
SIA  
OF  
CARE  
BL

BOREHOLE NUMBER

16

FIGURE

F-1

|          |                              |            |                  |                        |       |
|----------|------------------------------|------------|------------------|------------------------|-------|
| Project  | Fenelon Landfill             | Drill Type | Acker AD II      | Ground Elevation       | 267.9 |
| Location | lot 15, con 4, Fenelon       | Technician | J. Preslie/D. H. | Static Water Elevation | -     |
| Date     | Nov. 27, 1992 & Nov. 2, 1993 | Contractor | SSF College      | Elevation Datum        | mASL  |

| DEPTH | INFERRED STRATIGRAPHY                                              |        | MONITOR | SAMPLE |      |     | REMARKS |
|-------|--------------------------------------------------------------------|--------|---------|--------|------|-----|---------|
|       | Description                                                        | Symbol |         | #      | type | ft' |         |
| 0     | SAND & GRAVEL                                                      |        |         |        |      |     |         |
|       | fine to medium grain sand<br>trace gravel<br>cobbles at 0.8 metres |        |         | 1      | SS   | 12  |         |
| 1     |                                                                    |        |         |        |      |     |         |
|       | fine grain sand, gravel                                            |        |         | 2      | SS   | 22  |         |
| 2     |                                                                    |        |         |        |      |     |         |
|       |                                                                    |        |         |        |      |     |         |
| 3     | fine to coarse grain sand,<br>gravel                               |        |         | 3      | SS   | 37  |         |
| 4     |                                                                    |        |         |        |      |     |         |
|       | fine to coarse grain sand,<br>gravel                               |        |         | 4      | SS   | 23  |         |
| 5     |                                                                    |        |         |        |      |     |         |
|       |                                                                    |        |         |        |      |     |         |
| 6     | fine to coarse grain sand,<br>gravel                               |        |         | 5      | SS   | 26  |         |
| 7     |                                                                    |        |         |        |      |     |         |
|       |                                                                    |        |         | 6      | SS   | 29  |         |
| 8     |                                                                    |        |         |        |      |     |         |
|       |                                                                    |        |         | 7      | SS   | 40  |         |
| 9     |                                                                    |        |         |        |      |     |         |
|       | end of borehole (9.2 metres)                                       |        |         | 8      | SS   | 34  |         |
|       | See Table 4 for installation details                               |        |         |        |      |     |         |

21-Nov-95

Fenelon

COUNTY OF VICTORIA

TRANSPORTATION AND PUBLIC WORKS DEPARTMENT

21-Nov-95

fenlog

BOREHOLE NUMBER

17

FIGURE

F-1a

|          |                        |            |             |                        |       |
|----------|------------------------|------------|-------------|------------------------|-------|
| Project  | Fenelon Landfill       | Drill Type | Acker AD II | Ground Elevation       | 267.8 |
| Location | lot 15, con 4, Fenelon | Technician | J. Preslie  | Static Water Elevation | -     |
| Date     | December 2, 1992       | Contractor | SSF College | Elevation Datum        | mASL  |

| DEPTH<br>(m) | INFERRED STRATIGRAPHY         |        | MONITOR | SAMPLE |      |    | REMARKS |
|--------------|-------------------------------|--------|---------|--------|------|----|---------|
|              | Description                   | Symbol |         | #      | type | N° |         |
| 10           | SAND                          |        |         |        |      |    |         |
| 11           |                               |        |         | 8      | SS   | 23 |         |
| 12           |                               |        |         | 9      | SS   | 32 |         |
| 13           |                               |        |         | 10     | SS   | 40 |         |
| 14           |                               |        |         | 11     | SS   | 39 |         |
| 15           |                               |        |         | 12     | SS   | 35 |         |
| 16           |                               |        |         |        |      |    |         |
| 17           | end of borehole (17.0 metres) |        |         |        |      |    |         |
| 18           |                               |        |         |        |      |    |         |
| 19           |                               |        |         |        |      |    |         |

See Table 4 for installation details

21-Nov-95

Fenelon

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fenlog

COUNTY OF VICTORIA

TRANSPORTATION AND PUBLIC WORKS DEPARTMENT

BOREHOLE NUMBER

18

FIGURE

F-1

| Project  | Fenelon Landfill       | Drill Type | Acker AD II | Ground Elevation       | 274.7   |
|----------|------------------------|------------|-------------|------------------------|---------|
| Location | lot 15, con 4, Fenelon | Technician | J. Preslie  | Static Water Elevation |         |
| Date     | December 1, 1992       | Contractor | SSF College | Elevation Datum        | mASL    |
| DEPTH    | INFERRED STRATIGRAPHY  | MONITOR    | SAMPLE      |                        | REMARKS |
| (m)      | Description            | Symbol     | #           | type                   | #'      |
| 0        | SILTY FINE SAND        |            |             |                        |         |
| 1        |                        |            | 1           | SS                     | 1       |
| 2        |                        |            | 2           | SS                     | 2       |
| 3        | MEDIUM SAND            |            | 3           | SS                     | 4       |
| 4        | FINE SAND              |            | 4           | SS                     | 7       |
| 5        |                        |            |             |                        |         |
| 6        |                        |            | 5           | SS                     | 12      |
| 7        |                        |            | 6           | SS                     | 15      |
| 8        |                        |            |             |                        |         |
| 9        |                        |            | 7           | SS                     | 22      |
| 10       |                        |            |             |                        |         |
| 11       |                        |            |             |                        |         |
| 12       |                        |            |             |                        |         |
| 13       |                        |            |             |                        |         |
| 14       |                        |            |             |                        |         |
| 15       |                        |            |             |                        |         |
| 16       |                        |            |             |                        |         |
| 17       |                        |            |             |                        |         |
| 18       |                        |            |             |                        |         |
| 19       |                        |            |             |                        |         |
| 20       |                        |            |             |                        |         |
| 21       |                        |            |             |                        |         |
| 22       |                        |            |             |                        |         |
| 23       |                        |            |             |                        |         |
| 24       |                        |            |             |                        |         |
| 25       |                        |            |             |                        |         |
| 26       |                        |            |             |                        |         |
| 27       |                        |            |             |                        |         |
| 28       |                        |            |             |                        |         |
| 29       |                        |            |             |                        |         |
| 30       |                        |            |             |                        |         |
| 31       |                        |            |             |                        |         |
| 32       |                        |            |             |                        |         |
| 33       |                        |            |             |                        |         |
| 34       |                        |            |             |                        |         |
| 35       |                        |            |             |                        |         |
| 36       |                        |            |             |                        |         |
| 37       |                        |            |             |                        |         |
| 38       |                        |            |             |                        |         |
| 39       |                        |            |             |                        |         |
| 40       |                        |            |             |                        |         |
| 41       |                        |            |             |                        |         |
| 42       |                        |            |             |                        |         |
| 43       |                        |            |             |                        |         |
| 44       |                        |            |             |                        |         |
| 45       |                        |            |             |                        |         |
| 46       |                        |            |             |                        |         |
| 47       |                        |            |             |                        |         |
| 48       |                        |            |             |                        |         |
| 49       |                        |            |             |                        |         |
| 50       |                        |            |             |                        |         |
| 51       |                        |            |             |                        |         |
| 52       |                        |            |             |                        |         |
| 53       |                        |            |             |                        |         |
| 54       |                        |            |             |                        |         |
| 55       |                        |            |             |                        |         |
| 56       |                        |            |             |                        |         |
| 57       |                        |            |             |                        |         |
| 58       |                        |            |             |                        |         |
| 59       |                        |            |             |                        |         |
| 60       |                        |            |             |                        |         |
| 61       |                        |            |             |                        |         |
| 62       |                        |            |             |                        |         |
| 63       |                        |            |             |                        |         |
| 64       |                        |            |             |                        |         |
| 65       |                        |            |             |                        |         |
| 66       |                        |            |             |                        |         |
| 67       |                        |            |             |                        |         |
| 68       |                        |            |             |                        |         |
| 69       |                        |            |             |                        |         |
| 70       |                        |            |             |                        |         |
| 71       |                        |            |             |                        |         |
| 72       |                        |            |             |                        |         |
| 73       |                        |            |             |                        |         |
| 74       |                        |            |             |                        |         |
| 75       |                        |            |             |                        |         |
| 76       |                        |            |             |                        |         |
| 77       |                        |            |             |                        |         |
| 78       |                        |            |             |                        |         |
| 79       |                        |            |             |                        |         |
| 80       |                        |            |             |                        |         |
| 81       |                        |            |             |                        |         |
| 82       |                        |            |             |                        |         |
| 83       |                        |            |             |                        |         |
| 84       |                        |            |             |                        |         |
| 85       |                        |            |             |                        |         |
| 86       |                        |            |             |                        |         |
| 87       |                        |            |             |                        |         |
| 88       |                        |            |             |                        |         |
| 89       |                        |            |             |                        |         |
| 90       |                        |            |             |                        |         |
| 91       |                        |            |             |                        |         |
| 92       |                        |            |             |                        |         |
| 93       |                        |            |             |                        |         |
| 94       |                        |            |             |                        |         |
| 95       |                        |            |             |                        |         |
| 96       |                        |            |             |                        |         |
| 97       |                        |            |             |                        |         |
| 98       |                        |            |             |                        |         |
| 99       |                        |            |             |                        |         |
| 100      |                        |            |             |                        |         |
| 101      |                        |            |             |                        |         |
| 102      |                        |            |             |                        |         |
| 103      |                        |            |             |                        |         |
| 104      |                        |            |             |                        |         |
| 105      |                        |            |             |                        |         |
| 106      |                        |            |             |                        |         |
| 107      |                        |            |             |                        |         |
| 108      |                        |            |             |                        |         |
| 109      |                        |            |             |                        |         |
| 110      |                        |            |             |                        |         |
| 111      |                        |            |             |                        |         |
| 112      |                        |            |             |                        |         |
| 113      |                        |            |             |                        |         |
| 114      |                        |            |             |                        |         |
| 115      |                        |            |             |                        |         |
| 116      |                        |            |             |                        |         |
| 117      |                        |            |             |                        |         |
| 118      |                        |            |             |                        |         |
| 119      |                        |            |             |                        |         |
| 120      |                        |            |             |                        |         |
| 121      |                        |            |             |                        |         |
| 122      |                        |            |             |                        |         |
| 123      |                        |            |             |                        |         |
| 124      |                        |            |             |                        |         |
| 125      |                        |            |             |                        |         |
| 126      |                        |            |             |                        |         |
| 127      |                        |            |             |                        |         |
| 128      |                        |            |             |                        |         |
| 129      |                        |            |             |                        |         |
| 130      |                        |            |             |                        |         |
| 131      |                        |            |             |                        |         |
| 132      |                        |            |             |                        |         |
| 133      |                        |            |             |                        |         |
| 134      |                        |            |             |                        |         |
| 135      |                        |            |             |                        |         |
| 136      |                        |            |             |                        |         |
| 137      |                        |            |             |                        |         |
| 138      |                        |            |             |                        |         |
| 139      |                        |            |             |                        |         |
| 140      |                        |            |             |                        |         |
| 141      |                        |            |             |                        |         |
| 142      |                        |            |             |                        |         |
| 143      |                        |            |             |                        |         |
| 144      |                        |            |             |                        |         |
| 145      |                        |            |             |                        |         |
| 146      |                        |            |             |                        |         |
| 147      |                        |            |             |                        |         |
| 148      |                        |            |             |                        |         |
| 149      |                        |            |             |                        |         |
| 150      |                        |            |             |                        |         |
| 151      |                        |            |             |                        |         |
| 152      |                        |            |             |                        |         |
| 153      |                        |            |             |                        |         |
| 154      |                        |            |             |                        |         |
| 155      |                        |            |             |                        |         |
| 156      |                        |            |             |                        |         |
| 157      |                        |            |             |                        |         |
| 158      |                        |            |             |                        |         |
| 159      |                        |            |             |                        |         |
| 160      |                        |            |             |                        |         |
| 161      |                        |            |             |                        |         |
| 162      |                        |            |             |                        |         |
| 163      |                        |            |             |                        |         |
| 164      |                        |            |             |                        |         |
| 165      |                        |            |             |                        |         |
| 166      |                        |            |             |                        |         |
| 167      |                        |            |             |                        |         |
| 168      |                        |            |             |                        |         |
| 169      |                        |            |             |                        |         |
| 170      |                        |            |             |                        |         |
| 171      |                        |            |             |                        |         |
| 172      |                        |            |             |                        |         |
| 173      |                        |            |             |                        |         |
| 174      |                        |            |             |                        |         |
| 175      |                        |            |             |                        |         |
| 176      |                        |            |             |                        |         |
| 177      |                        |            |             |                        |         |
| 178      |                        |            |             |                        |         |
| 179      |                        |            |             |                        |         |
| 180      |                        |            |             |                        |         |
| 181      |                        |            |             |                        |         |
| 182      |                        |            |             |                        |         |
| 183      |                        |            |             |                        |         |
| 184      |                        |            |             |                        |         |
| 185      |                        |            |             |                        |         |
| 186      |                        |            |             |                        |         |
| 187      |                        |            |             |                        |         |
| 188      |                        |            |             |                        |         |
| 189      |                        |            |             |                        |         |
| 190      |                        |            |             |                        |         |
| 191      |                        |            |             |                        |         |
| 192      |                        |            |             |                        |         |
| 193      |                        |            |             |                        |         |
| 194      |                        |            |             |                        |         |
| 195      |                        |            |             |                        |         |
| 196      |                        |            |             |                        |         |
| 197      |                        |            |             |                        |         |
| 198      |                        |            |             |                        |         |
| 199      |                        |            |             |                        |         |
| 200      |                        |            |             |                        |         |
| 201      |                        |            |             |                        |         |
| 202      |                        |            |             |                        |         |
| 203      |                        |            |             |                        |         |
| 204      |                        |            |             |                        |         |
| 205      |                        |            |             |                        |         |
| 206      |                        |            |             |                        |         |
| 207      |                        |            |             |                        |         |
| 208      |                        |            |             |                        |         |
| 209      |                        |            |             |                        |         |
| 210      |                        |            |             |                        |         |
| 211      |                        |            |             |                        |         |
| 212      |                        |            |             |                        |         |
| 213      |                        |            |             |                        |         |
| 214      |                        |            |             |                        |         |
| 215      |                        |            |             |                        |         |
| 216      |                        |            |             |                        |         |
| 217      |                        |            |             |                        |         |
| 218      |                        |            |             |                        |         |
| 219      |                        |            |             |                        |         |
| 220      |                        |            |             |                        |         |
| 221      |                        |            |             |                        |         |
| 222      |                        |            |             |                        |         |
| 223      |                        |            |             |                        |         |
| 224      |                        |            |             |                        |         |
| 225      |                        |            |             |                        |         |
| 226      |                        |            |             |                        |         |
| 227      |                        |            |             |                        |         |
| 228      |                        |            |             |                        |         |
| 229      |                        |            |             |                        |         |
| 230      |                        |            |             |                        |         |
| 231      |                        |            |             |                        |         |
| 232      |                        |            |             |                        |         |
| 233      |                        |            |             |                        |         |
| 234      |                        |            |             |                        |         |
| 235      |                        |            |             |                        |         |
| 236      |                        |            |             |                        |         |
| 237      |                        |            |             |                        |         |
| 238      |                        |            |             |                        |         |
| 239      |                        |            |             |                        |         |
| 240      |                        |            |             |                        |         |
| 241      |                        |            |             |                        |         |
| 242      |                        |            |             |                        |         |
| 243      |                        |            |             |                        |         |
| 244      |                        |            |             |                        |         |
| 245      |                        |            |             |                        |         |
| 246      |                        |            |             |                        |         |
| 247      |                        |            |             |                        |         |
| 248      |                        |            |             |                        |         |
| 249      |                        |            |             |                        |         |
| 250      |                        |            |             |                        |         |
| 251      |                        |            |             |                        |         |
| 252      |                        |            |             |                        |         |
| 253      |                        |            |             |                        |         |
| 254      |                        |            |             |                        |         |
| 255      |                        |            |             |                        |         |
| 256      |                        |            |             |                        |         |
| 257      |                        |            |             |                        |         |
| 258      |                        |            |             |                        |         |
| 259      |                        |            |             |                        |         |
| 260      |                        |            |             |                        |         |
| 261      |                        |            |             |                        |         |
| 262      |                        |            |             |                        |         |
| 263      |                        |            |             |                        |         |
| 264      |                        |            |             |                        |         |
| 265      |                        |            |             |                        |         |
| 266      |                        |            |             |                        |         |
| 267      |                        |            |             |                        |         |
| 268      |                        |            |             |                        |         |
| 269      |                        |            |             |                        |         |
| 270      |                        |            |             |                        |         |
| 271      |                        |            |             |                        |         |
| 272      |                        |            |             |                        |         |
| 273      |                        |            |             |                        |         |
| 274      |                        |            |             |                        |         |
| 275      |                        |            |             |                        |         |
| 276      |                        |            |             |                        |         |
| 277      |                        |            |             |                        |         |
| 278      |                        |            |             |                        |         |
| 279      |                        |            |             |                        |         |
| 280      |                        |            |             |                        |         |
| 281      |                        |            |             |                        |         |
| 282      |                        |            |             |                        |         |
| 283      |                        |            |             |                        |         |
| 284      |                        |            |             |                        |         |
| 285      |                        |            |             |                        |         |
| 286      |                        |            |             |                        |         |
| 287      |                        |            |             |                        |         |
| 288      |                        |            |             |                        |         |
| 289      |                        |            |             |                        |         |
| 290      |                        |            |             |                        |         |
| 291      |                        |            |             |                        |         |
| 292      |                        |            |             |                        |         |
| 293      |                        |            |             |                        |         |
| 294      |                        |            |             |                        |         |
| 295      |                        |            |             |                        |         |
| 296      |                        |            |             |                        |         |
| 297      |                        |            |             |                        |         |
| 298      |                        |            |             |                        |         |
| 299      |                        |            |             |                        |         |
| 300      |                        |            |             |                        |         |
| 301      |                        |            |             |                        |         |
| 302      |                        |            |             |                        |         |
| 303      |                        |            |             |                        |         |
| 304      |                        |            |             |                        |         |
| 305      |                        |            |             |                        |         |
| 306      |                        |            |             |                        |         |
| 307      |                        |            |             |                        |         |
| 308      |                        |            |             |                        |         |
| 309      |                        |            |             |                        |         |
| 310      |                        |            |             |                        |         |
| 311      |                        |            |             |                        |         |
| 312      |                        |            |             |                        |         |
| 313      |                        |            |             |                        |         |
| 314      |                        |            |             |                        |         |
| 315      |                        |            |             |                        |         |
| 316      |                        |            |             |                        |         |
| 317      |                        |            |             |                        |         |
| 318      |                        |            |             |                        |         |
| 319      |                        |            |             |                        |         |
| 320      |                        |            |             |                        |         |
| 321      |                        |            |             |                        |         |
| 322      |                        |            |             |                        |         |
| 323      |                        |            |             |                        |         |
| 324      |                        |            |             |                        |         |
| 325      |                        |            |             |                        |         |
| 326      |                        |            |             |                        |         |
| 327      |                        |            |             |                        |         |
| 328      |                        |            |             |                        |         |
| 329      |                        |            |             |                        |         |
| 330      |                        |            |             |                        |         |
| 331      |                        |            |             |                        |         |
| 332      |                        |            |             |                        |         |
| 333      |                        |            |             |                        |         |
| 334      |                        |            |             |                        |         |
| 335      |                        |            |             |                        |         |
| 336      |                        |            |             |                        |         |
| 337      |                        |            |             |                        |         |
| 338      |                        |            |             |                        |         |
| 339      |                        |            |             |                        |         |
| 340      |                        |            |             |                        |         |
| 341      |                        |            |             |                        |         |
| 342      |                        |            |             |                        |         |
| 343      |                        |            |             |                        |         |
| 344      |                        |            |             |                        |         |
| 345      |                        |            |             |                        |         |
| 346      |                        |            |             |                        |         |
| 347      |                        |            |             |                        |         |
| 348      |                        |            |             |                        |         |
| 349      |                        |            |             |                        |         |
| 350      |                        |            |             |                        |         |
| 351      |                        |            |             |                        |         |
| 352      |                        |            |             |                        |         |
| 35       |                        |            |             |                        |         |

BOREHOLE NUMBER

19

FIGURE

F-1

| Project  | Fenelon Landfill       | Drill Type | Acker AD II | Ground Elevation       | 265.2   |
|----------|------------------------|------------|-------------|------------------------|---------|
| Location | lot 15, con 4, Fenelon | Technician | D. Hamilton | Static Water Elevation | -       |
| Date     | December 1, 1993       | Contractor | SSF College | Elevation Datum        | mASL    |
| DEPTH    | INFERRED STRATIGRAPHY  | MONITOR    | SAMPLE      |                        | REMARKS |
| (m)      | Description            | Symbol     | #           | Type                   | N       |
| 0        | Organics               |            |             |                        |         |
|          | FINE SAND              |            | 1           | AS                     | -       |
| 1        |                        |            |             |                        |         |
|          |                        |            | 2           | SS                     | 3       |
| 2        |                        |            |             |                        |         |
|          |                        |            | 3           | SS                     | 25      |
| 3        | SAND & GRAVEL          |            |             |                        |         |
|          |                        |            | 4           | SS                     | 24      |
| 4        |                        |            |             |                        |         |
|          |                        |            | 5           | SS                     | 19      |
| 5        |                        |            |             |                        |         |
|          |                        |            | 6           | SS                     | 50      |
| 6        |                        |            |             |                        |         |
|          |                        |            | 7           | SS                     | 53      |
| 7        |                        |            |             |                        |         |
|          |                        |            |             |                        |         |
| 8        |                        |            |             |                        |         |
|          |                        |            |             |                        |         |
| 9        |                        |            |             |                        |         |

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fenlog

COUNTY OF VICTORIA

TRANSPORTATION AND PUBLIC WORKS DEPARTMENT

BOREHOLE NUMBER

19

FIGURE

F-1a

| Project  | Fenelon Landfill              | Drill Type | Acker AD II | Ground Elevation       | 265.2   |
|----------|-------------------------------|------------|-------------|------------------------|---------|
| Location | lot 15, con 4, Fenelon        | Technician | D. Hamilton | Static Water Elevation | -       |
| Date     | December 1, 1993              | Contractor | SSF College | Elevation Datum        | mASL    |
| DEPTH    | INFERRED STRATIGRAPHY         | MONITOR    | SAMPLE      |                        | REMARKS |
| (m)      | Description                   | Symbol     | #           | Type                   | N       |
| 10       | SAND & GRAVEL                 |            |             |                        |         |
|          |                               |            | 8           | SS                     | 53      |
| 11       |                               |            |             |                        |         |
|          |                               |            | 9           | SS                     | 32      |
| 12       |                               |            |             |                        |         |
|          |                               |            | 10          | SS                     | 39      |
| 13       |                               |            |             |                        |         |
|          |                               |            | 11          | SS                     | 33      |
| 14       |                               |            |             |                        |         |
|          |                               |            | 12          | SS                     | 18      |
| 15       |                               |            |             |                        |         |
|          |                               |            |             |                        |         |
| 16       |                               |            |             |                        |         |
|          |                               |            |             |                        |         |
| 17       | TILL                          |            |             |                        |         |
|          | end of borehole (17.0 metres) |            |             |                        |         |
| 18       |                               |            |             |                        |         |
|          |                               |            |             |                        |         |
| 19       |                               |            |             |                        |         |

See Table 4 for installation details

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fenlog

COUNTY OF VICTORIA

TRANSPORTATION AND PUBLIC WORKS DEPARTMENT

BOREHOLE NUMBER

20

FIGURE

F-1

|          |                        |            |             |                        |       |
|----------|------------------------|------------|-------------|------------------------|-------|
| Project  | Fenelon Landfill       | Drill Type | backhoe     | Ground Elevation       | 264.4 |
| Location | lot 15, con 4, Fenelon | Technician | D. Hamilton | Static Water Elevation | -     |
| Date     | July, 1993             | Contractor | Shamrock    | Elevation Datum        | mASL  |

| DEPTH<br>(m)                         | INFERRED STRATIGRAPHY               |        | MONITOR | SAMPLE |      |    | REMARKS |
|--------------------------------------|-------------------------------------|--------|---------|--------|------|----|---------|
|                                      | Description                         | Symbol |         | #      | type | R' |         |
| 0                                    | refuse and native sands/daily cover |        |         |        |      |    |         |
| 1                                    |                                     |        |         |        |      |    |         |
| 2                                    |                                     |        |         |        |      |    |         |
| 3                                    |                                     |        |         |        |      |    |         |
| 4                                    |                                     |        |         |        |      |    |         |
| 5                                    | end of borehole (5.12 metres)       |        |         |        |      |    |         |
| 6                                    |                                     |        |         |        |      |    |         |
| 7                                    |                                     |        |         |        |      |    |         |
| 8                                    |                                     |        |         |        |      |    |         |
| 9                                    |                                     |        |         |        |      |    |         |
| See Table 4 for installation details |                                     |        |         |        |      |    |         |

24-Nov-95

fenlog

COUNTY OF VICTORIA

TRANSPORTATION AND PUBLIC WORKS DEPARTMENT

BOREHOLE NUMBER

21

FIGURE

F-1

|          |                        |            |             |                        |       |
|----------|------------------------|------------|-------------|------------------------|-------|
| Project  | Fenelon Landfill       | Drill Type | backhoe     | Ground Elevation       | 262.9 |
| Location | lot 15, con 4, Fenelon | Technician | D. Hamilton | Static Water Elevation | -     |
| Date     | July, 1993             | Contractor | Shamrock    | Elevation Datum        | mASL  |

| DEPTH<br>(m)                         | INFERRED STRATIGRAPHY               |        | MONITOR | SAMPLE |      |    | REMARKS |
|--------------------------------------|-------------------------------------|--------|---------|--------|------|----|---------|
|                                      | Description                         | Symbol |         | #      | type | R' |         |
| 0                                    | refuse and native sands/daily cover |        |         |        |      |    |         |
| 1                                    |                                     |        |         |        |      |    |         |
| 2                                    |                                     |        |         |        |      |    |         |
| 3                                    | end of borehole (2.5 metres)        |        |         |        |      |    |         |
| 4                                    |                                     |        |         |        |      |    |         |
| 5                                    |                                     |        |         |        |      |    |         |
| 6                                    |                                     |        |         |        |      |    |         |
| 7                                    |                                     |        |         |        |      |    |         |
| 8                                    |                                     |        |         |        |      |    |         |
| 9                                    |                                     |        |         |        |      |    |         |
| See Table 4 for installation details |                                     |        |         |        |      |    |         |

24-Nov-95

fenlog

COUNTY OF VICTORIA

TRANSPORTATION AND PUBLIC WORKS DEPARTMENT

# WATER WELL RECORD

Shad

1. PRINT ONLY IN SPACES PROVIDED

1. ENTER ☒ CORRECT BOX WHERE APPLICABLE

|                                         |  |                                                 |                                   |                                      |
|-----------------------------------------|--|-------------------------------------------------|-----------------------------------|--------------------------------------|
| COUNTY OR DISTRICT<br>VICTORIA          |  | TOWNSHIP BOROUGH CITY TOWN VILLAGE<br>FINLAYSON | CON. BLOCK TRACT SURVEY ETC<br>IV | LOT<br>16                            |
| OWNER (SURNAME FIRST)<br>C. H. VICTORIA |  | ADDRESS<br>9000 16th Avenue S.E. Victoria       |                                   | DATE COMPLETED<br>DAY 26 MO 04 YR 20 |

OFFICE

WASTE MANUFACTURING

K4U 5 R 2

## LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

| LOG OF OVERBURDEN AND BEDROCK ENCOUNTERED |                      |                      |                     |              |    |
|-------------------------------------------|----------------------|----------------------|---------------------|--------------|----|
| GENERAL COLOUR                            | MOST COMMON MATERIAL | OTHER MATERIALS      | GENERAL DESCRIPTION | DEPTH - FEET |    |
|                                           |                      |                      |                     | FROM         | TO |
| BROWN                                     | SAND-                | STONKS               | LOOSE               | 0            | 19 |
| BROWN                                     | SAND                 | SAND                 | FINE                | 1            | 27 |
| - GREY & BROWN "                          | "                    | CLAY                 | FINE-APP            | 28           | 37 |
| GRAY                                      | CLAY                 | STONKS               | TILL                | 39           | 41 |
| GRAY                                      | CLAY                 | SAND                 | LOOSE               | 41           | 52 |
| GREEN                                     | LIMESTONE            | <del>SEAT</del> SHOT | BROKEN WHATHAD Rock | 52           | 60 |
| GREEN                                     | LIMESTONE            |                      |                     | 60           | 66 |
|                                           |                      |                      |                     |              |    |
|                                           |                      |                      |                     |              |    |
|                                           |                      |                      |                     |              |    |
|                                           |                      |                      |                     |              |    |
|                                           |                      |                      |                     |              |    |
|                                           |                      |                      |                     |              |    |

JUN 23 1998

JUN 03 1998

| <b>WATER RECORD</b>              |                                     |       |                          |          |  |
|----------------------------------|-------------------------------------|-------|--------------------------|----------|--|
| <b>WATER FOUND<br/>AT - FEET</b> | <b>KIND OF WATER</b>                |       |                          |          |  |
| 52-60                            | <input checked="" type="checkbox"/> | FRESH | <input type="checkbox"/> | SULPHUR  |  |
|                                  | <input type="checkbox"/>            | SALTY | <input type="checkbox"/> | MINERALS |  |
|                                  | <input type="checkbox"/>            |       | <input type="checkbox"/> | GAS      |  |
|                                  | <input type="checkbox"/>            | FRESH | <input type="checkbox"/> | SULPHUR  |  |
|                                  | <input type="checkbox"/>            | SALTY | <input type="checkbox"/> | MINERALS |  |
|                                  | <input type="checkbox"/>            |       | <input type="checkbox"/> | GAS      |  |
|                                  | <input type="checkbox"/>            | FRESH | <input type="checkbox"/> | SULPHUR  |  |
|                                  | <input type="checkbox"/>            | SALTY | <input type="checkbox"/> | MINERALS |  |
|                                  | <input type="checkbox"/>            |       | <input type="checkbox"/> | GAS      |  |
|                                  | <input type="checkbox"/>            | FRESH | <input type="checkbox"/> | SULPHUR  |  |
|                                  | <input type="checkbox"/>            | SALTY | <input type="checkbox"/> | MINERALS |  |
|                                  | <input type="checkbox"/>            |       | <input type="checkbox"/> | GAS      |  |

| CASING & OPEN HOLE RECORD |                                                                                                                                                                                                            |                             |              |    |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------|----|
| INSIDE<br>DIAM.<br>INCHES | MATERIAL                                                                                                                                                                                                   | WELL<br>THICKNESS<br>INCHES | DEPTH - FEET |    |
|                           |                                                                                                                                                                                                            |                             | FROM         | TO |
| 6 1/4                     | <input checked="" type="checkbox"/> STEEL<br><input checked="" type="checkbox"/> GALVANIZED<br><input type="checkbox"/> CONCRETE<br><input type="checkbox"/> OPEN HOLE<br><input type="checkbox"/> PLASTIC | 138                         | 0            | 60 |
| 6 1/2                     | <input checked="" type="checkbox"/> STEEL<br><input checked="" type="checkbox"/> GALVANIZED<br><input type="checkbox"/> CONCRETE<br><input type="checkbox"/> OPEN HOLE<br><input type="checkbox"/> PLASTIC |                             | 60           | 66 |
|                           | <input checked="" type="checkbox"/> STEEL<br><input checked="" type="checkbox"/> GALVANIZED<br><input type="checkbox"/> CONCRETE<br><input type="checkbox"/> OPEN HOLE<br><input type="checkbox"/> PLASTIC |                             |              |    |

|        |                                 |                           |        |
|--------|---------------------------------|---------------------------|--------|
| SCREEN | SILL-S. OF OPENING<br>SLOT NO 1 | SHAPED IN<br>O3R          | LENGTH |
|        | MATERIAL AND TYPE               | DEPTH TO TOP<br>OF SCREEN | FEET   |

| PLUGGING & SEALING RECORD |    |                   |                                  |
|---------------------------|----|-------------------|----------------------------------|
| DEPTH SET AT - FEET       |    | MATERIAL AND TYPE | (COMMENT ABOVE: LEAD PEGS, ETC.) |
| FROM                      | TO |                   |                                  |
| 0                         | 12 | BEN TOBARK        |                                  |
|                           |    |                   |                                  |
|                           |    |                   |                                  |
|                           |    |                   |                                  |
|                           |    |                   |                                  |
|                           |    |                   |                                  |

|                                                                           |                                          |                                             |                                             |                          |                                                                                             |                                                                           |  |
|---------------------------------------------------------------------------|------------------------------------------|---------------------------------------------|---------------------------------------------|--------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|--|
| PUMPING TEST                                                              | PUMPING TEST METHOD                      |                                             | PUMPING RATE                                |                          | DURATION OF PUMPING                                                                         |                                                                           |  |
|                                                                           | <input checked="" type="checkbox"/> PUMP | <input checked="" type="checkbox"/> DRAINER | 5.5                                         |                          | CPM                                                                                         | 3 HOURS                                                                   |  |
|                                                                           | MIN                                      |                                             |                                             |                          |                                                                                             |                                                                           |  |
|                                                                           | STATIC LEVEL                             |                                             | WATER LEVEL END OF PUMPING                  |                          | <input checked="" type="checkbox"/> PUMPING<br><input checked="" type="checkbox"/> RECOVERY |                                                                           |  |
|                                                                           | 14'5" 41                                 |                                             | 18 MINUTES 30 MINUTES 45 MINUTES 60 MINUTES |                          | 41 41                                                                                       |                                                                           |  |
| FEET                                                                      |                                          | FEET                                        |                                             | FEET                     |                                                                                             | FEET                                                                      |  |
| IF FLOWING<br>GIVE RATE                                                   |                                          | PUMP INTAKE SET AT                          |                                             | WATER AT END OF TEST     |                                                                                             |                                                                           |  |
| GPM                                                                       |                                          | 50                                          |                                             | FEET                     |                                                                                             | <input type="checkbox"/> CLEAR <input checked="" type="checkbox"/> CLOUDY |  |
| RECOMMENDED PUMP TYPE                                                     |                                          | RECOMMENDED PUMP SETTING                    |                                             | RECOMMENDED PUMPING RATE |                                                                                             | GPM                                                                       |  |
| <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP |                                          | 60                                          |                                             | 5                        |                                                                                             |                                                                           |  |

|                                              |                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                     |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>FINAL<br/>STATUS<br/>OF WELL</b></p>   | <p><input checked="" type="checkbox"/> WATER SUPPLY<br/> <input type="checkbox"/> OBSERVATION WELL<br/> <input type="checkbox"/> TEST HOLE<br/> <input type="checkbox"/> RECHARGE WELL</p>                                                       | <p><input type="checkbox"/> ABANDONED, INSUFFICIENT SUPPLY<br/> <input type="checkbox"/> ABANDONED POOR QUALITY<br/> <input type="checkbox"/> UNFINISHED<br/> <input type="checkbox"/> DEWATERING</p>                                               |
| <p><b>WATER<br/>USE</b></p>                  | <p><input type="checkbox"/> DOMESTIC<br/> <input type="checkbox"/> STOCK<br/> <input type="checkbox"/> IRRIGATION<br/> <input type="checkbox"/> INDUSTRIAL<br/> <input checked="" type="checkbox"/> OTHER</p>                                    | <p><input type="checkbox"/> COMMERCIAL<br/> <input type="checkbox"/> MUNICIPAL<br/> <input type="checkbox"/> PUBLIC SUPPLY<br/> <input type="checkbox"/> COOLING OR AIR CONDITIONING<br/> <input type="checkbox"/> NOT USED</p>                     |
| <p><b>METHOD<br/>OF<br/>CONSTRUCTION</b></p> | <p><input checked="" type="checkbox"/> CABLE TOOL<br/> <input type="checkbox"/> ROTARY (CONVENTIONAL)<br/> <input type="checkbox"/> ROTARY (REVERSE)<br/> <input type="checkbox"/> ROTARY (AIR)<br/> <input type="checkbox"/> AIR PERCUSSION</p> | <p><input checked="" type="checkbox"/> BORING<br/> <input type="checkbox"/> DIAMOND<br/> <input type="checkbox"/> JETTING<br/> <input checked="" type="checkbox"/> DRIVING<br/> <input type="checkbox"/> DIGGING <input type="checkbox"/> OTHER</p> |

|            |                                    |  |                                   |  |
|------------|------------------------------------|--|-----------------------------------|--|
| CONTRACTOR | NAME OF WELL CONTRACTOR            |  | WELL CONTRACTOR<br>LICENSE NUMBER |  |
|            | BEATWHITE PILLING                  |  | 1376                              |  |
|            | ADDRESS                            |  |                                   |  |
|            | 2211 E. LINCOLN AVE                |  |                                   |  |
|            | NAME OF WELL TECHNICIAN            |  | WELL TECHNICIAN<br>LICENSE NUMBER |  |
|            | GORD BAILEY                        |  | T0222                             |  |
|            | SIGNATURE OF TECHNICIAN/CONTRACTOR |  | EXPIRATION DATE                   |  |
|            |                                    |  | DATE 22 MAY 1980                  |  |

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE INDICATE NORTH BY ARROW

GLEN ANN RD

MARK RD

3100

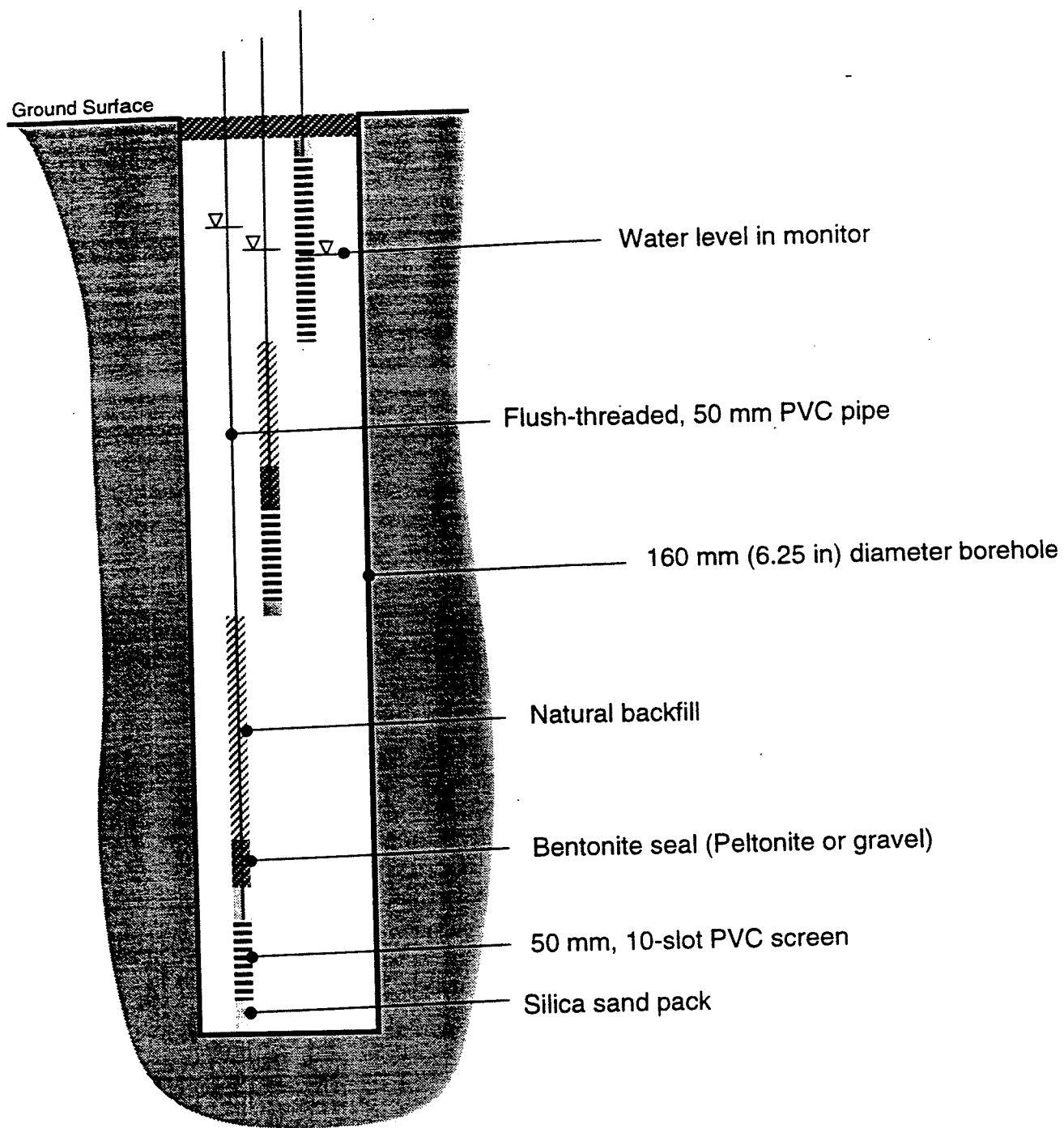
11801

DRILLERS REMARKS

|                 |  |  |        |    |
|-----------------|--|--|--------|----|
| OFFICE USE ONLY |  |  |        | 11 |
|                 |  |  | Fig. 1 |    |



## Explanation of Borehole Log



**BOREHOLE LOG****BH 18 A, B** (Page 1 of 2)BOREHOLE DIAMETER:  
GROUND ELEVATION (18A):  
CASING ELEVATION (18A):160 mm  
267.9 mASL  
268.81 mASLBOREHOLE TYPE: AIR ROTARY  
DRILLING RIG: INGERSOLL-RAND TH55  
CONTRACTOR: G. HART & SONS WELL DRILLING LTD.  
GEOLOGIST: TED RANNIE  
DATE(S) DRILLED: 15 JULY 1999STATIC WATER LEVELS (mASL): 259.81 (18A)  
DATE: 12NOV99 259.81 (18B)

| DATE(S) DRILLED: 15 JULY 1999 |              |                                                                                                                           |           |                     | K (m/s) |                 | SAMPLES           |          |     |      | REMARKS |     |                                                                                                                                                              |
|-------------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------|-----------|---------------------|---------|-----------------|-------------------|----------|-----|------|---------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ELEVATION<br>(mASL)           | DEPTH<br>(m) | DESCRIPTION                                                                                                               | LITHOLOGY | MONITORS<br>18A 18B |         | IN-SITU<br>TEST | HAZEN<br>ESTIMATE | INTERVAL | NO. | TYPE |         | 'N' | GRAIN SIZE<br>ANALYSIS                                                                                                                                       |
| 259.5                         | 8.4          | <b>FINE SAND:</b> Medium brown,<br>minor coarse gravel, saturated below<br>about 3 m.                                     |           |                     |         |                 |                   |          | 1   | GS   | -       | x   | All monitors installed in<br>the same borehole.<br><br>Monitors consist of flush-<br>threaded, 50 mm PVC pipe<br>and 10-slot screen.<br><br>GS = Grab sample |
|                               |              |                                                                                                                           |           |                     |         |                 |                   |          | 2   | GS   | -       |     |                                                                                                                                                              |
|                               |              |                                                                                                                           |           |                     |         |                 |                   |          | 3   | GS   | -       |     |                                                                                                                                                              |
|                               |              |                                                                                                                           |           |                     |         |                 |                   |          | 4   | GS   | -       |     |                                                                                                                                                              |
|                               |              |                                                                                                                           |           |                     |         |                 |                   |          | 5   | GS   | -       |     |                                                                                                                                                              |
|                               |              |                                                                                                                           |           |                     |         |                 |                   |          | 6   | GS   | -       |     |                                                                                                                                                              |
|                               |              |                                                                                                                           |           |                     |         |                 |                   |          | 7   | GS   | -       |     |                                                                                                                                                              |
|                               |              |                                                                                                                           |           |                     |         |                 |                   |          | 8   | GS   | -       |     |                                                                                                                                                              |
|                               |              | 9                                                                                                                         | GS        | -                   |         |                 |                   |          |     |      |         |     |                                                                                                                                                              |
|                               |              | 10                                                                                                                        | GS        | -                   |         |                 |                   |          |     |      |         |     |                                                                                                                                                              |
|                               |              | 11                                                                                                                        | GS        | -                   |         |                 |                   |          |     |      |         |     |                                                                                                                                                              |
|                               |              | 12                                                                                                                        | GS        | -                   |         |                 |                   |          |     |      |         |     |                                                                                                                                                              |
|                               |              | 13                                                                                                                        | GS        | -                   |         |                 |                   |          |     |      |         |     |                                                                                                                                                              |
|                               |              | 14                                                                                                                        | GS        | -                   |         |                 |                   |          |     |      |         |     |                                                                                                                                                              |
| 251.9                         | 16.0         | <b>GRAVELLY SAND:</b><br>Medium brown,<br>loose, poorly sorted, wet.                                                      |           |                     |         |                 |                   |          |     |      |         |     |                                                                                                                                                              |
| 245.5                         | 22.4         | <b>FINE SAND:</b> Medium brown,<br>minor coarse gravel, saturated.                                                        |           |                     |         |                 |                   |          |     |      |         |     |                                                                                                                                                              |
|                               |              | <b>GRAVELLY SAND:</b><br>Medium grey, loose, less fine material<br>than above unit, moderately well<br>sorted, saturated. |           |                     |         |                 |                   |          |     |      |         |     |                                                                                                                                                              |

HYDROGEOLOGICAL STUDY, PHASE 3  
FENELON LANDFILL  
VICTORIA COUNTY, ONTARIO

Middle Earth Hydrogeology Inc.

**BOREHOLE LOG****BH 18 A, B** (Page 2 of 2)

BOREHOLE TYPE: AIR ROTARY  
DRILLING RIG: INGERSOLL-RAND TH55  
CONTRACTOR: G. HART & SONS WELL DRILLING LTD.  
GEOLOGIST: TED RANNIE  
DATE(S) DRILLED: 15 JULY 1999

BOREHOLE DIAMETER: 100 mm  
GROUND ELEVATION (18A): 267.9 mASL  
CASING ELEVATION (18A): 268.81 mASL  
STATIC WATER LEVELS (mASL): 259.81 (18A)  
DATE: 12NOV99 259.81 (18B)

| DATE(S) DRILLED: 15 JULY 1999 |                   | ELEVATION<br>(mASL) | DEPTH<br>(m) | DESCRIPTION                                                          | LITHOLOGY                                                                         | MONITORS<br><br>18A                                                               | K (m/s)            |     | SAMPLES |     |                        |    | REMARKS                                                                                                                                                      |   |
|-------------------------------|-------------------|---------------------|--------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|-----|---------|-----|------------------------|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| IN-SITU<br>TEST               | HAZEN<br>ESTIMATE |                     |              |                                                                      |                                                                                   |                                                                                   | INTERVAL           | NO. | TYPE    | 'N' | GRAIN SIZE<br>ANALYSIS |    |                                                                                                                                                              |   |
|                               |                   |                     |              |                                                                      |                                                                                   |                                                                                   |                    |     |         |     |                        |    |                                                                                                                                                              |   |
| 245.1                         | 22.9              |                     |              | <b>GRAVELLY SAND:</b><br>Medium brown,<br>loose, poorly sorted, wet. |  |  |                    |     |         | 14  | GS                     | -  | All monitors installed in<br>the same borehole.<br><br>Monitors consist of flush-<br>threaded, 50 mm PVC pipe<br>and 10-slot screen.<br><br>GS = Grab sample |   |
|                               |                   |                     |              |                                                                      |                                                                                   |                                                                                   |                    |     |         |     | 15                     | GS |                                                                                                                                                              | - |
|                               |                   |                     |              | <b>LIMESTONE:</b> Medium grey,<br>fractured, aphanitic.              |                                                                                   |                                                                                   |                    |     |         |     | 16                     | GS |                                                                                                                                                              | - |
|                               |                   |                     |              |                                                                      |                                                                                   |                                                                                   |                    |     |         |     | 17                     | GS |                                                                                                                                                              | - |
|                               |                   |                     |              |                                                                      |                                                                                   |                                                                                   |                    |     |         |     | 18                     | GS |                                                                                                                                                              | - |
|                               |                   |                     |              | Borehole depth = 27.1 m                                              |                                                                                   |                                                                                   | 2x10 <sup>-5</sup> |     |         |     |                        |    |                                                                                                                                                              |   |

HYDROGEOLOGICAL STUDY, PHASE 3  
FENELON LANDFILL  
VICTORIA COUNTY, ONTARIO



Middle Earth Hydrogeology Inc.

**BH 22** (Page 1 of 1)

BOREHOLE TYPE: AIR ROTARY  
 DRILLING RIG: INGERSOLL-RAND TH55  
 CONTRACTOR: G. HART & SONS WELL DRILLING LTD.  
 GEOLOGIST: TED RANNIE  
 DATE(S) DRILLED: 15 JULY 1999

|                         |             |
|-------------------------|-------------|
| BOREHOLE DIAMETER:      | 160 mm      |
| GROUND ELEVATION (22A): | 263.5 mASL  |
| CASING ELEVATION (22A): | 264.43 mASL |

|                             |              |
|-----------------------------|--------------|
| STATIC WATER LEVELS (mASL): | 260.31 (22)  |
| DATE: 12NOV99               | 260.35 (22A) |
|                             | 260.39 (22P) |

[illegible]

## BH 23 (Page 1 of 1)

|                             |              |
|-----------------------------|--------------|
| BOREHOLE DIAMETER:          | 100 mm       |
| GROUND ELEVATION (23A):     | 260.2 mASL   |
| CASING ELEVATION (23A):     | 261.45 mASL  |
| STATIC WATER LEVELS (mASL): | 259.38 (23)  |
| DATE: 12NOV99               | 259.32 (23A) |
|                             | 259.33 (23B) |

**HYDROGEOLOGICAL STUDY, PHASE 3  
FENELON LANDFILL  
VICTORIA COUNTY, ONTARIO**



**Middle Earth Hydrogeology Inc.**

# BOREHOLE LOG

BH 24 (Page 1 of 1)

BOREHOLE DIAMETER: 160 mm  
GROUND ELEVATION: 262.4 mASL  
CASING ELEVATION: 263.33 mASL

BOREHOLE TYPE: AIR ROTARY  
DRILLING RIG: INGERSOLL-RAND TH55  
CONTRACTOR: G. HART & SONS WELL DRILLING LTD.  
GEOLOGIST: TED RANNIE  
DATE(S) DRILLED: 13 JULY 1999

STATIC WATER LEVELS (mASL): 260.38  
DATE: 29JUL99

| ELEVATION<br>(mASL) | DEPTH<br>(m) | DESCRIPTION                                   | LITHOLOGY         | MONITOR                                | K (m/s)         |                   | SAMPLES  |     |      |     |                        | REMARKS                                                                                        |
|---------------------|--------------|-----------------------------------------------|-------------------|----------------------------------------|-----------------|-------------------|----------|-----|------|-----|------------------------|------------------------------------------------------------------------------------------------|
|                     |              |                                               |                   |                                        | IN-SITU<br>TEST | HAZEN<br>ESTIMATE | INTERVAL | NO. | TYPE | 'N' | GRAIN SIZE<br>ANALYSIS |                                                                                                |
| 260.0               | 2.4          | REFUSE AND FILL: Saturated below about 1.5 m. | [Hatched pattern] | [Vertical line with horizontal dashes] |                 |                   |          | 1   | GS   | -   |                        | Monitor consists of flush-threaded, 50 mm PVC pipe and 10-slot screen.<br><br>GS = Grab sample |
| 259.7               | 2.7          | PEAT: Dark brown, saturated.                  |                   |                                        |                 |                   |          | 2   | GS   | -   |                        |                                                                                                |
|                     |              | FINE SAND: Medium grey, saturated.            |                   |                                        |                 |                   |          | 3   | GS   | -   |                        |                                                                                                |
|                     |              | Borehole depth = 4.9 m                        |                   |                                        |                 |                   |          |     |      |     |                        |                                                                                                |



only in spaces provided.  
Mark correct box with a checkmark, where applicable.

18A, B

|                                           |                                                                             |                                                     |                  |
|-------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------|------------------|
| County or District<br><b>Victoria</b>     | Township/Borough/City/Town/Village<br><b>Fenelon (Fenelon Landfill #25)</b> | Can block tract survey, etc.<br><b>4</b>            | Lot<br><b>17</b> |
| Owner's surname<br><b>Victoria County</b> | First Name                                                                  | Address<br><b>P.O. Box 9000 Lindsay, ON K9V 5R8</b> |                  |
|                                           |                                                                             | Date completed<br><b>16 07 99</b>                   | day month year   |

| LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions) |                      |                 |                     |              |    |
|------------------------------------------------------------|----------------------|-----------------|---------------------|--------------|----|
| General colour                                             | Most common material | Other materials | General description | Depth - feet |    |
|                                                            |                      |                 |                     | From         | To |
| Brown                                                      | sand                 |                 |                     | 0            | 4  |
| Brown                                                      | sandy clay           |                 |                     | 4            | 7  |
| Brown                                                      | sand                 |                 |                     | 7            | 14 |
| Brown                                                      | sand & gravel        |                 |                     | 14           | 25 |
| Brown                                                      | sandy clay           | gravel          |                     | 25           | 31 |
| Brown                                                      | sand & gravel        |                 | wet                 | 31           | 45 |
| Brown                                                      | sand                 |                 | wet                 | 45           | 54 |
| Brown                                                      | sand & gravel        |                 | wet                 | 54           | 75 |
| Grey                                                       | limestone boulders   | sand & gravel   | wet                 | 75           | 79 |
| Grey                                                       | limestone            |                 |                     | 79           | 89 |

| WATER RECORD          |                                                                                                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water found at - feet | Kind of water                                                                                                                                                       |
| 84-89                 | <input type="checkbox"/> Fresh <input type="checkbox"/> Sulphur<br><input type="checkbox"/> Salty <input type="checkbox"/> Minerals<br><input type="checkbox"/> Gas |
| 55-60                 | <input type="checkbox"/> Fresh <input type="checkbox"/> Sulphur<br><input type="checkbox"/> Salty <input type="checkbox"/> Minerals<br><input type="checkbox"/> Gas |

| CASING & OPEN HOLE RECORD |                                                                                                                                                                                                 |                       |              |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|
| Inside diam inches        | Material                                                                                                                                                                                        | Wall thickness inches | Depth - feet |
|                           |                                                                                                                                                                                                 |                       | From To      |
|                           | <input type="checkbox"/> Steel<br><input type="checkbox"/> Galvanized<br><input type="checkbox"/> Concrete<br><input type="checkbox"/> Open hole<br><input type="checkbox"/> Plastic            |                       |              |
| 2                         | Sch 40                                                                                                                                                                                          |                       | +3 84        |
|                           |                                                                                                                                                                                                 |                       | +3 55        |
| 6 1/2                     | <input checked="" type="checkbox"/> Steel<br><input type="checkbox"/> Galvanized<br><input type="checkbox"/> Concrete<br><input type="checkbox"/> Open hole<br><input type="checkbox"/> Plastic | .188                  | +3 7 1/2     |

| Size of opening (Bolt No.) | Diameter | Length                 |
|----------------------------|----------|------------------------|
|                            | 2 inches | 5 / 5 feet             |
| Material and type          |          | Depth at top of screen |
| PVC                        |          | 84 / 55 feet           |

| PLUGGING & SEALING RECORD              |                                                   |       |
|----------------------------------------|---------------------------------------------------|-------|
| <input type="checkbox"/> Annular space | <input type="checkbox"/> Abandonment              |       |
| Depth set at - feet                    | Material and type (Cement grout, bentonite, etc.) |       |
| From To                                |                                                   |       |
| 89 89 1/2                              | silica sand                                       |       |
| 81 1/2 79                              | peltonite                                         |       |
| 79 60                                  | sand fill                                         |       |
| 60 52                                  | silica sand                                       | #cont |

| PUMPING TEST | Pumping test method                                            | Pumping rate               | Duration of pumping                                                                                               |
|--------------|----------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------|
|              | <input type="checkbox"/> Pump <input type="checkbox"/> Baler   | GPM                        | Hours Mins                                                                                                        |
|              | Static level                                                   | Water level end of pumping | Water levels during                                                                                               |
|              | 29 1/2 feet                                                    |                            | <input type="checkbox"/> Pumping <input type="checkbox"/> Recovery<br>15 minutes 30 minutes 45 minutes 60 minutes |
|              | If flowing give rate                                           | Pump intake set at         | Water at end of test                                                                                              |
|              | GPM                                                            | feet                       | <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy                                                    |
|              | Recommended pump type                                          | Recommended pump setting   | Recommended pump rate                                                                                             |
|              | <input type="checkbox"/> Shallow <input type="checkbox"/> Deep | feet                       | GPM                                                                                                               |

| FINAL STATUS OF WELL                             |                                                         |                                           |
|--------------------------------------------------|---------------------------------------------------------|-------------------------------------------|
| <input type="checkbox"/> Water supply            | <input type="checkbox"/> Abandoned, insufficient supply | <input type="checkbox"/> Unfinished       |
| <input type="checkbox"/> Observation well        | <input type="checkbox"/> Abandoned, poor quality        | <input type="checkbox"/> Replacement well |
| <input type="checkbox"/> Test hole               | <input type="checkbox"/> Abandoned (Other)              |                                           |
| <input type="checkbox"/> Recharge well           | <input type="checkbox"/> Dewatering                     |                                           |
| WATER USE                                        |                                                         |                                           |
| <input type="checkbox"/> Domestic                | <input type="checkbox"/> Commercial                     | <input type="checkbox"/> Not use          |
| <input type="checkbox"/> Stock                   | <input type="checkbox"/> Municipal                      | <input type="checkbox"/> Other            |
| <input type="checkbox"/> Irrigation              | <input type="checkbox"/> Public supply                  |                                           |
| <input type="checkbox"/> Industrial              | <input type="checkbox"/> Cooling & air conditioning     |                                           |
| METHOD OF CONSTRUCTION                           |                                                         |                                           |
| <input type="checkbox"/> Cable tool              | <input type="checkbox"/> Air percussion                 | <input type="checkbox"/> Driving          |
| <input type="checkbox"/> Rotary (conventional)   | <input type="checkbox"/> Boring                         | <input type="checkbox"/> Digging          |
| <input type="checkbox"/> Rotary (reverse)        | <input type="checkbox"/> Diamond                        | <input type="checkbox"/> Other            |
| <input checked="" type="checkbox"/> Rotary (air) | <input type="checkbox"/> Jetting                        |                                           |

| LOCATION OF WELL                                                                         |        |
|------------------------------------------------------------------------------------------|--------|
| In diagram below show distances of well from road and lot line. Indicate north by arrow. |        |
| 52 - 50 peltonite<br>50 - 9 sand fill<br>9 - 6 holeplug                                  |        |
|                                                                                          | 207214 |

|                                                                       |                                              |
|-----------------------------------------------------------------------|----------------------------------------------|
| Name of Well Contractor<br><b>G.Hart &amp; Sons Well Drilling Ltd</b> | Well Contractor's License No.<br><b>2662</b> |
| Address<br><b>Box 850 Fenelon Falls, ON K0M 1N0</b>                   |                                              |
| Name of Well Technician<br><b>Bryan Watson</b>                        | Well Technician's License No.                |
| Signature of Technician<br><i>Bryan Watson</i>                        | Submission date<br>day mo yr                 |

| MINISTRY USE ONLY |  |
|-------------------|--|
|                   |  |



Correct box with a checkmark, where applicable.

22

|                                           |                                                                             |                                                     |                                                                      |
|-------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------|
| County or District<br><b>Victoria</b>     | Township/Borough/City/Town/Village<br><b>Fenelon (Fenelon Landfill #24)</b> | Con block tract survey, etc.<br><b>4</b>            | Lot<br><b>17</b>                                                     |
| Owner's surname<br><b>Victoria County</b> | First Name<br><b></b>                                                       | Address<br><b>P.O. Box 9000 Lindsay, ON K9V 5R8</b> | Date completed<br><b>15</b> day<br><b>07</b> month<br><b>99</b> year |

[illegible]

| WATER RECORD          |                                                                             |                                                                                                                  |
|-----------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Water found at - feet | Kind of water                                                               |                                                                                                                  |
| 13-20                 | <input type="checkbox"/> Fresh<br><input checked="" type="checkbox"/> Salty | <input type="checkbox"/> Sulphur<br><input checked="" type="checkbox"/> Minerals<br><input type="checkbox"/> Gas |
| 36-41                 | <input type="checkbox"/> Fresh<br><input checked="" type="checkbox"/> Salty | <input type="checkbox"/> Sulphur<br><input checked="" type="checkbox"/> Minerals<br><input type="checkbox"/> Gas |
| 57-62                 | <input type="checkbox"/> Fresh<br><input checked="" type="checkbox"/> Salty | <input type="checkbox"/> Sulphur<br><input checked="" type="checkbox"/> Minerals<br><input type="checkbox"/> Gas |
|                       | <input type="checkbox"/> Fresh<br><input type="checkbox"/> Salty            | <input type="checkbox"/> Sulphur<br><input type="checkbox"/> Minerals<br><input type="checkbox"/> Gas            |
|                       | <input type="checkbox"/> Fresh<br><input type="checkbox"/> Salty            | <input type="checkbox"/> Sulphur<br><input type="checkbox"/> Minerals<br><input type="checkbox"/> Gas            |

| CASING & OPEN HOLE RECORD |                                             |                       |              |       |
|---------------------------|---------------------------------------------|-----------------------|--------------|-------|
| Inside diam inches        | Material                                    | Well thickness inches | Depth - feet |       |
|                           |                                             |                       | From         | To    |
| 2                         | <input type="checkbox"/> Steel              | Sch40                 | +3           | 57    |
|                           | <input type="checkbox"/> Galvanized         |                       | +3           | 36    |
|                           | <input type="checkbox"/> Concrete           |                       | +3           | 10    |
|                           | <input type="checkbox"/> Open hole          |                       |              |       |
|                           | <input checked="" type="checkbox"/> Plastic |                       |              |       |
| 6 1/4                     | <input type="checkbox"/> Steel              |                       | +3           | 6 1/4 |
|                           | <input type="checkbox"/> Galvanized         |                       |              |       |
|                           | <input type="checkbox"/> Concrete           |                       |              |       |
|                           | <input type="checkbox"/> Open hole          |                       |              |       |
|                           | <input type="checkbox"/> Plastic            |                       |              |       |
|                           | <input type="checkbox"/> Steel              |                       |              |       |
|                           | <input type="checkbox"/> Galvanized         |                       |              |       |
|                           | <input type="checkbox"/> Concrete           |                       |              |       |
|                           | <input type="checkbox"/> Open hole          |                       |              |       |
|                           | <input type="checkbox"/> Plastic            |                       |              |       |

|        |                               |                                                    |                                 |
|--------|-------------------------------|----------------------------------------------------|---------------------------------|
| SCREEN | Size of opening<br>(Slot No.) | Diameter<br>2 inches                               | Length<br>55/10 <sub>feet</sub> |
|        | Material and type<br>PVC      | Depth at top of screen<br>57/36/10 <sub>feet</sub> |                                 |

| PLUGGING & SEALING RECORD              |     |                                                   |
|----------------------------------------|-----|---------------------------------------------------|
| <input type="checkbox"/> Annular space |     | <input type="checkbox"/> Abandonment              |
| Depth cut in - test                    |     | Material and type (Cement grout, bentonite, etc.) |
| From                                   | To  |                                                   |
| 63                                     | 55½ | silica sand                                       |
| 55½                                    | 53  | peltonite                                         |
| 53                                     | 41  | sand fill *cont'd                                 |

|                                                                                         |                                                                                      |                               |                                                                |                      |                                               |                                   |
|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------|----------------------------------------------------------------|----------------------|-----------------------------------------------|-----------------------------------|
| PUMPING TEST                                                                            | Pumping test method<br><input type="checkbox"/> Pump <input type="checkbox"/> Bailer |                               | Pumping rate<br>GPM                                            |                      | Duration of pumping<br>..... Hours ..... Mins |                                   |
|                                                                                         | Static level                                                                         | Water level<br>end of pumping | Water levels during                                            |                      | <input type="checkbox"/> Pumping              | <input type="checkbox"/> Recovery |
|                                                                                         | 13                                                                                   |                               | 15 minutes                                                     | 30 minutes           | 45 minutes                                    | 60 minutes                        |
|                                                                                         |                                                                                      | test                          | test                                                           | test                 | test                                          | test                              |
|                                                                                         |                                                                                      | if flowing give rate          | Pump intake set at                                             | Water at end of test |                                               |                                   |
|                                                                                         | GPM                                                                                  | test                          | <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy |                      |                                               |                                   |
| Recommended pump type<br><input type="checkbox"/> Shallow <input type="checkbox"/> Deep | Recommended pump setting                                                             | test                          | Recommended pump rate                                          |                      | GPM                                           |                                   |

|                                                                                                                                                                                        |                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>FINAL STATUS OF WELL</b>                                                                                                                                                            |                                                                                                                                                                                                  |
| <input type="checkbox"/> Water supply<br><input type="checkbox"/> Observation well<br><input type="checkbox"/> Test hole<br><input type="checkbox"/> Recharge well                     | <input type="checkbox"/> Abandoned, insufficient supply<br><input type="checkbox"/> Abandoned, poor quality<br><input type="checkbox"/> Abandoned (Other)<br><input type="checkbox"/> Dewatering |
| <input type="checkbox"/> Unfinished<br><input type="checkbox"/> Replacement well                                                                                                       |                                                                                                                                                                                                  |
| <b>WATER USE</b>                                                                                                                                                                       |                                                                                                                                                                                                  |
| <input type="checkbox"/> Domestic<br><input type="checkbox"/> Stock<br><input type="checkbox"/> Irrigation<br><input type="checkbox"/> Industrial                                      | <input type="checkbox"/> Commercial<br><input type="checkbox"/> Municipal<br><input type="checkbox"/> Public supply<br><input type="checkbox"/> Cooling & air conditioning                       |
| <input type="checkbox"/> Not use<br><input type="checkbox"/> Other .....                                                                                                               |                                                                                                                                                                                                  |
| <b>METHOD OF CONSTRUCTION</b>                                                                                                                                                          |                                                                                                                                                                                                  |
| <input type="checkbox"/> Cable tool<br><input type="checkbox"/> Rotary (conventional)<br><input type="checkbox"/> Rotary (reverse)<br><input checked="" type="checkbox"/> Rotary (air) | <input type="checkbox"/> Air percussion<br><input type="checkbox"/> Boring<br><input type="checkbox"/> Diamond<br><input type="checkbox"/> Jetting                                               |
| <input type="checkbox"/> Driving<br><input type="checkbox"/> Digging<br><input type="checkbox"/> Other .....                                                                           |                                                                                                                                                                                                  |

**LOCATION OF WELL**

In diagram below show distances of well from road and lot line.  
Indicate north by arrow.

\* 41-35½ silica sand  
35½-33 peltonite  
33-20 sand fill  
20-9 silica sand  
9 - 6 holeplug

Mark Rd

207202

|                                                                       |  |                                              |
|-----------------------------------------------------------------------|--|----------------------------------------------|
| Name of Well Contractor<br><b>G.Hart &amp; Sons Well Drilling Ltd</b> |  | Well Contractor's License No.<br><b>2662</b> |
| Address<br><b>Box 850 Fenelon Falls, ON KOM 1N0</b>                   |  |                                              |
| Name of Well Technician<br><b>Bryan Watson</b>                        |  | Well Technician's License No.                |
| Signature of Technician/Contractor<br><i>Bryan Watson</i>             |  | Submission date<br>day    mo    yr           |

|                   |  |  |  |  |
|-------------------|--|--|--|--|
| INDUSTRY USE ONLY |  |  |  |  |
|                   |  |  |  |  |

|                                           |                                                                             |                                                     |                                                     |
|-------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| County or District<br><b>Victoria</b>     | Township/Borough/City/Town/Village<br><b>Fenelon (Fenelon Landfill #26)</b> | Can block tract survey, etc.<br><b>4</b>            | Lot<br><b>17</b>                                    |
| Owner's surname<br><b>Victoria County</b> | First Name<br><b>Victoria County</b>                                        | Address<br><b>P.O. Box 9000 Lindsay, ON K9V 5R8</b> | Date completed<br><b>19 07 99</b><br>day month year |

| LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions) |                      |                 |                     |              |    |
|------------------------------------------------------------|----------------------|-----------------|---------------------|--------------|----|
| General colour                                             | Most common material | Other materials | General description | Depth - feet |    |
|                                                            |                      |                 |                     | From         | To |
| Brown                                                      | sand                 | some clay       |                     | 0            | 3  |
| Brown                                                      | sand & gravel        | some clay       |                     | 3            | 8  |
| Brown                                                      | sand & gravel        |                 | wet                 | 8            | 38 |
| Grey                                                       | sand & gravel        |                 | wet                 | 38           | 53 |
| Grey                                                       | limestone            |                 | fractures           | 53           | 63 |
|                                                            |                      |                 |                     |              |    |
|                                                            |                      |                 |                     |              |    |
|                                                            |                      |                 |                     |              |    |
|                                                            |                      |                 |                     |              |    |
|                                                            |                      |                 |                     |              |    |
|                                                            |                      |                 |                     |              |    |
|                                                            |                      |                 |                     |              |    |
|                                                            |                      |                 |                     |              |    |
|                                                            |                      |                 |                     |              |    |

| WATER RECORD          |                                                                                                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water found at - feet | Kind of water                                                                                                                                                       |
| 57-63                 | <input type="checkbox"/> Fresh <input type="checkbox"/> Sulphur<br><input type="checkbox"/> Salty <input type="checkbox"/> Minerals<br><input type="checkbox"/> Gas |
| 35-40                 | <input type="checkbox"/> Fresh <input type="checkbox"/> Sulphur<br><input type="checkbox"/> Salty <input type="checkbox"/> Minerals<br><input type="checkbox"/> Gas |
| 3-12                  | <input type="checkbox"/> Fresh <input type="checkbox"/> Sulphur<br><input type="checkbox"/> Salty <input type="checkbox"/> Minerals<br><input type="checkbox"/> Gas |

| CASING & OPEN HOLE RECORD |                                                                                                                                                                                                 |                       |              |    |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|----|
| Inside diam inches        | Material                                                                                                                                                                                        | Wall thickness inches | Depth - feet |    |
|                           |                                                                                                                                                                                                 |                       | From         | To |
| 2                         | <input type="checkbox"/> Steel<br><input type="checkbox"/> Galvanized<br><input type="checkbox"/> Concrete<br><input type="checkbox"/> Open hole<br><input checked="" type="checkbox"/> Plastic | Sch 40                | +4           | 58 |
|                           |                                                                                                                                                                                                 |                       | +4           | 35 |
|                           |                                                                                                                                                                                                 |                       | +4           | 2  |
| 6 1/2                     | <input type="checkbox"/> Steel<br><input type="checkbox"/> Galvanized<br><input type="checkbox"/> Concrete<br><input type="checkbox"/> Open hole<br><input type="checkbox"/> Plastic            | ,188                  | +4           | 5  |

| Size of opening (Blot No.) | Diameter | Length                 |
|----------------------------|----------|------------------------|
|                            | 2 inches | 5/5/10 feet            |
| Material and type          | PVC      | Depth at top of screen |
|                            |          | 58/35/2 feet           |

| PLUGGING & SEALING RECORD |        |                                                   |
|---------------------------|--------|---------------------------------------------------|
| Annular space             |        | Abandonment                                       |
| Depth set at - feet       |        | Material and type (Cement grout, bentonite, etc.) |
| From                      | To     |                                                   |
| 63                        | 56 1/2 | silica sand                                       |
| 56 1/2                    | 54 1/2 | peltonite                                         |
| 54 1/2                    | 40     | natural fill                                      |
| 40                        | 32 1/2 | silica sand                                       |
| 32 1/2                    | 30     | peltonite                                         |

| PUMPING TEST | Pumping test method                                            | Pumping rate               | Duration of pumping                                            |                                                                    |
|--------------|----------------------------------------------------------------|----------------------------|----------------------------------------------------------------|--------------------------------------------------------------------|
|              | <input type="checkbox"/> Pump <input type="checkbox"/> Sinker  | GPM                        | Hours                                                          | Minutes                                                            |
|              | Static level                                                   | Water level end of pumping | Water levels during                                            | <input type="checkbox"/> Pumping <input type="checkbox"/> Recovery |
|              |                                                                |                            | 15 minutes 30 minutes 45 minutes 60 minutes                    |                                                                    |
|              | 6 feet                                                         | feet                       | feet                                                           | feet                                                               |
|              | If flowing give rate                                           | Pump intake set at         | Water at end of test                                           |                                                                    |
|              | GPM                                                            | feet                       | <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy |                                                                    |
|              | Recommended pump type                                          | Recommended pump setting   | Recommended pump rate                                          |                                                                    |
|              | <input type="checkbox"/> Shallow <input type="checkbox"/> Deep | feet                       | GPM                                                            |                                                                    |

| FINAL STATUS OF WELL                                                                                                                                                                   |                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Water supply<br><input type="checkbox"/> Observation well<br><input type="checkbox"/> Test hole<br><input type="checkbox"/> Recharge well                     | <input type="checkbox"/> Abandoned, insufficient supply<br><input type="checkbox"/> Abandoned, poor quality<br><input type="checkbox"/> Abandoned (Other)<br><input type="checkbox"/> Dewatering |
| <input type="checkbox"/> Unfinished<br><input type="checkbox"/> Replacement well                                                                                                       |                                                                                                                                                                                                  |
| WATER USE                                                                                                                                                                              |                                                                                                                                                                                                  |
| <input type="checkbox"/> Domestic<br><input type="checkbox"/> Stock<br><input type="checkbox"/> Irrigation<br><input type="checkbox"/> Industrial                                      | <input type="checkbox"/> Commercial<br><input type="checkbox"/> Municipal<br><input type="checkbox"/> Public supply<br><input type="checkbox"/> Cooling & air conditioning                       |
| <input type="checkbox"/> Not use<br><input type="checkbox"/> Other                                                                                                                     |                                                                                                                                                                                                  |
| METHOD OF CONSTRUCTION                                                                                                                                                                 |                                                                                                                                                                                                  |
| <input type="checkbox"/> Cable tool<br><input type="checkbox"/> Rotary (conventional)<br><input type="checkbox"/> Rotary (reverse)<br><input checked="" type="checkbox"/> Rotary (air) | <input type="checkbox"/> Air percussion<br><input type="checkbox"/> Boring<br><input type="checkbox"/> Diamond<br><input type="checkbox"/> Jetting                                               |
| <input type="checkbox"/> Driving<br><input type="checkbox"/> Digging<br><input type="checkbox"/> Other                                                                                 |                                                                                                                                                                                                  |

| LOCATION OF WELL                                                                         |  |
|------------------------------------------------------------------------------------------|--|
| In diagram below show distances of well from road and lot line. Indicate north by arrow. |  |
| * 30 - 12 natural fill<br>12 - 2 silica sand                                             |  |
|                                                                                          |  |
| Mark Rd<br>Landfill<br>50'<br>30'<br>12'<br>12'                                          |  |
| 207215                                                                                   |  |

|                                                                       |                                              |
|-----------------------------------------------------------------------|----------------------------------------------|
| Name of Well Contractor<br><b>G.Hart &amp; Sons Well Drilling Ltd</b> | Well Contractor's Licence No.<br><b>2662</b> |
| Address<br><b>Box 850 Fenelon Falls, ON K0M 1N0</b>                   |                                              |
| Name of Well Technician<br><b>Bryan Watson</b>                        | Well Technician's Licence No.                |
| Signature of Technician<br><i>Bryan Watson</i>                        | Submission date<br>day mo yr                 |

| MINISTRY USE ONLY |  |
|-------------------|--|
|                   |  |

**1 - CONTRACTOR'S COPY**

# DRILL HOLE # reinstall MW 6 (2008)

Page 1 of 1

Date Drilled: Dec. 11, 2007  
Rig: CME 55N  
Contractor: Aardvark Drilling Inc.  
Hammer Type: cathead

Location: Fenelon Landfill  
Elevation:  
Co-ord: 873766 E, 4926966 N

Project No. 07-0384-00  
Project: Kawartha Lakes  
Client: City of Kawartha Lakes

| Depth (m) | Sample Type | Recovery Number | Blows/0.15 m | Symbols | SOIL DESCRIPTION           | Well Installation | Moisture Content % |    | Pocket Penetrometer |     | SPT (N)  |     |
|-----------|-------------|-----------------|--------------|---------|----------------------------|-------------------|--------------------|----|---------------------|-----|----------|-----|
|           |             |                 |              |         |                            |                   | Wp                 | WI | kPa                 |     | Blows/ft |     |
|           |             |                 |              |         |                            |                   | 10                 | 30 | 100                 | 200 | 300      | 400 |
| 0         |             |                 |              |         | Ground Surface 0           |                   |                    |    |                     |     |          |     |
|           | Grab        | 1               |              |         | FILL refuse                | Concrete          |                    |    |                     |     |          |     |
| 1         |             |                 |              |         |                            |                   |                    |    |                     |     |          |     |
|           |             |                 |              |         | PEAT black, saturated      |                   |                    |    |                     |     |          |     |
| 2         | SS          | 2               | 5            |         | SAND fine, grey, saturated | Bentonite         |                    |    |                     |     |          |     |
| 3         |             |                 |              |         |                            |                   |                    |    |                     |     |          |     |
|           | SS          | 3               | 28           |         |                            |                   |                    |    |                     |     |          |     |
| 4         |             |                 |              |         |                            |                   |                    |    |                     |     |          |     |
| 5         |             |                 |              |         |                            |                   |                    |    |                     |     |          |     |
| 6         |             |                 |              |         |                            |                   |                    |    |                     |     |          |     |
| 7         |             |                 |              |         |                            |                   |                    |    |                     |     |          |     |

Note: This borehole log has been prepared for geotechnical purposes and does not necessarily contain information suitable for an environmental assessment of the subsurface conditions.

Aardvark Drilling Inc.  
25-C Lewis Road  
Guelph, Ontario

# DRILL HOLE # reinstall MW 6A (2008)

Page 1 of 1

Date Drilled: Dec. 11, 2007  
Rig: CME 55N  
Contractor: Aardvark Drilling Inc.  
Hammer Type: cathead

Location: Fenelon Landfill  
Elevation:  
Co-ord: 673766 E, 4926966 N

Project No. 07-0384-00  
Project: Kawartha Lakes  
Client: City of Kawartha Lakes

| Depth (m) | Sample Type | Recovery Number | Blows/0.15 m | Symbols | SOIL DESCRIPTION           | Well Installation              | Moisture Content % |    | Pocket Penetrometer |     | SPT (N) |     |
|-----------|-------------|-----------------|--------------|---------|----------------------------|--------------------------------|--------------------|----|---------------------|-----|---------|-----|
|           |             |                 |              |         |                            |                                | Wp                 | WI | 100                 | 200 | 300     | 400 |
| 0         |             |                 |              |         | Ground Surface             | Concrete                       |                    |    |                     |     |         |     |
|           |             |                 |              |         | FILL refuse                | Bentonite                      |                    |    |                     |     |         |     |
| 1         |             |                 |              |         |                            | Raised Steel Casing, padlocked |                    |    |                     |     |         |     |
|           |             |                 |              |         | PEAT black, saturated      |                                |                    |    |                     |     |         |     |
| 2         |             |                 |              |         |                            |                                |                    |    |                     |     |         |     |
|           |             |                 |              |         | SAND fine, grey, saturated | #2 Silica Sand                 |                    |    |                     |     |         |     |
| 3         |             |                 |              |         |                            |                                |                    |    |                     |     |         |     |
|           |             |                 |              |         |                            | 2" Slot 10 Screen              |                    |    |                     |     |         |     |
| 4         |             |                 |              |         |                            |                                |                    |    |                     |     |         |     |

Note: This borehole log has been prepared for geotechnical purposes and does not necessarily contain information suitable for an environmental assessment of the subsurface conditions.

Aardvark Drilling Inc.  
25-C Lewis Road  
Guelph, Ontario

# Log of Borehole: NMW#2

**Project No.:** 12793

**Project:** Kawartha Lakes Well (Fenelon)

**Client:** City of Kawartha Lakes

**Location:** 341 Mark Road, Fenelon Twp, ON

**Enclosure:**

**Project Manager:** Raj Kundu



| SUBSURFACE PROFILE |        |                                                               |             | SAMPLE |      |          |              | Well Data | Comments                                |
|--------------------|--------|---------------------------------------------------------------|-------------|--------|------|----------|--------------|-----------|-----------------------------------------|
| Depth              | Symbol | Description                                                   | Depth/Elev. | Number | Type | Recovery | Vapour (ppm) |           |                                         |
| 0 ft<br>0 m        |        | Ground Surface                                                | 0.0         |        |      |          |              |           |                                         |
| 2                  |        | <b>Fill Material</b><br>Dense, dry, brown sandy fill material | 0.0         |        |      | 40       |              |           | Monument Casing                         |
| 4                  |        |                                                               | -4.0        |        |      |          |              |           | Bentonite pellet seal                   |
| 6                  |        | <b>Sand</b><br>Loose, dense, brown sand                       | 4.0         |        |      |          |              |           | sand pack with 3.05 m screening         |
| 8                  |        |                                                               | -8.0        |        |      | 70       |              |           |                                         |
| 10                 |        | <b>Sand</b><br>Loose, wet, brown/grey sand                    | 8.0         |        |      | 80       |              |           |                                         |
| 12                 |        |                                                               | -12.0       |        |      |          |              |           |                                         |
| 14                 |        | <b>Sand</b><br>Loose, wet, brown/grey sand                    | 12.0        |        |      | 80       |              |           |                                         |
| 16                 |        |                                                               |             |        |      |          |              |           | Well depth at 4.88 m<br>End of Borehole |
| 18                 |        |                                                               |             |        |      |          |              |           |                                         |
| 20                 |        |                                                               |             |        |      |          |              |           |                                         |

**Drilled By:** Strata Soil Sampling Inc. T Harris Environmental Management Inc.

**Drill Method:** Geoprobe GM100DT

**Drill Date:** December 18th, 2008

93 Skyway Avenue, Suite 101

Toronto, Ontario

M9W 6N6

**Hole Size:** 10 cm

**Datum:**

**Sheet:** 1 of 1

# Log of Borehole: NMW#1

**Project No.:** 12793

**Project:** Kawartha Lakes Well (Fenelon)

**Client:** City of Kawartha Lakes

**Location:** 341 Mark Road, Fenelon Twp, ON

**Enclosure:**

**Project Manager:** Raj Kundu



| SUBSURFACE PROFILE |        |                                                                |             | SAMPLE |      |          |              | Well Data | Comments                                |
|--------------------|--------|----------------------------------------------------------------|-------------|--------|------|----------|--------------|-----------|-----------------------------------------|
| Depth              | Symbol | Description                                                    | Depth/Elev. | Number | Type | Recovery | Vapour (ppm) |           |                                         |
| 0 ft<br>0 m        |        | Ground Surface                                                 | 0.0         |        |      |          |              |           |                                         |
| 0                  |        | <b>Sand</b><br>Loose, moist, brown sand with gravel inclusions | 0.0         |        |      | 30       |              |           | Monument Casing                         |
| 2                  |        |                                                                |             |        |      |          |              |           |                                         |
| 4                  |        |                                                                | -4.0        |        |      |          |              |           | Bentonite pellet seal                   |
| 4                  |        | <b>Sand</b><br>Loose, moist, dark brown silty sand with peat   | 4.0         |        |      |          |              |           |                                         |
| 6                  |        |                                                                |             |        |      |          |              |           |                                         |
| 8                  |        |                                                                | -8.0        |        |      | 10       |              |           | Sand pack with 3.05 m of screening      |
| 8                  |        | <b>Sand</b><br>Loose, moist, grey silty sand with peat         | 8.0         |        |      |          |              |           |                                         |
| 10                 |        |                                                                |             |        |      |          |              |           |                                         |
| 12                 |        |                                                                | -12.0       |        |      |          |              |           |                                         |
| 12                 |        | <b>Sand</b><br>Loose, wet, grey silty sand                     | 12.0        |        |      | 15       |              |           |                                         |
| 14                 |        |                                                                |             |        |      |          |              |           |                                         |
| 16                 |        |                                                                |             |        |      |          |              |           | Well Depth at 4.88 m<br>End of Borehole |
| 18                 |        |                                                                |             |        |      |          |              |           |                                         |
| 20                 |        |                                                                |             |        |      | 70       |              |           |                                         |

**Drilled By:** Strata Soil Sampling Inc. T Harris Environmental Management Inc.

**Drill Method:** Geoprobe GM100DT

**Drill Date:** December 17th, 2008

93 Skyway Avenue, Suite 101

Toronto, Ontario

M9W 6N6

**Hole Size:** 10 cm

**Datum:**

**Sheet:** 1 of 1

**Well Owner's Information**

First Name: \_\_\_\_\_ Last Name / Organization: **City of Kawartha Lakes** E-mail Address: \_\_\_\_\_  
 Mailing Address (Street Number/Name): **12 Peel St P.O. Box 9000** Municipality: **Lindsay** Province: **ON** Postal Code: **K9V 5R8** Telephone No. (inc. area code): **665 3049/4111**  
☐ Well Constructed by Well Owner

**Well Location**

Address of Well Location (Street Number/Name): \_\_\_\_\_ Township: \_\_\_\_\_ Lot: \_\_\_\_\_ Concession: \_\_\_\_\_  
 County/District/Municipality: \_\_\_\_\_ City/Town/Village: \_\_\_\_\_ Province: **Ontario** Postal Code: \_\_\_\_\_  
 Other: \_\_\_\_\_

UTM Coordinates: Zone: **17** Easting: **067444D** Northing: **493612R** Municipal Plan and Sublot Number: \_\_\_\_\_

**Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)**

| General Colour    | Most Common Material | Other Materials | General Description | Depth (m/ft)  |
|-------------------|----------------------|-----------------|---------------------|---------------|
|                   |                      |                 |                     | From To       |
| <b>Blk.</b>       | <b>Peat</b>          |                 | <b>loose</b>        | <b>0' 4'</b>  |
| <b>Brown/Grey</b> | <b>Sand</b>          |                 | <b>loose</b>        | <b>4' 8'</b>  |
| <b>Grey</b>       | <b>Sand</b>          | <b>Silt</b>     | <b>loose</b>        | <b>8' 15'</b> |
|                   |                      |                 |                     |               |
|                   |                      |                 |                     |               |
|                   |                      |                 |                     |               |
|                   |                      |                 |                     |               |
|                   |                      |                 |                     |               |
|                   |                      |                 |                     |               |
|                   |                      |                 |                     |               |

| Annular Space       |                                          |                                                  | Results of Well Yield Testing |                    |            |                    |
|---------------------|------------------------------------------|--------------------------------------------------|-------------------------------|--------------------|------------|--------------------|
| Depth Set at (m/ft) | Type of Sealant Used (Material and Type) | Volume Placed (m <sup>3</sup> /ft <sup>3</sup> ) | Draw Down                     |                    | Recovery   |                    |
| From To             |                                          |                                                  | Time (min)                    | Water Level (m/ft) | Time (min) | Water Level (m/ft) |
| <b>0' 1'</b>        | <b>Concrete</b>                          |                                                  |                               |                    |            |                    |
| <b>1' 9'</b>        | <b>Ben Seal</b>                          |                                                  |                               |                    |            |                    |
| <b>9' 15'</b>       | <b>Sand</b>                              |                                                  |                               |                    |            |                    |

**Method of Construction**

☐ Cable Tool ☐ Diamond ☐ Public ☐ Commercial ☐ Not used  
☐ Rotary (Conventional) ☐ Jetting ☐ Domestic ☐ Municipal ☐ Dewatering  
☐ Rotary (Reverse) ☐ Driving ☐ Livestock ☒ Test Hole ☒ Monitoring  
☐ Boring ☐ Digging ☐ Irrigation ☐ Cooling & Air Conditioning  
☐ Air percussion ☐ Industrial  
☒ Other, specify **Direct Push** ☐ Other, specify \_\_\_\_\_

| Construction Record - Casing |                                                                          |                        |              | Status of Well                                              |  |
|------------------------------|--------------------------------------------------------------------------|------------------------|--------------|-------------------------------------------------------------|--|
| Inside Diameter (cm/in)      | Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel) | Wall Thickness (cm/in) | Depth (m/ft) |                                                             |  |
|                              |                                                                          |                        | From To      |                                                             |  |
| <b>5.20</b>                  | <b>Pvc</b>                                                               | <b>0.390</b>           | <b>0 10'</b> | <input type="checkbox"/> Water Supply                       |  |
|                              |                                                                          |                        |              | <input type="checkbox"/> Replacement Well                   |  |
|                              |                                                                          |                        |              | <input type="checkbox"/> Test Hole                          |  |
|                              |                                                                          |                        |              | <input type="checkbox"/> Recharge Well                      |  |
|                              |                                                                          |                        |              | <input type="checkbox"/> Dewatering Well                    |  |
|                              |                                                                          |                        |              | <input type="checkbox"/> Observation and/or Monitoring Hole |  |
|                              |                                                                          |                        |              | <input type="checkbox"/> Alteration (Construction)          |  |
|                              |                                                                          |                        |              | <input type="checkbox"/> Abandoned, insufficient Supply     |  |
|                              |                                                                          |                        |              | <input type="checkbox"/> Abandoned, Poor Water Quality      |  |
|                              |                                                                          |                        |              | <input type="checkbox"/> Abandoned, other, specify _____    |  |
|                              |                                                                          |                        |              | <input type="checkbox"/> Other, specify _____               |  |

| Construction Record - Screen |                                       |           |                |
|------------------------------|---------------------------------------|-----------|----------------|
| Outside Diameter (cm/in)     | Material (Plastic, Galvanized, Steel) | Slot No.  | Depth (m/ft)   |
|                              |                                       |           | From To        |
| <b>6.03</b>                  | <b>Pvc</b>                            | <b>10</b> | <b>10' 15'</b> |
|                              |                                       |           |                |
|                              |                                       |           |                |
|                              |                                       |           |                |

| Water Details               |                                                                                                                                                            | Hole Diameter |                  |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------|
| Water found at Depth (m/ft) | Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____ | Depth (m/ft)  | Diameter (cm/in) |
|                             |                                                                                                                                                            | From To       |                  |
| Water found at Depth (m/ft) | Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____ |               |                  |
| Water found at Depth (m/ft) | Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____ |               |                  |
| Water found at Depth (m/ft) | Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____ |               |                  |

**Well Contractor and Well Technician Information**

Business Name of Well Contractor: **Strata Soil Sampling Inc** Well Contractor's Licence No.: **7121411**  
 Business Address (Street Number/Name): **1472 West Beaver Creek** Municipality: **Richmond Hill**  
 Province: **ON** Postal Code: **L4B 1C6** Business E-mail Address: **wrecords@strata-soil.com**  
 Business Telephone No. (inc. area code): **705 764 4304** Name of Well Technician (Last Name, First Name): **Mike Deans**  
 Well Technician's Licence No.: **7129771** Signature of Technician and/or Contractor: \_\_\_\_\_ Date Submitted: **2008/08/11**

**Well owner's information package delivered**  
☐ Yes ☐ No

**Date Package Delivered**  
**Y Y Y Y M M D D**  
**2008 08 07**

**Ministry Use Only**  
**7 81722**  
**2008 08 07**





Ontario

Ministry of  
the Environment

Well Tag No. (Plac

A081555

A 081555

Regulation 903 Ontario Water Resources Act

Well Record

Measurements recorded in: ☒ Metric ☐ Imperial

Page 1 of 1

Well Owner's Information

First Name Last Name / Organization E-mail Address ☐ Well Constructed by Well Owner

Mailing Address (Street Number/Name) City of Kawartha Lakes Municipality Province Postal Code Telephone No. (inc. area code)

26 Francis St. W. P.O. Box 9000 Lindsay ON K9L 1S1 370 532 491 4111

Well Location Address of Well Location (Street Number/Name) Township Lot Concession

Family Landfill (operating) - 241 Main Rd. Township of Lindsay City/Town/Village Province Ontario Postal Code

County/District/Municipality South of the site on the right side of Main Rd. Other

UTM Coordinates Zone Easting Northing Municipal Plan and Sublot Number

NAD 83 17 117 414 184 912 62 25

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

| General Colour | Most Common Material | Other Materials                | General Description | Depth (m/ft) |
|----------------|----------------------|--------------------------------|---------------------|--------------|
|                | Sand                 |                                | Wet                 | 0.00 7.62    |
| Grey           | Sand                 | Gravel                         |                     | 7.62 11.23   |
|                | Mixed fill           | Sand, gravel, limestone debris |                     | 11.23 15.24  |
|                | Silt (fine)          |                                |                     | 15.24 18.29  |
|                | Mixed fill           | Sand, gravel                   |                     | 18.29 20.27  |

Annular Space

| Depth Set at (m/ft) | Type of Sealant Used (Material and Type) | Volume Placed (m <sup>3</sup> /ft <sup>3</sup> ) |
|---------------------|------------------------------------------|--------------------------------------------------|
| 0.00 15.24          | Bestcrete                                |                                                  |
| 15.24 19.26         | Sand                                     |                                                  |
| 19.26 20.27         | Native fill                              |                                                  |

Method of Construction

|                                                    |                                  |                                         |                                                     |                                     |
|----------------------------------------------------|----------------------------------|-----------------------------------------|-----------------------------------------------------|-------------------------------------|
| <input type="checkbox"/> Cable Tool                | <input type="checkbox"/> Diamond | <input type="checkbox"/> Public         | <input type="checkbox"/> Commercial                 | <input type="checkbox"/> Not used   |
| <input type="checkbox"/> Rotary (Conventional)     | <input type="checkbox"/> Jetting | <input type="checkbox"/> Domestic       | <input type="checkbox"/> Municipal                  | <input type="checkbox"/> Dewatering |
| <input type="checkbox"/> Rotary (Reverse)          | <input type="checkbox"/> Driving | <input type="checkbox"/> Livestock      | <input type="checkbox"/> Test Hole                  | <input type="checkbox"/> Monitoring |
| <input type="checkbox"/> Boring                    | <input type="checkbox"/> Digging | <input type="checkbox"/> Irrigation     | <input type="checkbox"/> Cooling & Air Conditioning |                                     |
| <input type="checkbox"/> Air percussion            |                                  | <input type="checkbox"/> Industrial     |                                                     |                                     |
| <input checked="" type="checkbox"/> Other, specify | HS Auger 4-25"                   | <input type="checkbox"/> Other, specify |                                                     |                                     |

Well Use

| Construction Record - Casing                                             | Status of Well                                                         |
|--------------------------------------------------------------------------|------------------------------------------------------------------------|
| Inside Diameter (cm/in)                                                  | <input type="checkbox"/> Water Supply                                  |
| Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel) | <input type="checkbox"/> Replacement Well                              |
| Wall Thickness (cm/in)                                                   | <input type="checkbox"/> Test Hole                                     |
| Depth (m/ft)                                                             | <input type="checkbox"/> Recharge Well                                 |
| From To                                                                  | <input type="checkbox"/> Dewatering Well                               |
| 10.0 Steel 70 +0.91 0.91                                                 | <input checked="" type="checkbox"/> Observation and/or Monitoring Hole |
| 5.0 Plastic 40 +0.91 16.31                                               | <input type="checkbox"/> Alteration (Construction)                     |
|                                                                          | <input type="checkbox"/> Abandoned, Insufficient Supply                |
|                                                                          | <input type="checkbox"/> Abandoned, Poor Water Quality                 |
|                                                                          | <input type="checkbox"/> Abandoned, other, specify                     |
|                                                                          | <input type="checkbox"/> Other, specify                                |

Construction Record - Screen

| Outside Diameter (cm/in) | Material (Plastic, Galvanized, Steel) | Slot No. | Depth (m/ft) |
|--------------------------|---------------------------------------|----------|--------------|
| 6.1                      | Plastic                               | 240      | 16.31 19.26  |

Water Details

| Water found at Depth (m/ft) | Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested | Depth (m/ft)   | Diameter (cm/in) |
|-----------------------------|---------------------------------------------------------------------------------|----------------|------------------|
|                             | <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify            | From To        |                  |
|                             | <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify            | 0.00 8.23 20.0 |                  |
|                             | <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify            | 8.23 20.27 8.9 |                  |

Well Contractor and Well Technician Information

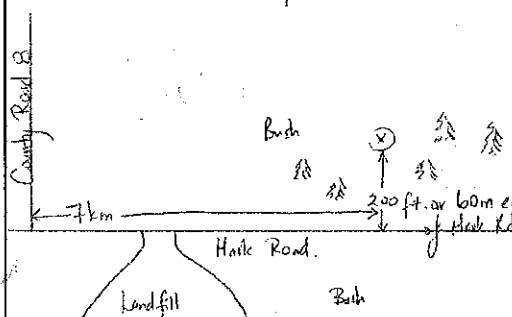
|                                       |                                                 |
|---------------------------------------|-------------------------------------------------|
| Business Name of Well Contractor      | Well Contractor's Licence No.                   |
| All-Taxco Drilling Ltd.               | 714 12 13                                       |
| Business Address (Street Number/Name) | Municipality                                    |
| 3611 Coffey Drive                     | Waterloo                                        |
| Province Postal Code                  | Business E-mail Address                         |
| ON N1A 1Y1                            | alltaxco@golden.net                             |
| Bus. Telephone No. (inc. area code)   | Name of Well Technician (Last Name, First Name) |
| 519 336 6161                          | Grant D.                                        |
| Well Technician's Licence No.         | Signature of Technician and/or Contractor       |
| 1312111                               |                                                 |
| Date Submitted                        |                                                 |
| 3/14/14                               |                                                 |

Results of Well Yield Testing

| After test of well yield, water was:                     | Draw Down    | Recovery           |
|----------------------------------------------------------|--------------|--------------------|
| <input type="checkbox"/> Clear and sand free             | Time (min)   | Water Level (m/ft) |
| <input type="checkbox"/> Other, specify                  | Time (min)   | Water Level (m/ft) |
| If pumping discontinued, give reason:                    | Static Level |                    |
|                                                          | 1            | 1                  |
| Pump intake set at (m/ft)                                | 2            | 2                  |
| Pumping rate (l/min / GPM)                               | 3            | 3                  |
| Duration of pumping                                      | 4            | 4                  |
| hrs + min                                                | 5            | 5                  |
| Final water level end of pumping (m/ft)                  | 10           | 10                 |
| If flowing give rate (l/min / GPM)                       | 15           | 15                 |
| Recommended pump depth (m/ft)                            | 20           | 20                 |
| Recommended pump rate (l/min / GPM)                      | 25           | 25                 |
| Well production (l/min / GPM)                            | 30           | 30                 |
| Disinfected?                                             | 40           | 40                 |
| <input type="checkbox"/> Yes <input type="checkbox"/> No | 50           | 50                 |
|                                                          | 60           | 60                 |

Map of Well Location

Please provide a map below following instructions on the back.



Comments: Tagged well is located on the south side of the Family Landfill site (operating) on the right side of Main Rd.

| Well owner's information                                 | Date Package Delivered | Ministry Use Only |
|----------------------------------------------------------|------------------------|-------------------|
| Package delivered                                        | Y Y Y Y M M D D        | Audit No.         |
| Date Work Completed                                      | D D M M Y Y Y Y        | 2099100           |
| <input type="checkbox"/> Yes <input type="checkbox"/> No |                        | Received          |
|                                                          |                        |                   |



PROJECT: 11-1188-0007

**RECORD OF BOREHOLE: MW26-2**

SHEET 2 OF 2

LOCATION: N ;E

BORING DATE: May 31 - June 2, 2011

DATUM:

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

| DEPTH SCALE<br>METRES | BORING METHOD                   | SOIL PROFILE                                                                                    |             |                       | SAMPLES |          | DYNAMIC PENETRATION<br>RESISTANCE, BLOWS/0.3m |                           |    |                       | HYDRAULIC CONDUCTIVITY,<br>k, cm/s |                       |                  |                  | ADDITIONAL<br>LAB. TESTING | PIEZOMETER<br>OR<br>STANDPIPE<br>INSTALLATION |                  |
|-----------------------|---------------------------------|-------------------------------------------------------------------------------------------------|-------------|-----------------------|---------|----------|-----------------------------------------------|---------------------------|----|-----------------------|------------------------------------|-----------------------|------------------|------------------|----------------------------|-----------------------------------------------|------------------|
|                       |                                 | DESCRIPTION                                                                                     | STRATA PLOT | ELEV.<br>DEPTH<br>(m) | NUMBER  | TYPE     | BLOWS/0.3m                                    | RESISTANCE, BLOWS/0.3m    |    |                       |                                    | k, cm/s               |                  |                  |                            |                                               |                  |
|                       |                                 |                                                                                                 |             |                       |         |          |                                               | SHEAR STRENGTH<br>Cu, kPa |    | nat V. rem V. + ⊕ - ⊙ |                                    | WATER CONTENT PERCENT |                  |                  |                            |                                               |                  |
|                       |                                 |                                                                                                 |             |                       |         |          |                                               | 20                        | 40 | 60                    | 80                                 | 10 <sup>-6</sup>      | 10 <sup>-5</sup> | 10 <sup>-4</sup> |                            |                                               | 10 <sup>-3</sup> |
|                       |                                 |                                                                                                 |             |                       |         |          |                                               |                           |    |                       |                                    |                       |                  |                  |                            |                                               |                  |
| 10                    | Wash Boring<br>114 mm HW Casing | Very dense to dense, grey, well graded,<br>SAND and GRAVEL, trace clay, trace<br>silt (cobbles) |             |                       |         |          |                                               |                           |    |                       |                                    |                       |                  |                  |                            |                                               |                  |
| 11                    |                                 |                                                                                                 |             |                       | 10      | 50<br>DO | 67                                            |                           |    |                       |                                    |                       |                  |                  |                            |                                               |                  |
| 12                    |                                 |                                                                                                 |             |                       |         |          |                                               |                           |    |                       |                                    |                       |                  |                  |                            |                                               |                  |
| 13                    |                                 |                                                                                                 |             |                       | 11      | 50<br>DO | 41                                            |                           |    |                       |                                    |                       |                  |                  |                            |                                               |                  |
| 14                    |                                 |                                                                                                 |             |                       |         |          |                                               |                           |    |                       |                                    |                       |                  |                  |                            |                                               |                  |
|                       |                                 | END OF BOREHOLE                                                                                 |             | 14.50                 |         |          |                                               |                           |    |                       |                                    |                       |                  |                  |                            |                                               |                  |
| 15                    |                                 |                                                                                                 |             |                       |         |          |                                               |                           |    |                       |                                    |                       |                  |                  |                            |                                               |                  |
| 16                    |                                 |                                                                                                 |             |                       |         |          |                                               |                           |    |                       |                                    |                       |                  |                  |                            |                                               |                  |
| 17                    |                                 |                                                                                                 |             |                       |         |          |                                               |                           |    |                       |                                    |                       |                  |                  |                            |                                               |                  |
| 18                    |                                 |                                                                                                 |             |                       |         |          |                                               |                           |    |                       |                                    |                       |                  |                  |                            |                                               |                  |
| 19                    |                                 |                                                                                                 |             |                       |         |          |                                               |                           |    |                       |                                    |                       |                  |                  |                            |                                               |                  |
| 20                    |                                 |                                                                                                 |             |                       |         |          |                                               |                           |    |                       |                                    |                       |                  |                  |                            |                                               |                  |

Bentonite Seal

Sand

50 mm Diam. PVC Screen

Cave

Grounwater level  
approximately at ground  
surface on June 2,  
2011.

DEPTH SCALE

1 : 50



LOGGED: CR

CHECKED: FB

MIS-BHS 001 11-1188-0007.GPJ GAL-MIS.GDT 6/16/11 DD

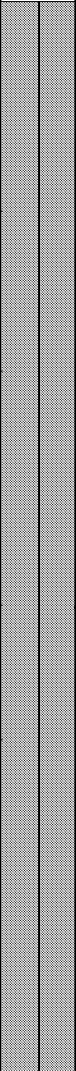
|                                       |                                     |                                |
|---------------------------------------|-------------------------------------|--------------------------------|
| <b>BOREHOLE LOG</b>                   | <b>PROJECT:</b> 60317459            | <b>BOREHOLE:</b> BH27-I 1 of 2 |
| Fenelon Landfill Drilling             | <b>Northing:</b> 4926696            | <b>DATE:</b> March 13, 2014    |
| Fenelon Landfill                      | <b>Easting:</b> 675656              | <b>LOGGED BY</b> KGA           |
| <b>Client:</b> City of Kawartha Lakes | <b>Methodology:</b> HQ Casing       | <b>GROUND ELEV</b> N/A m ASL   |
|                                       | <b>Contractor:</b> Lantech Drilling |                                |

| DEPTH<br>(m) | STRATIGRAPHY | STRATIGRAPHIC DESCRIPTION                                                                    | MONITOR<br>DETAILS<br>& NUMBER | WATER LEVEL | SAMPLE |          |      |         |         |       | COMMENTS                                                    |
|--------------|--------------|----------------------------------------------------------------------------------------------|--------------------------------|-------------|--------|----------|------|---------|---------|-------|-------------------------------------------------------------|
|              |              |                                                                                              |                                |             | NUMBER | INTERVAL | TYPE | N VALUE | % WATER | % REC |                                                             |
| 1            |              | <b>PEAT</b><br>Black silty organic soil, rootlets, twigs, saturated, very loose.             |                                | ▽           |        |          |      |         |         |       | Lithology above 13 m is inferred from BH27-II and BH27-III. |
| 1.7          |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 2            |              | <b>SILTY SAND / SANDY SILT</b><br>Grey silty sand to sandy silt, saturated, compact.         |                                |             |        |          |      |         |         |       |                                                             |
| 3.1          |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 3            |              | <b>SANDY SILT</b><br>Grey sandy silt, trace clay, trace gravel, saturated, loose to compact. |                                |             |        |          |      |         |         |       |                                                             |
| 4            |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 5.0          |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 5            |              | <b>SILTY SAND</b><br>Grey silty fine sand, trace clay, trace gravel, saturated, compact.     |                                |             |        |          |      |         |         |       |                                                             |
| 6.1          |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 6            |              | <b>SAND</b><br>Grey fine sand, trace silt, saturated, loose to compact.                      |                                |             |        |          |      |         |         |       |                                                             |
| 7            |              |                                                                                              |                                |             |        |          |      |         |         |       | Lithology above 13 m is inferred from BH27-II and BH27-III. |
| 8            |              | - Grey fine sand below about 7.6 m.                                                          |                                |             |        |          |      |         |         |       |                                                             |
| 9            |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 9.9          |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 10           |              | <b>SAND</b><br>Light brown fine sand, saturated, compact.                                    |                                |             |        |          |      |         |         |       |                                                             |
| 11           |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |

|                                                                                        |                                                                                                                            |                                                                                     |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>BOREHOLE LOG</b>                                                                    | <b>PROJECT:</b> 60317459                                                                                                   | <b>BOREHOLE:</b> BH27-I 2 of 2                                                      |
| Fenelon Landfill Drilling<br>Fenelon Landfill<br><b>Client:</b> City of Kawartha Lakes | <b>Northing:</b> 4926696<br><b>Easting:</b> 675656<br><b>Methodology:</b> HQ Casing<br><b>Contractor:</b> Lantech Drilling | <b>DATE:</b> March 13, 2014<br><b>LOGGED BY</b> KGA<br><b>GROUND ELEV</b> N/A m ASL |

| DEPTH<br>(m) | STRATIGRAPHY | STRATIGRAPHIC DESCRIPTION                                                                                                                                                                       | MONITOR<br>DETAILS<br>& NUMBER | WATER LEVEL | SAMPLE |          |      |         |         |       | COMMENTS |
|--------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------|--------|----------|------|---------|---------|-------|----------|
|              |              |                                                                                                                                                                                                 |                                |             | NUMBER | INTERVAL | TYPE | N VALUE | % WATER | % REC |          |
| 13.1         |              | <b>SAND &amp; GRAVEL</b><br>Grey coarse sand and gravel, minor oxidation, rounded gravel, saturated.                                                                                            |                                |             | 1      |          | SS   | 33      |         | 46    |          |
| 13.7         |              |                                                                                                                                                                                                 |                                |             |        |          |      |         |         |       |          |
| 14           |              | <b>SAND</b><br>Brown medium coarse sand, trace silt, saturated.                                                                                                                                 |                                |             |        |          |      |         |         |       |          |
| 15           |              |                                                                                                                                                                                                 |                                |             | 2      |          | SS   | 26      |         | 38    |          |
| 16           |              |                                                                                                                                                                                                 |                                |             |        |          |      |         |         |       |          |
| 16.5         |              | <b>GRAVEL</b><br>Gravel, some sand, gravel is angular, broken metamorphic rock, saturated.                                                                                                      |                                |             | 3      |          | SS   | 33      |         | 25    |          |
| 17           |              |                                                                                                                                                                                                 |                                |             |        |          |      |         |         |       |          |
| 18           |              |                                                                                                                                                                                                 |                                |             | 4      |          | SS   | >50     |         | 44    |          |
| 18.3         |              | <b>LIMESTONE BEDROCK</b><br>Grey competent limestone, dark and light grey bedding 1 mm to 3 mm in thickness. Horizontal fracturing, 2-5 mm of broken rock and fracturing at 19.2 m and 19.74 m. |                                |             | 1      |          | HQ   |         |         |       | RQD 76%  |
| 19           |              |                                                                                                                                                                                                 |                                |             |        |          |      |         |         |       |          |
| 20           |              |                                                                                                                                                                                                 |                                |             | 2      |          | HQ   |         |         |       | RQD 80%  |
| 21           |              |                                                                                                                                                                                                 |                                |             |        |          |      |         |         |       |          |
| 21.3         |              |                                                                                                                                                                                                 |                                |             |        |          |      |         |         |       |          |

|                                                                                        |                                                                                                                           |                                                                                     |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>BOREHOLE LOG</b>                                                                    | <b>PROJECT:</b> 60317459                                                                                                  | <b>BOREHOLE:</b> BH27-II 1 of 1                                                     |
| Fenelon Landfill Drilling<br>Fenelon Landfill<br><b>Client:</b> City of Kawartha Lakes | <b>Northing:</b> 4926696<br><b>Easting:</b> 675656<br><b>Methodology:</b> HSA / SS<br><b>Contractor:</b> Lantech Drilling | <b>DATE:</b> March 10, 2014<br><b>LOGGED BY</b> SRB<br><b>GROUND ELEV</b> N/A m ASL |

| DEPTH<br>(m) | STRATIGRAPHY                                                                                 | STRATIGRAPHIC DESCRIPTION                                                                                                                               | MONITOR<br>DETAILS<br>& NUMBER                                                     | WATER LEVEL                                                                       | SAMPLE |          |      |    |       |         | COMMENTS                                     |       |
|--------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|----------|------|----|-------|---------|----------------------------------------------|-------|
|              |                                                                                              |                                                                                                                                                         |                                                                                    |                                                                                   | NUMBER | INTERVAL | TYPE | N  | VALUE | % WATER |                                              | % REC |
| 1            |             | <b>PEAT</b><br>Black silty organic soil, rootlets, twigs, saturated, very loose.                                                                        |  |  |        |          |      |    |       |         | Rod sinking in the flowing sand past augers. |       |
| 1.7          |                                                                                              |                                                                                                                                                         |                                                                                    |                                                                                   |        |          |      |    |       |         |                                              |       |
| 2            |                                                                                              | <b>SILTY SAND / SANDY SILT</b><br>Grey silty sand to sandy silt, saturated, compact.                                                                    |                                                                                    |                                                                                   |        |          |      |    |       |         |                                              |       |
| 3.1          |                                                                                              |                                                                                                                                                         |                                                                                    |                                                                                   |        |          |      |    |       |         |                                              |       |
| 3            | <b>SANDY SILT</b><br>Grey sandy silt, trace clay, trace gravel, saturated, loose to compact. |                                                                                                                                                         |                                                                                    |                                                                                   |        |          |      |    |       |         |                                              |       |
| 4            |                                                                                              |                                                                                                                                                         |                                                                                    |                                                                                   |        |          |      |    |       |         |                                              |       |
| 5.0          | 5                                                                                            | <b>SILTY SAND</b><br>Grey silty fine sand, trace clay, trace gravel, saturated, compact.                                                                |                                                                                    |                                                                                   |        |          | 1    | SS | 15    |         |                                              | 83    |
| 6.1          | 6                                                                                            |                                                                                                                                                         |                                                                                    |                                                                                   |        |          | 2    | SS | 14    |         |                                              | 71    |
| 7            |                                                                                              |                                                                                                                                                         |                                                                                    |                                                                                   |        |          | 3    | SS | 7     |         |                                              | 92    |
| 8            |                                                                                              |                                                                                                                                                         |                                                                                    |                                                                                   |        |          | 4    | SS | 10    |         |                                              | 63    |
| 9            |                                                                                              |                                                                                                                                                         |                                                                                    |                                                                                   | 5      | SS       | 6    |    | 75    |         |                                              |       |
| 9.9          |                                                                                              |                                                                                                                                                         |                                                                                    |                                                                                   | 6      | SS       | 10   |    | 67    |         |                                              |       |
| 10           | 10                                                                                           | <b>SAND</b><br>Light brown fine sand, saturated, compact.                                                                                               |                                                                                    |                                                                                   | 7      | SS       | 23   |    | 75    |         |                                              |       |
| 10.7         |                                                                                              | Borehole terminated at 10.67 m in fine sand.<br><br>Augered directly to 4.57 m without sampling, stratigraphy inferred from adjacent borehole BH27-III. |                                                                                    |                                                                                   |        |          |      |    |       |         |                                              |       |

Rod sinking in the flowing sand past augers.

|                                       |                                     |                                  |
|---------------------------------------|-------------------------------------|----------------------------------|
| <b>BOREHOLE LOG</b>                   | <b>PROJECT:</b> 60317459            | <b>BOREHOLE:</b> BH27-III 1 of 1 |
| Fenelon Landfill Drilling             | <b>Northing:</b> 4926696            | <b>DATE:</b> March 6, 2014       |
| Fenelon Landfill                      | <b>Easting:</b> 675656              | <b>LOGGED BY</b> SRB             |
| <b>Client:</b> City of Kawartha Lakes | <b>Methodology:</b> HSA / SS        | <b>GROUND ELEV</b> N/A m ASL     |
|                                       | <b>Contractor:</b> Lantech Drilling |                                  |

| DEPTH<br>(m) | STRATIGRAPHY | STRATIGRAPHIC DESCRIPTION                                                                    | MONITOR<br>DETAILS<br>& NUMBER | WATER LEVEL | SAMPLE |          |      |         |         | COMMENTS |       |
|--------------|--------------|----------------------------------------------------------------------------------------------|--------------------------------|-------------|--------|----------|------|---------|---------|----------|-------|
|              |              |                                                                                              |                                |             | NUMBER | INTERVAL | TYPE | N VALUE | % WATER |          | % REC |
| 1            |              | <b>PEAT</b><br>Black silty organic soil, rootlets, twigs, saturated, very loose.             |                                |             | 1      |          | SS   | 3       |         | 100      |       |
|              |              |                                                                                              |                                |             | 2      |          | SS   | 2       |         | 54       |       |
| 1.7          |              |                                                                                              |                                |             | 3      |          | SS   | 2       |         | 54       |       |
| 2            |              | <b>SILTY SAND / SANDY SILT</b><br>Grey silty sand to sandy silt, saturated, compact.         |                                |             | 4      |          | SS   | 14      |         | 63       |       |
| 3.1          |              |                                                                                              |                                |             | 5      |          | SS   | 15      |         | 67       |       |
| 4            |              | <b>SANDY SILT</b><br>Grey sandy silt, trace clay, trace gravel, saturated, loose to compact. |                                |             | 6      |          | SS   | 6       |         | 100      |       |
| 4.6          |              | Borehole terminated at 4.57 m in sandy silt.                                                 |                                |             |        |          |      |         |         |          |       |



**Cambium Environmental Inc.**  
PO Box 325 • 52 Hunter Street East  
Peterborough • Ontario • K9H 1G5

**Log of Borehole: WPI**

**Project No.:** 1816-001

**Project Name:** Fenelon Falls Landfill Well Install

**Client:** City of Kawartha Lakes

**Logged By:** S. Dolstra

**Location:** Fenelon Falls Landfill

**Project Manager:** D. Bucholtz

| SUBSURFACE PROFILE                        |        |                                                                                                      | Well Installation | Remarks                                                                                                                                                                                                                                                            |
|-------------------------------------------|--------|------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Depth                                     | Symbol | Description                                                                                          |                   |                                                                                                                                                                                                                                                                    |
| -4 ft<br>m<br>-2<br>0<br>2<br>4<br>6<br>8 |        | Ground Surface<br><b>Organic Material</b><br>Dark brown, wet<br><b>Drive Point Well – No Samples</b> |                   | Well stick up 0.87m<br><br>Steel well riser equipped with lockable J-Plug and weather proof lock<br><br>Water level December 2, 2010 from top of pipe (0.72 m)<br><br>0.051m steel well riser<br><br><br><br><br><br><br><br>0.051m x 0.30m stainless steel screen |
|                                           |        | End of Borehole                                                                                      |                   |                                                                                                                                                                                                                                                                    |

**Drilled By:** S. Dolstra

**Input By:** S. Dolstra

**Drill Method:** Drive Point

**Checked By:** D. Bucholtz

**Drill Date:** December 2, 2010

**Sheet:** 1 of 1





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**Log of Borehole: WP2**

**Project No.:** 1816-001

**Project Name:** Fenelon Falls Landfill Well Install

**Client:** City of Kawartha Lakes

**Logged By:** S. Dolstra

**Location:** Fenelon Falls Landfill

**Project Manager:** D. Bucholtz

| SUBSURFACE PROFILE |        |                                            | Well Installation | Remarks                                                               |
|--------------------|--------|--------------------------------------------|-------------------|-----------------------------------------------------------------------|
| Depth              | Symbol | Description                                |                   |                                                                       |
| ft m               |        |                                            |                   |                                                                       |
| -4                 |        |                                            |                   | Well stick up 1.0m                                                    |
| -2                 |        |                                            |                   | Steel well riser equipped with lockable J-Plug and weather proof lock |
| 0                  |        | Ground Surface                             |                   | Water level December 2, 2010 from top of pipe (0.85 m)                |
|                    |        | <b>Organic Material</b><br>Dark brown, wet |                   | 0.051m steel well riser                                               |
|                    |        | <b>Drive Point Well – No Samples</b>       |                   |                                                                       |
| 2                  |        |                                            |                   |                                                                       |
| 4                  |        |                                            |                   |                                                                       |
| 6                  |        |                                            |                   |                                                                       |
| 8                  |        |                                            |                   | 0.051m x 0.30m stainless steel screen                                 |
|                    |        | End of Borehole                            |                   |                                                                       |

**Drilled By:** S. Dolstra

**Input By:** S. Dolstra

**Drill Method:** Drive Point

**Checked By:** D. Bucholtz

**Drill Date:** December 2, 2010

**Sheet:** 1 of 1



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**Log of Borehole: WP3**

**Project No.:** 1816-001

**Project Name:** Fenelon Falls Landfill Well Install

**Client:** City of Kawartha Lakes

**Logged By:** S. Dolstra

**Location:** Fenelon Falls Landfill

**Project Manager:** D. Bucholtz

| SUBSURFACE PROFILE |        |                                            | Well Installation | Remarks                                                               |
|--------------------|--------|--------------------------------------------|-------------------|-----------------------------------------------------------------------|
| Depth              | Symbol | Description                                |                   |                                                                       |
| -4 m               |        |                                            |                   | Well stick up 0.95m                                                   |
| -2                 |        |                                            |                   | Steel well riser equipped with lockable J-Plug and weather proof lock |
| 0                  |        | Ground Surface                             |                   |                                                                       |
|                    |        | <b>Organic Material</b><br>Dark brown, wet |                   |                                                                       |
|                    |        | <b>Drive Point Well – No Samples</b>       |                   | 0.051m steel well riser                                               |
| 2                  |        |                                            |                   |                                                                       |
| 4                  |        |                                            |                   | Water level December 2, 2010 from top of pipe (2.04 m)                |
| 6                  |        |                                            |                   |                                                                       |
| 8                  |        |                                            |                   | 0.051m x 0.30m stainless steel screen                                 |
|                    |        | End of Borehole                            |                   |                                                                       |

**Drilled By:** S. Dolstra

**Input By:** S. Dolstra

**Drill Method:** Drive Point

**Checked By:** D. Bucholtz

**Drill Date:** December 2, 2010

**Sheet:** 1 of 1



**Cambium Environmental Inc.**  
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**Log of Borehole: WP4**

**Project No.:** 1816-001

**Project Name:** Fenelon Falls Landfill Well Install

**Client:** City of Kawartha Lakes

**Logged By:** S. Dolstra

**Location:** Fenelon Falls Landfill

**Project Manager:** D. Bucholtz

| SUBSURFACE PROFILE |        |                                            | Well Installation | Remarks                                                                |
|--------------------|--------|--------------------------------------------|-------------------|------------------------------------------------------------------------|
| Depth              | Symbol | Description                                |                   |                                                                        |
| -4 m<br>ft         |        |                                            |                   | Well stick up 0.86m                                                    |
| -2                 |        |                                            |                   | Steel well riser equipped with lockable J-Plug and weather proof lock. |
| 0                  |        | Ground Surface                             |                   |                                                                        |
|                    |        | <b>Organic Material</b><br>Dark brown, wet |                   |                                                                        |
|                    |        | <b>Drive Point Well – No Samples</b>       |                   | 0.051m steel well riser                                                |
| 2                  |        |                                            |                   |                                                                        |
| 4                  |        |                                            |                   | Water level December 2, 2010 from top of pipe (2.04 m)                 |
| 6                  |        |                                            |                   |                                                                        |
| 8                  |        |                                            |                   | 0.051m x 0.30m stainless steel screen                                  |
|                    |        | End of Borehole                            |                   |                                                                        |

**Drilled By:** S. Dolstra

**Input By:** S. Dolstra

**Drill Method:** Drive Point

**Checked By:** D. Bucholtz

**Drill Date:** December 2, 2010

**Sheet:** 1 of 1

**Pinchin Environmental**  
204-160 Charlotte Street  
Peterborough, Ontario, K9J 2T8

# **Stratigraphic and Instrumentation Log: WP6-13**

**Project No.:** 81838

**Project:** Fenelon Landfill

**Client:** City of Kawatha Lakes

**Location:** 341 Mark Road, Fenelon Falls, Ontario

**Logged By:** C. Moose

**Entered By:** L. DiAngelo

**Project Manager:** C. Moose

**Drill Date:** August 22, 2013

| SUBSURFACE PROFILE |        |                                                             |           | SAMPLE |      |        |         |              | Vapour Reading (ppm)                                                                         | Monitoring Well |
|--------------------|--------|-------------------------------------------------------------|-----------|--------|------|--------|---------|--------------|----------------------------------------------------------------------------------------------|-----------------|
| Depth (m)          | Symbol | Description                                                 | Elevation | Number | Type | Sample | N-Value | Recovery (%) |                                                                                              |                 |
| 0                  |        | Ground Surface <b>258.592</b>                               | 0.0       | NA     | NA   | NA     | NA      | NA           | <div> <div> <div>▲</div> <div>ppm</div> <div>▲</div> </div> <div>50 100 150 200</div> </div> |                 |
|                    |        | <b>Topsoil</b>                                              | -0.2      | NA     | NA   | NA     | NA      | NA           |                                                                                              |                 |
|                    |        | <b>Sand</b><br>Wet, brown, fine to coarse grained, no odour |           | NA     | NA   | NA     | NA      | NA           |                                                                                              |                 |
| 1                  |        |                                                             |           | NA     | NA   | NA     | NA      | NA           |                                                                                              |                 |
|                    |        |                                                             | -1.5      | NA     | NA   | NA     | NA      | NA           |                                                                                              |                 |
|                    |        | <b>Silty Clay</b><br>Wet, grey, no odour                    |           | NA     | NA   | NA     | NA      | NA           |                                                                                              |                 |
| 2                  |        |                                                             |           | NA     | NA   | NA     | NA      | NA           |                                                                                              |                 |
|                    |        |                                                             |           | NA     | NA   | NA     | NA      | NA           |                                                                                              |                 |
| 3                  |        |                                                             | -3.0      | NA     | NA   | NA     | NA      | NA           |                                                                                              |                 |
|                    |        | End of Borehole                                             |           | NA     | NA   | NA     | NA      | NA           |                                                                                              |                 |
| 4                  |        |                                                             |           |        |      |        |         |              |                                                                                              |                 |
| 5                  |        |                                                             |           |        |      |        |         |              |                                                                                              |                 |
| 6                  |        |                                                             |           |        |      |        |         |              |                                                                                              |                 |

**Drilled By:** Strata Drilling

**Drill Method:** GeoProbe 7822 DT

**Vapour Instrument:** NA

**Well Casing Size:** 5.1 cm

**Datum:** NA

**Casing Elevation:** NA

**Ground Elevation:** ~~NA~~ 258.592

**Sheet:** 1 of 1

**Pinchin Environmental**  
204-160 Charlotte Street  
Peterborough, Ontario, K9J 2T8

## Stratigraphic and Instrumentation Log: MW-7 (2013)

**Project No.:** 81838

**Project:** Fenelon Landfill

**Client:** City of Kawatha Lakes

**Location:** 341 Mark Road, Fenelon Falls, Ontario

**Logged By:** C. Moose

**Entered By:** L. DiAngelo

**Project Manager:** C. Moose

**Drill Date:** August 22, 2013

| SUBSURFACE PROFILE |        |                                                                                        |           | SAMPLE |      |        |         |              | Vapour Reading (ppm) | Monitoring Well |
|--------------------|--------|----------------------------------------------------------------------------------------|-----------|--------|------|--------|---------|--------------|----------------------|-----------------|
| Depth (m)          | Symbol | Description                                                                            | Elevation | Number | Type | Sample | N-Value | Recovery (%) |                      |                 |
| 0                  |        | Ground Surface                                                                         | 0.0       |        |      |        |         |              |                      |                 |
| 1                  |        | <b>Fill - Sand and Gravel</b><br>Domestic refuse, moist, brown, fine to coarse grained |           | NA     | NA   | NA     | NA      | NA           |                      |                 |
| 2                  |        |                                                                                        |           |        |      |        |         |              |                      |                 |
| 3                  |        |                                                                                        |           | NA     | NA   | NA     | NA      | NA           |                      |                 |
| 4                  |        |                                                                                        |           |        |      |        |         |              |                      |                 |
| 5                  |        |                                                                                        |           |        |      |        |         |              |                      |                 |
| 6                  |        |                                                                                        |           | NA     | NA   | NA     | NA      | NA           |                      |                 |
| 7                  |        |                                                                                        |           |        |      |        |         |              |                      |                 |
| 8                  |        |                                                                                        |           |        |      |        |         |              |                      |                 |
| 9                  |        | Wet below 9 m depth                                                                    |           | NA     | NA   | NA     | NA      | NA           |                      |                 |
| 10                 |        |                                                                                        |           |        |      |        |         |              |                      |                 |
| 11                 |        |                                                                                        |           |        |      |        |         |              |                      |                 |
| 12                 |        |                                                                                        |           | NA     | NA   | NA     | NA      | NA           |                      |                 |
| 13                 |        |                                                                                        |           |        |      |        |         |              |                      |                 |
| 14                 |        |                                                                                        |           |        |      |        |         |              |                      |                 |
| 15                 |        |                                                                                        |           | NA     | NA   | NA     | NA      | NA           |                      |                 |
| 16                 |        |                                                                                        |           |        |      |        |         |              |                      |                 |
| 17                 |        |                                                                                        | -17.1     |        |      |        |         |              |                      |                 |
|                    |        | End of Borehole                                                                        |           |        |      |        |         |              |                      |                 |

**Drilled By:** Strata Drilling

**Drill Method:** GeoProbe 7822 DT

**Vapour Instrument:** NA

**Well Casing Size:** 5.1 cm

**Datum:** NA

**Casing Elevation:** NA

**Ground Elevation:** NA

**Sheet:** 1 of 1

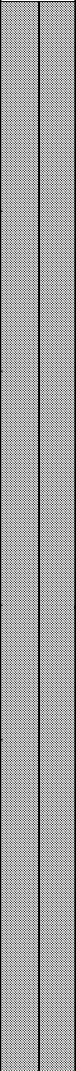
|                                       |                                     |                                |
|---------------------------------------|-------------------------------------|--------------------------------|
| <b>BOREHOLE LOG</b>                   | <b>PROJECT:</b> 60317459            | <b>BOREHOLE:</b> BH27-I 1 of 2 |
| Fenelon Landfill Drilling             | <b>Northing:</b> 4926696            | <b>DATE:</b> March 13, 2014    |
| Fenelon Landfill                      | <b>Easting:</b> 675656              | <b>LOGGED BY</b> KGA           |
| <b>Client:</b> City of Kawartha Lakes | <b>Methodology:</b> HQ Casing       | <b>GROUND ELEV</b> N/A m ASL   |
|                                       | <b>Contractor:</b> Lantech Drilling |                                |

| DEPTH<br>(m) | STRATIGRAPHY | STRATIGRAPHIC DESCRIPTION                                                                    | MONITOR<br>DETAILS<br>& NUMBER | WATER LEVEL | SAMPLE |          |      |         |         |       | COMMENTS                                                    |
|--------------|--------------|----------------------------------------------------------------------------------------------|--------------------------------|-------------|--------|----------|------|---------|---------|-------|-------------------------------------------------------------|
|              |              |                                                                                              |                                |             | NUMBER | INTERVAL | TYPE | N VALUE | % WATER | % REC |                                                             |
| 1            |              | <b>PEAT</b><br>Black silty organic soil, rootlets, twigs, saturated, very loose.             |                                | ▽           |        |          |      |         |         |       | Lithology above 13 m is inferred from BH27-II and BH27-III. |
| 1.7          |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 2            |              | <b>SILTY SAND / SANDY SILT</b><br>Grey silty sand to sandy silt, saturated, compact.         |                                |             |        |          |      |         |         |       |                                                             |
| 3.1          |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 3            |              | <b>SANDY SILT</b><br>Grey sandy silt, trace clay, trace gravel, saturated, loose to compact. |                                |             |        |          |      |         |         |       |                                                             |
| 4            |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 5.0          |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 5            |              | <b>SILTY SAND</b><br>Grey silty fine sand, trace clay, trace gravel, saturated, compact.     |                                |             |        |          |      |         |         |       |                                                             |
| 6.1          |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 6            |              | <b>SAND</b><br>Grey fine sand, trace silt, saturated, loose to compact.                      |                                |             |        |          |      |         |         |       |                                                             |
| 7            |              |                                                                                              |                                |             |        |          |      |         |         |       | Lithology above 13 m is inferred from BH27-II and BH27-III. |
| 8            |              | - Grey fine sand below about 7.6 m.                                                          |                                |             |        |          |      |         |         |       |                                                             |
| 9            |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 9.9          |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |
| 10           |              | <b>SAND</b><br>Light brown fine sand, saturated, compact.                                    |                                |             |        |          |      |         |         |       |                                                             |
| 11           |              |                                                                                              |                                |             |        |          |      |         |         |       |                                                             |

|                                                                                        |                                                                                                                            |                                                                                     |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>BOREHOLE LOG</b>                                                                    | <b>PROJECT:</b> 60317459                                                                                                   | <b>BOREHOLE:</b> BH27-I 2 of 2                                                      |
| Fenelon Landfill Drilling<br>Fenelon Landfill<br><b>Client:</b> City of Kawartha Lakes | <b>Northing:</b> 4926696<br><b>Easting:</b> 675656<br><b>Methodology:</b> HQ Casing<br><b>Contractor:</b> Lantech Drilling | <b>DATE:</b> March 13, 2014<br><b>LOGGED BY</b> KGA<br><b>GROUND ELEV</b> N/A m ASL |

| DEPTH<br>(m) | STRATIGRAPHY | STRATIGRAPHIC DESCRIPTION                                                                                                                                                                       | MONITOR<br>DETAILS<br>& NUMBER | WATER LEVEL | SAMPLE |          |      |         |         |       | COMMENTS |
|--------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------|--------|----------|------|---------|---------|-------|----------|
|              |              |                                                                                                                                                                                                 |                                |             | NUMBER | INTERVAL | TYPE | N VALUE | % WATER | % REC |          |
| 13.1         |              | <b>SAND &amp; GRAVEL</b><br>Grey coarse sand and gravel, minor oxidation, rounded gravel, saturated.                                                                                            |                                |             | 1      |          | SS   | 33      |         | 46    |          |
| 13.7         |              |                                                                                                                                                                                                 |                                |             |        |          |      |         |         |       |          |
| 14           |              | <b>SAND</b><br>Brown medium coarse sand, trace silt, saturated.                                                                                                                                 |                                |             |        |          |      |         |         |       |          |
| 15           |              |                                                                                                                                                                                                 |                                |             | 2      |          | SS   | 26      |         | 38    |          |
| 16           |              |                                                                                                                                                                                                 |                                |             |        |          |      |         |         |       |          |
| 16.5         |              | <b>GRAVEL</b><br>Gravel, some sand, gravel is angular, broken metamorphic rock, saturated.                                                                                                      |                                |             | 3      |          | SS   | 33      |         | 25    |          |
| 17           |              |                                                                                                                                                                                                 |                                |             |        |          |      |         |         |       |          |
| 18           |              |                                                                                                                                                                                                 |                                |             | 4      |          | SS   | >50     |         | 44    |          |
| 18.3         |              | <b>LIMESTONE BEDROCK</b><br>Grey competent limestone, dark and light grey bedding 1 mm to 3 mm in thickness. Horizontal fracturing, 2-5 mm of broken rock and fracturing at 19.2 m and 19.74 m. |                                |             | 1      |          | HQ   |         |         |       | RQD 76%  |
| 19           |              |                                                                                                                                                                                                 |                                |             |        |          |      |         |         |       |          |
| 20           |              |                                                                                                                                                                                                 |                                |             | 2      |          | HQ   |         |         |       | RQD 80%  |
| 21           |              |                                                                                                                                                                                                 |                                |             |        |          |      |         |         |       |          |
| 21.3         |              |                                                                                                                                                                                                 |                                |             |        |          |      |         |         |       |          |

|                                       |                                     |                                 |
|---------------------------------------|-------------------------------------|---------------------------------|
| <b>BOREHOLE LOG</b>                   | <b>PROJECT:</b> 60317459            | <b>BOREHOLE:</b> BH27-II 1 of 1 |
| Fenelon Landfill Drilling             | <b>Northing:</b> 4926696            | <b>DATE:</b> March 10, 2014     |
| Fenelon Landfill                      | <b>Easting:</b> 675656              | <b>LOGGED BY</b> SRB            |
| <b>Client:</b> City of Kawartha Lakes | <b>Methodology:</b> HSA / SS        | <b>GROUND ELEV</b> N/A m ASL    |
|                                       | <b>Contractor:</b> Lantech Drilling |                                 |

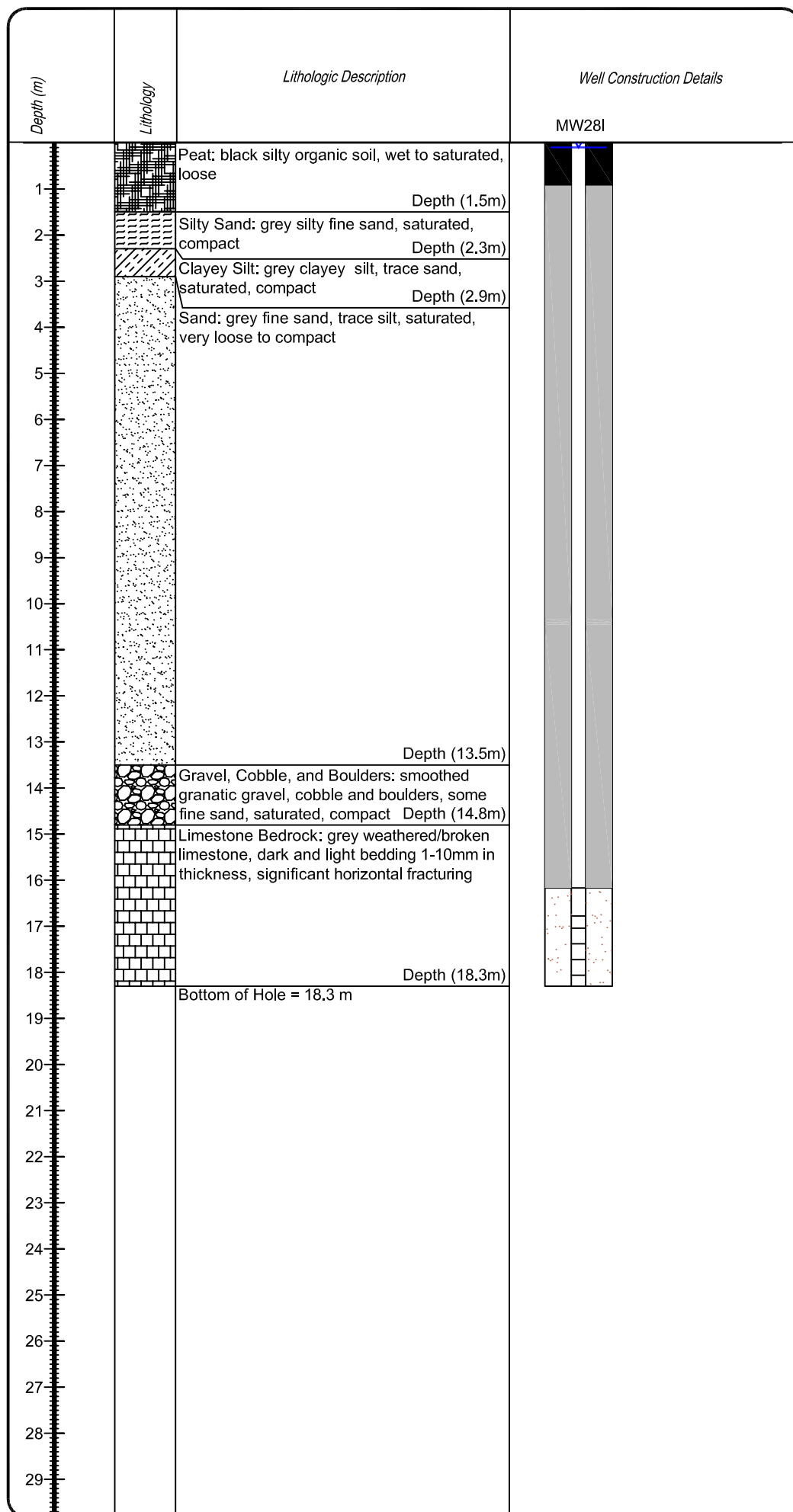
| DEPTH<br>(m) | STRATIGRAPHY                                                                        | STRATIGRAPHIC DESCRIPTION                                                                           | MONITOR<br>DETAILS<br>& NUMBER                                                     | WATER LEVEL                                                                       | SAMPLE                                                                                   |          |      |    |       |         | COMMENTS                                     |       |
|--------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------|------|----|-------|---------|----------------------------------------------|-------|
|              |                                                                                     |                                                                                                     |                                                                                    |                                                                                   | NUMBER                                                                                   | INTERVAL | TYPE | N  | VALUE | % WATER |                                              | % REC |
| 1            |    | <b>PEAT</b><br>Black silty organic soil, rootlets, twigs, saturated, very loose.                    |  |  |                                                                                          |          |      |    |       |         | Rod sinking in the flowing sand past augers. |       |
| 1.7          |                                                                                     |                                                                                                     |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
| 2            |                                                                                     |                                                                                                     |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
| 3.1          |                                                                                     |                                                                                                     |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
| 3            |    | <b>SILTY SAND / SANDY SILT</b><br>Grey silty sand to sandy silt, saturated, compact.                |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
| 4            |                                                                                     |                                                                                                     |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
| 5.0          |                                                                                     |                                                                                                     |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
| 5            |   | <b>SANDY SILT</b><br>Grey sandy silt, trace clay, trace gravel, saturated, loose to compact.        |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
| 6.1          |                                                                                     |                                                                                                     |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
| 6            |                                                                                     |                  |                                                                                    |                                                                                   | <b>SILTY SAND</b><br>Grey silty fine sand, trace clay, trace gravel, saturated, compact. | 1        |      | SS | 15    |         |                                              | 83    |
| 7            |                                                                                     |                                                                                                     |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
| 8            |                                                                                     |                                                                                                     |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
| 9            |  | <b>SAND</b><br>Grey fine sand, trace silt, saturated, loose to compact.                             |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
| 9.9          |                                                                                     |                                                                                                     |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
| 10           |                                                                                     |                                                                                                     |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
| 10.7         |                                                                                     | Borehole terminated at 10.67 m in fine sand.                                                        |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |
|              |                                                                                     | Augered directly to 4.57 m without sampling, stratigraphy inferred from adjacent borehole BH27-III. |                                                                                    |                                                                                   |                                                                                          |          |      |    |       |         |                                              |       |

Rod sinking in the flowing sand past augers.



|                                       |                                     |                                  |
|---------------------------------------|-------------------------------------|----------------------------------|
| <b>BOREHOLE LOG</b>                   | <b>PROJECT:</b> 60317459            | <b>BOREHOLE:</b> BH27-III 1 of 1 |
| Fenelon Landfill Drilling             | <b>Northing:</b> 4926696            | <b>DATE:</b> March 6, 2014       |
| Fenelon Landfill                      | <b>Easting:</b> 675656              | <b>LOGGED BY</b> SRB             |
| <b>Client:</b> City of Kawartha Lakes | <b>Methodology:</b> HSA / SS        | <b>GROUND ELEV</b> N/A m ASL     |
|                                       | <b>Contractor:</b> Lantech Drilling |                                  |

| DEPTH<br>(m) | STRATIGRAPHY | STRATIGRAPHIC DESCRIPTION                                                        | MONITOR<br>DETAILS<br>& NUMBER | WATER LEVEL | SAMPLE |          |      |         |         | COMMENTS |       |
|--------------|--------------|----------------------------------------------------------------------------------|--------------------------------|-------------|--------|----------|------|---------|---------|----------|-------|
|              |              |                                                                                  |                                |             | NUMBER | INTERVAL | TYPE | N VALUE | % WATER |          | % REC |
| 1            |              | <b>PEAT</b><br>Black silty organic soil, rootlets, twigs, saturated, very loose. |                                |             | 1      |          | SS   | 3       |         | 100      |       |
|              |              | 2                                                                                |                                |             |        | SS       | 2    |         | 54      |          |       |
| 1.7          |              | 3                                                                                |                                |             |        | SS       | 2    |         | 54      |          |       |
| 2            |              | 4                                                                                |                                |             |        | SS       | 14   |         | 63      |          |       |
| 3.1          |              | 5                                                                                |                                |             |        | SS       | 15   |         | 67      |          |       |
| 4            |              | 6                                                                                |                                |             |        | SS       | 6    |         | 100     |          |       |
| 4.6          |              | Borehole terminated at 4.57 m in sandy silt.                                     |                                |             |        |          |      |         |         |          |       |



### Monitoring Well

## MW28I

**Fenelon Landfill Drilling**  
Mark Rd.,  
Kawartha Lakes, ON

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#### DRILLING DETAILS

Drill Date: 4-9/02/2015  
Drilling Method: Auger/Core  
Driller: Lantech Drilling Services  
Geologist: Drew West

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#### MONITORING WELL INFORMATION

NAD Easting: 674481  
Northing: 4926636

|                                        |                       |  |  |
|----------------------------------------|-----------------------|--|--|
| Monitoring Well                        | MW28I                 |  |  |
| Ground Elev.                           |                       |  |  |
| Top of Casing Elev.                    |                       |  |  |
| Stick Up (m)                           | 0.85m                 |  |  |
| Well Depth (m)                         | 18.3                  |  |  |
| High Water Level (date of water level) | 0.10mbgs<br>9/02/2015 |  |  |

All units expressed as metres above sea level unless otherwise noted

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#### LEGEND

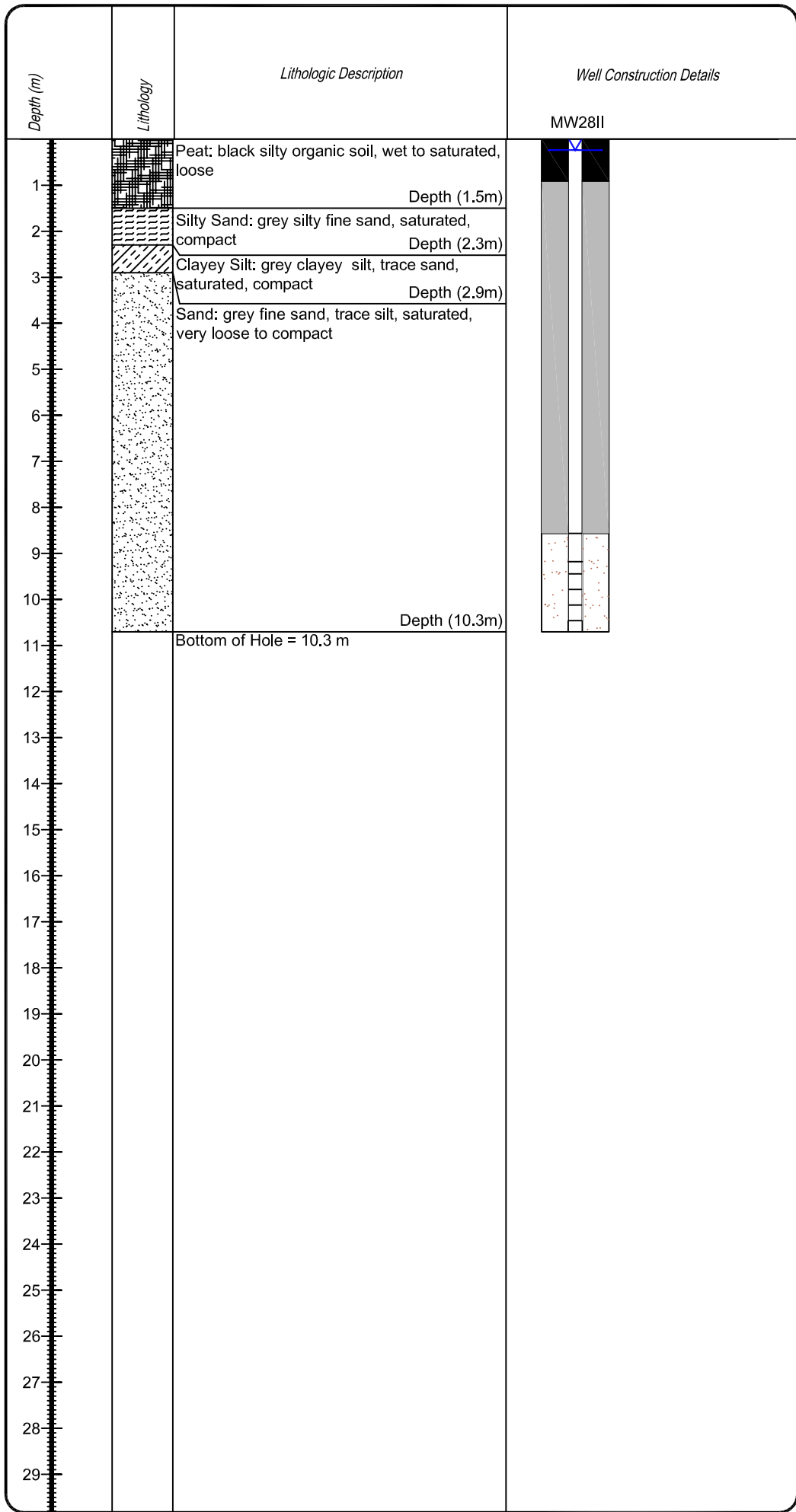
Water Level Elevation  
 Perched Water Table Elevation  
 Bentonite Slurry  
 Backfill  
 Silica Sand  
 Schedule 40 (2") PVC Riser Pipe  
 Schedule 40 (2") 10-slot PVC Screen  
 Steel Casing (6")

*Geologic materials recovered and evaluated by: Drew West*

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**AZIMUTH ENVIRONMENTAL CONSULTING, INC.**

|              |               |                    |
|--------------|---------------|--------------------|
| Date Issued: | February 2015 | Page<br><br>1 of 1 |
| Created By:  | JLM           |                    |
| Project No.  | 14-367        |                    |
| File Name:   | 14-367bh      |                    |



Monitoring Well

MW28II

Fenelon Landfill Drilling  
Mark Rd.,  
Kawartha Lakes, ON

DRILLING DETAILS

Drill Date: 10/02/2015  
Drilling Method: Auger/Core  
Driller: Lantech Drilling Services  
Geologist: Drew West

MONITORING WELL INFORMATION

NAD Easting: 674478  
Northing: 4926625

|                                           |                        |  |  |
|-------------------------------------------|------------------------|--|--|
| Monitoring Well                           | MW28II                 |  |  |
| Ground Elev.                              |                        |  |  |
| Top of Casing Elev.                       |                        |  |  |
| Stick Up (m)                              | 0.90m                  |  |  |
| Well Depth (m)                            | 10.7                   |  |  |
| High Water Level<br>(date of water level) | 0.24mbgs<br>10/02/2015 |  |  |

All units expressed as metres above sea level unless otherwise noted

LEGEND

Water Level Elevation

Perched Water Table Elevation

Bentonite Slurry

Backfill

Silica Sand

Schedule 40 (2") PVC Riser Pipe

Schedule 40 (2") 10-slot PVC Screen

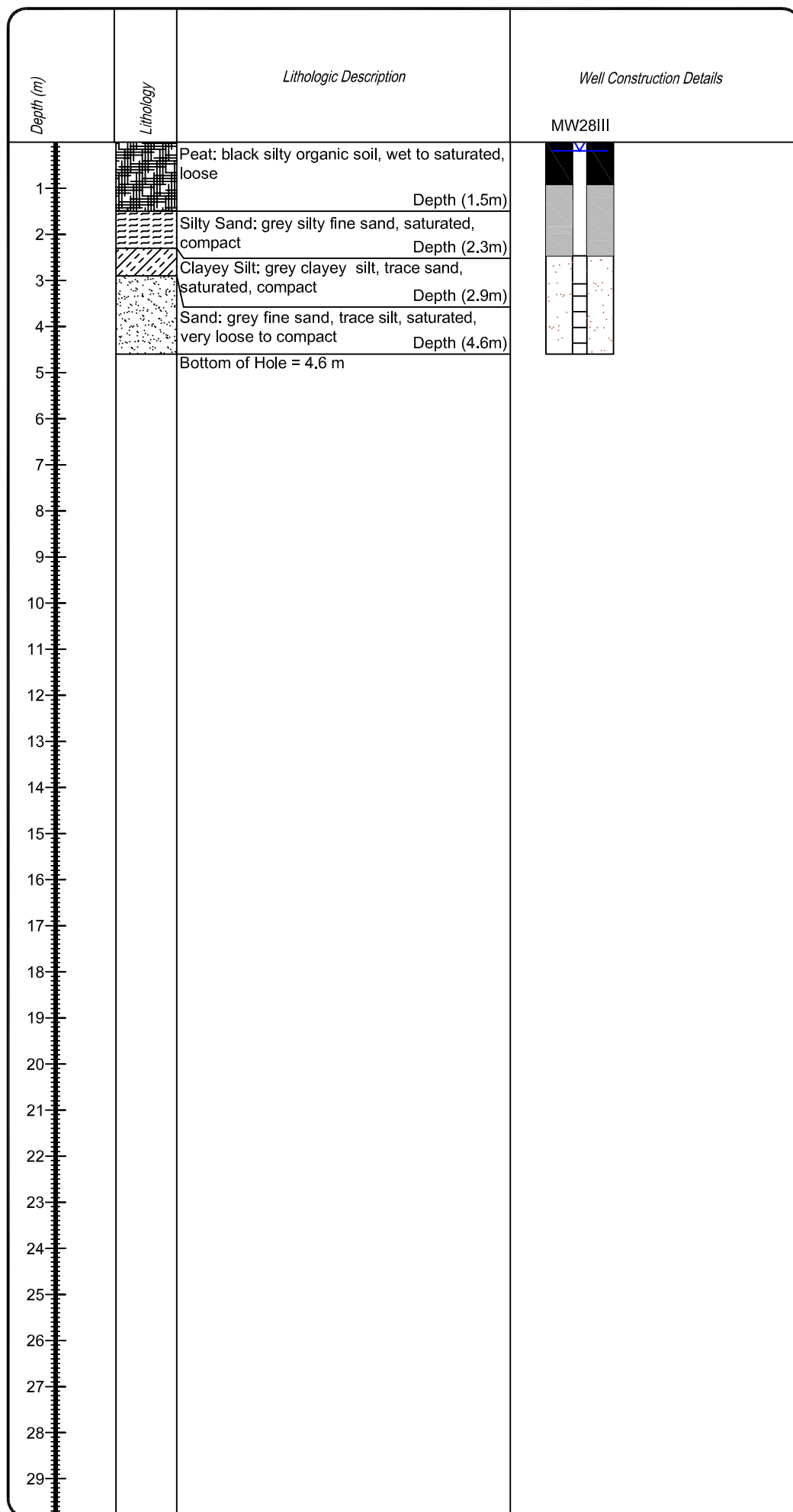
Steel Casing (6")

Geologic materials recovered and  
evaluated by: Drew West

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Date Issued: February 2015  
Created By: JLM  
Project No. 14-367  
File Name: 14-367bh

Page  
1 of 1



**Monitoring Well**

**MW28III**

**Fenelon Landfill Drilling**  
Mark Rd.,  
Kawartha Lakes, ON

**DRILLING DETAILS**

Drill Date: 03/02/2015  
Drilling Method: Auger/Core  
Driller: Lantech Drilling Services  
Geologist: Drew West

**MONITORING WELL INFORMATION**

NAD Easting: 674484  
Northing: 4926634

|                                           |                        |  |  |
|-------------------------------------------|------------------------|--|--|
| Monitoring Well                           | MW28III                |  |  |
| Ground Elev.                              |                        |  |  |
| Top of Casing Elev.                       |                        |  |  |
| Stick Up (m)                              | 0.95m                  |  |  |
| Well Depth (m)                            | 4.6                    |  |  |
| High Water Level<br>(date of water level) | 0.19mbgs<br>03/02/2015 |  |  |

All units expressed as metres above sea level unless otherwise noted

**LEGEND**

- Water Level Elevation
- Perched Water Table Elevation
- Bentonite Slurry
- Backfill
- Silica Sand
- Schedule 40 (2") PVC Riser Pipe
- Schedule 40 (2") 10-slot PVC Screen
- Steel Casing (6")

Geologic materials recovered and evaluated by: Drew West

**AZIMUTH ENVIRONMENTAL CONSULTING, INC.**

|                            |                |
|----------------------------|----------------|
| Date Issued: February 2015 | Page<br>1 of 1 |
| Created By: JLM            |                |
| Project No. 14-367         |                |
| File Name: 14-367bh        |                |



# BOREHOLE NO. 7-17

PAGE 1 of 1

PROJECT NAME: CITY OF KAWARTHA LAKES - FENELON LANDFILL

PROJECT NO.: 171-00763-00

CLIENT: CITY OF KAWARTHA LAKES

DATE COMPLETED: Feb 01, 2017

BOREHOLE TYPE: DIRECT PUSH/168 mm HOLLOW STEM AUGER METHOD

SUPERVISOR: TB / LGC

GROUND ELEVATION: NOT SURVEYED

REVIEWER: JSA

| DEPTH (m) | ELEV (mASL) | STRATIGRAPHIC DESCRIPTION                                                               | STRATIGRAPHY | MONITOR DETAILS | SAMPLE |         |         |            |               | CONE PENETRATION |                | WATER CONTENT % |                | REMARKS                                                                                                                           |
|-----------|-------------|-----------------------------------------------------------------------------------------|--------------|-----------------|--------|---------|---------|------------|---------------|------------------|----------------|-----------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------|
|           |             |                                                                                         |              |                 | TYPE   | N VALUE | % WATER | % RECOVERY | PLD/TOV (ppm) | "N" VALUE        | SHEAR STRENGTH | W <sub>p</sub>  | W <sub>L</sub> |                                                                                                                                   |
| 0.0       |             |                                                                                         |              |                 |        |         |         |            |               | 10 20 30         | 50 100 150 200 |                 |                |                                                                                                                                   |
| 0.3       |             | <b>FILL:</b><br>Brown clayey silt FILL (final cover), trace sand, frozen                |              |                 |        |         |         |            |               |                  |                |                 |                | Monitoring well installed with 50 mm inner diameter, schedule 80 PVC risers, with a 3.05 m length No. 10 screen size well screen. |
| 1.0       |             | <b>FILL</b><br>Grey sand FILL, moist                                                    |              |                 | DP1    |         |         | 20         |               |                  |                |                 |                |                                                                                                                                   |
| 1.6       |             | <b>WASTE</b><br>WASTE, with intermittent layers of grey to dark grey sand (daily cover) |              |                 |        |         |         |            |               |                  |                |                 |                |                                                                                                                                   |
| 2.0       |             |                                                                                         |              |                 | DP2    |         |         | 20         |               |                  |                |                 |                |                                                                                                                                   |
| 3.0       |             |                                                                                         |              |                 |        |         |         |            |               |                  |                |                 |                |                                                                                                                                   |
| 4.0       |             |                                                                                         |              |                 | DP3    |         |         | 35         |               |                  |                |                 |                |                                                                                                                                   |
| 5.0       |             |                                                                                         |              |                 |        |         |         |            |               |                  |                |                 |                | Groundwater level measured at 10.7 m below ground surface in monitoring well on completion of well installation.                  |
| 6.0       |             |                                                                                         |              |                 | DP4    |         |         | 18         |               |                  |                |                 |                |                                                                                                                                   |
| 7.0       |             | -Wood debris                                                                            |              |                 |        |         |         |            |               |                  |                |                 |                |                                                                                                                                   |
| 8.0       |             |                                                                                         |              |                 |        |         |         |            |               |                  |                |                 |                |                                                                                                                                   |
| 9.0       |             |                                                                                         |              |                 |        |         |         |            |               |                  |                |                 |                |                                                                                                                                   |
| 10.0      |             |                                                                                         |              |                 |        |         |         |            |               |                  |                |                 |                |                                                                                                                                   |
| 11.0      |             |                                                                                         |              |                 | DP5    |         |         | 27         |               |                  |                |                 |                |                                                                                                                                   |
| 12.0      |             |                                                                                         |              |                 |        |         |         |            |               |                  |                |                 |                |                                                                                                                                   |
| 13.0      |             | - Wet to saturated                                                                      |              |                 | DP6    |         |         | 17         |               |                  |                |                 |                |                                                                                                                                   |
| 13.7      |             | <b>SILTY SAND:</b><br>Grey SILTY SAND, saturated                                        |              |                 |        |         |         |            |               |                  |                |                 |                |                                                                                                                                   |
| 14.0      |             |                                                                                         |              |                 |        |         |         |            |               |                  |                |                 |                |                                                                                                                                   |
| 14.6      |             | Borehole terminated at 14.6 m below ground surface in SILTY SAND.                       |              |                 | DP7    |         |         | 50         |               |                  |                |                 |                |                                                                                                                                   |
| 15.0      |             |                                                                                         |              |                 |        |         |         |            |               |                  |                |                 |                |                                                                                                                                   |
| 16.0      |             |                                                                                         |              |                 |        |         |         |            |               |                  |                |                 |                |                                                                                                                                   |

WSP GEOTECH (METRIC) WITH UTM AND MASL\_FENELON BOREHOLE LOGS.GPJ WSP\_ENV\_V1.GDT 3/20/17



# BOREHOLE NO. WP1

PAGE 1 of 1

PROJECT NAME: CITY OF KAWARTHA LAKES - FENELON FALLS LANDFILL

PROJECT NO.: 171-00763-01

CLIENT: CITY OF KAWARTHA LAKES

DATE COMPLETED: Jul 12, 2018

BOREHOLE TYPE: 157.8 mm HAND AUGER

SUPERVISOR: TB

GROUND ELEVATION: 259.8 m (Geodetic)

REVIEWER: RDJ

| DEPTH (m) | ELEV (MASL) | STRATIGRAPHIC DESCRIPTION                                                            | STRATIGRAPHY | MONITOR DETAILS | SAMPLE |         |         |            |               | CONE PENETRATION<br>"N" VALUE<br>10 20 30<br>SHEAR STRENGTH<br>10 20 30 40<br>Intact (Max) Cu<br>Remoulded Cu | WATER CONTENT %<br>15 30 45<br>W <sub>p</sub> W <sub>L</sub> | UTM CO-ORDINATES<br>UTM Zone: NAD:<br>Easting:<br>Northing:<br><br>REMARKS                                                                                                                                                                                                          |
|-----------|-------------|--------------------------------------------------------------------------------------|--------------|-----------------|--------|---------|---------|------------|---------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |             |                                                                                      |              |                 | TYPE   | N VALUE | % WATER | % RECOVERY | PLD/TOV (ppm) |                                                                                                               |                                                              |                                                                                                                                                                                                                                                                                     |
| 0.0       |             | <b>TOPSOIL:</b><br>Black silty TOPSOIL, trace sand, some organics, wet to saturated. |              |                 |        |         |         |            |               |                                                                                                               |                                                              | Monitoring well installed with 50 mm inner diameter, schedule 40 PVC risers, with a 3.05 m length No. 10 screen size well screen. Top of pipe elevation = 260.53 m (Geodetic).<br><br>Groundwater level measured at 0.6 m below ground surface in monitoring well on July 13, 2018. |
| 0.8       | 259.0       | <b>SILTY SAND:</b><br>Light brown SILTY SAND, trace gravel, saturated.               |              |                 |        |         |         |            |               |                                                                                                               |                                                              |                                                                                                                                                                                                                                                                                     |
| 1.0       |             |                                                                                      |              |                 |        |         |         |            |               |                                                                                                               |                                                              |                                                                                                                                                                                                                                                                                     |
| 2.4       | 257.4       | Borehole terminated at 2.44 m below ground surface in SILTY SAND.                    |              |                 |        |         |         |            |               |                                                                                                               |                                                              |                                                                                                                                                                                                                                                                                     |
| 3.0       |             |                                                                                      |              |                 |        |         |         |            |               |                                                                                                               |                                                              |                                                                                                                                                                                                                                                                                     |

WSP GEOTECH (METRIC) WITH UTM AND MASL\_FENELON BOREHOLE LOGS.GPJ WSP\_ENV\_V1.GDT 8/9/18





# BOREHOLE NO. WP3

PAGE 1 of 1

PROJECT NAME: CITY OF KAWARTHA LAKES - FENELON FALLS LANDFILL

PROJECT NO.: 171-00763-01

CLIENT: CITY OF KAWARTHA LAKES

DATE COMPLETED: Jul 12, 2018

BOREHOLE TYPE: 157.8 mm HAND AUGER

SUPERVISOR: TB

GROUND ELEVATION: 259.4 m (Geodetic)

REVIEWER: RDJ

| DEPTH (m) | ELEV (MASL) | STRATIGRAPHIC DESCRIPTION                                                            | STRATIGRAPHY | MONITOR DETAILS | SAMPLE |         |         |            |                | CONE PENETRATION<br>"N" VALUE<br>10 20 30<br>SHEAR STRENGTH<br>10 20 30 40<br>Intact (Max) Cu<br>Remoulded Cu | WATER CONTENT %<br>15 30 45<br>W <sub>p</sub> W <sub>L</sub> | UTM CO-ORDINATES<br>UTM Zone: NAD:<br>Easting:<br>Northing:<br><br>REMARKS                                                                                                                                                                                                          |
|-----------|-------------|--------------------------------------------------------------------------------------|--------------|-----------------|--------|---------|---------|------------|----------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |             |                                                                                      |              |                 | TYPE   | N VALUE | % WATER | % RECOVERY | PI/D/TOV (ppm) |                                                                                                               |                                                              |                                                                                                                                                                                                                                                                                     |
| 0.0       |             | <b>TOPSOIL:</b><br>Black silty TOPSOIL, trace sand, some organics, wet to saturated. |              |                 |        |         |         |            |                |                                                                                                               |                                                              | Monitoring well installed with 50 mm inner diameter, schedule 40 PVC risers, with a 3.05 m length No. 10 screen size well screen. Top of pipe elevation = 260.24 m (Geodetic).<br><br>Groundwater level measured at 0.9 m below ground surface in monitoring well on July 13, 2018. |
| 0.8       | 258.7       | <b>SILTY SAND:</b><br>Light brown SILTY SAND, trace gravel, saturated.               |              |                 |        |         |         |            |                |                                                                                                               |                                                              |                                                                                                                                                                                                                                                                                     |
| 1.0       |             |                                                                                      |              |                 |        |         |         |            |                |                                                                                                               |                                                              |                                                                                                                                                                                                                                                                                     |
| 2.0       |             |                                                                                      |              |                 |        |         |         |            |                |                                                                                                               |                                                              |                                                                                                                                                                                                                                                                                     |
| 2.4       | 257.0       | Borehole terminated at 2.4 m below ground surface in SILTY SAND.                     |              |                 |        |         |         |            |                |                                                                                                               |                                                              |                                                                                                                                                                                                                                                                                     |
| 3.0       |             |                                                                                      |              |                 |        |         |         |            |                |                                                                                                               |                                                              |                                                                                                                                                                                                                                                                                     |

WSP GEOTECH (METRIC) WITH UTM AND MASL FENELON BOREHOLE LOGS.GPJ WSP\_ENV\_V1.GDT 8/9/18





# BOREHOLE NO. WP4

PAGE 1 of 1

PROJECT NAME: CITY OF KAWARTHA LAKES - FENELON FALLS LANDFILL

PROJECT NO.: 171-00763-01

CLIENT: CITY OF KAWARTHA LAKES

DATE COMPLETED: Jul 12, 2018

BOREHOLE TYPE: 157.8 mm HAND AUGER

SUPERVISOR: TB

GROUND ELEVATION: 259.4 m (Geodetic)

REVIEWER: RDJ

| DEPTH (m) | ELEV (MASL) | STRATIGRAPHIC DESCRIPTION                                                            | STRATIGRAPHY | MONITOR DETAILS | SAMPLE |         |         |            |                | CONE PENETRATION |                | WATER CONTENT % | UTM CO-ORDINATES                                                                                                                                                               |
|-----------|-------------|--------------------------------------------------------------------------------------|--------------|-----------------|--------|---------|---------|------------|----------------|------------------|----------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |             |                                                                                      |              |                 | TYPE   | N VALUE | % WATER | % RECOVERY | PI/D/TOV (ppm) | "N" VALUE        | SHEAR STRENGTH |                 |                                                                                                                                                                                |
| 0.0       |             | <b>TOPSOIL:</b><br>Black silty TOPSOIL, trace sand, some organics, wet to saturated. |              |                 |        |         |         |            |                | 10 20 30         | 10 20 30 40    | 15 30 45        | UTM Zone: NAD:<br>Easting:<br>Northing:                                                                                                                                        |
| 0.9       | 258.6       | <b>SILTY SAND:</b><br>Light brown SILTY SAND, trace gravel, saturated.               |              |                 |        |         |         |            |                |                  |                |                 | REMARKS                                                                                                                                                                        |
| 1.0       |             |                                                                                      |              |                 |        |         |         |            |                |                  |                |                 |                                                                                                                                                                                |
| 2.0       |             |                                                                                      |              |                 |        |         |         |            |                |                  |                |                 |                                                                                                                                                                                |
| 2.4       | 257.0       | Borehole terminated at 2.4 m below ground surface in SILTY SAND.                     |              |                 |        |         |         |            |                |                  |                |                 | Monitoring well installed with 50 mm inner diameter, schedule 40 PVC risers, with a 3.05 m length No. 10 screen size well screen. Top of pipe elevation = 260.05 m (Geodetic). |
| 3.0       |             |                                                                                      |              |                 |        |         |         |            |                |                  |                |                 | Groundwater level measured at 0.8 m below ground surface in monitoring well on July 13, 2018.                                                                                  |



# BOREHOLE NO. WP5

PAGE 1 of 1

PROJECT NAME: CITY OF KAWARTHA LAKES - FENELON FALLS LANDFILL

PROJECT NO.: 171-00763-01

CLIENT: CITY OF KAWARTHA LAKES

DATE COMPLETED: Jul 12, 2018

BOREHOLE TYPE: 157.8 mm HAND AUGER

SUPERVISOR: TB

GROUND ELEVATION: 259.2 m (Geodetic)

REVIEWER: RDJ

| DEPTH (m) | ELEV (MASL) | STRATIGRAPHIC DESCRIPTION                                                            | STRATIGRAPHY | MONITOR DETAILS | SAMPLE |         |         |            |               | CONE PENETRATION<br>"N" VALUE<br>10 20 30<br>SHEAR STRENGTH<br>10 20 30 40<br>Intact (Max) Cu<br>Remoulded Cu | WATER CONTENT %<br>15 30 45<br>W <sub>p</sub> W <sub>L</sub> | UTM CO-ORDINATES<br>UTM Zone: NAD:<br>Easting:<br>Northing: | REMARKS                                                                                                                                                                        |
|-----------|-------------|--------------------------------------------------------------------------------------|--------------|-----------------|--------|---------|---------|------------|---------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |             |                                                                                      |              |                 | TYPE   | N VALUE | % WATER | % RECOVERY | PLD/TOV (ppm) |                                                                                                               |                                                              |                                                             |                                                                                                                                                                                |
| 0.0       |             | <b>TOPSOIL:</b><br>Black silty TOPSOIL, trace sand, some organics, wet to saturated. |              |                 |        |         |         |            |               |                                                                                                               |                                                              |                                                             | Monitoring well installed with 50 mm inner diameter, schedule 40 PVC risers, with a 0.45 m length No. 10 screen size well screen. Top of pipe elevation = 260.18 m (Geodetic). |
| 0.5       | 258.7       | <b>SILTY SAND:</b><br>Light brown SILTY SAND, trace gravel, saturated.               |              |                 |        |         |         |            |               |                                                                                                               |                                                              |                                                             | Groundwater level measured at 0.1 m below ground surface in monitoring well on July 13, 2018.                                                                                  |
| 0.9       | 258.2       | Borehole terminated at 0.9 m below ground surface in SILTY SAND.                     |              |                 |        |         |         |            |               |                                                                                                               |                                                              |                                                             |                                                                                                                                                                                |
| 1.0       |             |                                                                                      |              |                 |        |         |         |            |               |                                                                                                               |                                                              |                                                             |                                                                                                                                                                                |
| 2.0       |             |                                                                                      |              |                 |        |         |         |            |               |                                                                                                               |                                                              |                                                             |                                                                                                                                                                                |
| 3.0       |             |                                                                                      |              |                 |        |         |         |            |               |                                                                                                               |                                                              |                                                             |                                                                                                                                                                                |



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## **APPENDIX E**

### **ECA and MECP Correspondence**

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**AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER A321206

Issue Date: January 20, 2016

The Corporation of the City of Kawartha Lakes  
12 Peel St  
Lindsay, Ontario  
K9V 3L8

Site Location: Fenelon Landfill Site  
341 Mark Rd Lot 16, Concession 4, former Township of Fenelon  
Kawartha Lakes City,

*You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:*

the use and operation of 21.3 hectare waste disposal/transfer/composting and reuse site, and 102.6 hectares of contaminant attenuation zone for the following types of waste:

**solid non-hazardous waste** as defined in Reg. 347, generated within the boundaries of the City of Kawartha Lakes.

Note: Use of the Site for any other type of waste is not authorized under this Approval, and requires obtaining a separate amendment for this Approval.

*For the purpose of this environmental compliance approval, the following definitions apply:*

"Approval" or "ECA" means this Environmental Compliance Approval and any Schedules to it, including the application and supporting documentation listed in Schedule "A".

"Contaminating Life Span" means contaminating life span as defined in Ontario Regulation 232/98;

"Compost" means Leaf and Yard Waste that has been composted and fully cured and tested to confirm it meets the criteria in Table 1 of O.Reg. 101/94. Compost is not considered a waste if testing for the compost quality criteria is completed and compliance with the criteria is demonstrated;

"Depot" means the Household Hazardous Waste Depot, and includes any building, drop-off areas,

storage areas and any other structures, areas and facilities associated with the handling, consolidation, storage, transfer and transport of HHW.

"Director" means any Ministry employee appointed in writing by the Minister pursuant to section 5 of the EPA as a Director for the purposes of Part V of the EPA;

"District Manager" means the District Manager of the local district office of the Ministry in which the Site is geographically located;

"EPA" means Environmental Protection Act, R.S.O. 1990, c. E. 19, as amended;

"HHW" means household hazardous waste (also known as municipal hazardous and special waste) ;

"Leaf and Yard Waste" means waste consisting of leaves, grass clippings, natural Christmas trees and other plant materials, generally less than seven (7) centimetres in diameter;

"Coarse Leaf and Yard Waste" means Leaf and Yard Waste that consists of tree stumps, limbs or other woody materials in excess of seven (7) centimetres in diameter;

"Ministry" means the Ontario Ministry of the Environment and Climate Change;

"NMA" means Nutrient Management Act, 2002, S.O. 2002, c. 4, as amended;

"Operator" means any person, other than the Owner's employees, authorized by the Owner as having the charge, management or control of any aspect of the Site and includes its successors or assigns;

"Owner" means any person that is responsible for the establishment or operation of the Site being approved by this Approval, and includes The Corporation of the City of Kawartha Lakes its successors and assigns;

"OWRA" means the Ontario Water Resources Act, R.S.O. 1990, c. O.40, as amended;

"PA" means the Pesticides Act, R.S.O. 1990, c. P-11, as amended;

"PRC" means the Public Review Committee for this site, as described in the conditions in this Approval.

"Provincial Officer" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the OWRA or Section 5 of the EPA or Section 17 of PA or Section 4 of NMA or Section 8 of SDWA.

"PWQO" means the Provincial Water Quality Objectives, dated July 1994, as amended;

"Reasonable Use Guideline" means the Ministry Guideline B-7 entitled "Incorporation of the Reasonable Use Concept into MOEE Groundwater Management Activities", dated April 1994, as amended;

"Regional Director" means the Regional Director of the local Regional Office of the Ministry in which the Site is located.

"Regulation 101" means Regulation 101/94, Recycling and Composting of Municipal Waste, as amended;

"Regulation 347" or "Reg. 347" means Regulation 347/90, as amended;

"SDWA" means Safe Drinking Water Act, 2002, S.O. 2002, c. 32, as amended;

"Site" means the entire waste disposal site including the landfilling area, buffer lands, Household Hazardous Waste Depot, Reuse Centre, Leaf and Yard Waste Compost facility authorized by this Approval located at 341 Mark Rd Lot 16, Concession 4, former Township of Fenelon, City of Kawartha Lakes; and

"Trained personnel" means personnel knowledgeable in the following through instruction and/or practice:

- a. relevant waste management legislation, regulations and guidelines;
- b. major environmental concerns pertaining to the waste to be handled;
- c. occupational health and safety concerns pertaining to the processes and wastes to be handled;
- d. management procedures including the use and operation of equipment for the processes and wastes to be handled;
- e. emergency response procedures;
- f. specific written procedures for the control of nuisance conditions;
- g. specific written procedures for refusal of unacceptable waste loads; and
- h. the requirements of this Approval.

*You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:*

## **TERMS AND CONDITIONS**

### **1. GENERAL**

#### **Compliance**

- (1) The Owner and Operator shall ensure compliance with all the conditions of this Approval and shall ensure that any person authorized to carry out work on or operate any aspect of the Site is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

- (2) Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this Approval.

#### **In Accordance**

- (3) Except as otherwise provided by this Approval, the Site shall be designed, developed, built, operated and maintained in accordance with the documentation listed in the attached Schedule "A".

#### **Interpretation**

- (4) Where there is a conflict between a provision of any document listed in Schedule "A" in this Approval, and the conditions of this Approval, the conditions in this Approval shall take precedence.
- (5) Where there is a conflict between the application and a provision in any document listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the Ministry approved the amendment.
- (6) Where there is a conflict between any two documents listed in Schedule "A", the document bearing the most recent date shall take precedence.
- (7) The conditions of this Approval are severable. If any condition of this Approval, or the application of any condition of this Approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.

#### **Other Legal Obligations**

- (8) The issuance of, and compliance with, this Approval does not:
- (a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or
  - (b) limit in any way the authority of the Ministry to require certain steps be taken or to require the Owner and Operator to furnish any further information related to compliance with this Approval.

#### **Adverse Effect**

- (9) The Owner and Operator shall take steps to minimize and ameliorate any adverse effect on the natural environment or impairment of water quality resulting from the Site, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

- (10) Despite an Owner, Operator or any other person fulfilling any obligations imposed by this Approval the person remains responsible for any contravention of any other condition of this Approval or any applicable statute, regulation, or other legal requirement resulting from any act or omission that caused the adverse effect to the natural environment or impairment of water quality.

### **Change of Ownership**

- (11) The Owner shall notify the Director, in writing, and forward a copy of the notification to the District Manager, within 30 days of the occurrence of any changes in the following information:
- (a) the ownership of the Site;
  - (b) the Operator of the Site;
  - (c) the address of the Owner or Operator; and
  - (d) the partners, where the Owner or Operator is or at any time becomes a partnership and a copy of the most recent declaration filed under the Business Names Act, R. S. O. 1990, c. B.17, shall be included in the notification.
- (12) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance and sufficient financial assurance is deposited with the Ministry to ensure that these conditions will be carried out.
- (13) In the event of any change in Ownership of the Site, other than change to a successor Owner, the Owner shall notify the successor of and provide the successor with a copy of this Approval, and the Owner shall provide a copy of the notification to the District Manager and the Director.

### **Certificate of Requirement/Registration on Title**

- (14) The Owner shall:
- (a) Within six (6) months of the date of the issuance of this Approval, submit to the Director for review, two copies of a completed Certificate of Requirement with a registerable description of the Site; and
  - (b) Within 10 calendar days of receiving the Certificate of Requirement authorized by the Director, register the Certificate of Requirement in the appropriate Land Registry Office on title to the Site and submit to the Director and the District Manager the duplicate registered copy immediately following registration.
- (15) Pursuant to Section 197 of the Environmental Protection Act, neither the Owner nor any person having an interest in the Site shall deal with the Site in any way without first giving a copy of this Approval to each person acquiring an interest in the Site as a result of the dealing.



### **Registration on Title Requirement - Contaminant Attenuation Zone (CAZ)**

- (16) For any new lands added, or if not done previously for existing CAZ lands, the Owner shall, within six (6) months from the date of issuance of this Approval, submit to the Director documents confirming that a contaminant attenuation zone (CAZ) has been established, in either fee simple or by way of a groundwater easement.
- (a) If rights are obtained in fee simple, the Owner shall provide:
    - (i) documentation evidencing ownership of the CAZ obtained in compliance with O.Reg. 232/98, as amended;
    - (ii) a completed Certificate of Requirement and supporting documents containing a registerable description of the CAZ; and
    - (iii) a letter signed by a member of the Law Society of Upper Canada; or other qualified legal practitioner acceptable to the Director, verifying the legal description of the CAZ.
  - (b) within fifteen (15) calendar days of receiving a Certificate of Requirement signed or authorized by the Director, the Owner shall:
    - (i) register the Certificate of Requirement in the appropriate Land Registry Office on the title to the property; and
    - (ii) submit to the Director a written verification that the Certificate of Requirement has been registered on title.
  - (c) The Owner shall not amend or remove or consent to the removal of the easement or CAZ from title without the prior written consent of the Director.

### **Inspections by the Ministry**

- (17) No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the OWRA, the EPA, the PA, the SDWA or the NMA, of any place to which this Approval relates, and without limiting the foregoing:
- (a) to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this Approval are kept;
  - (b) to have access to, inspect, and copy any records required to be kept by the conditions of this Approval;
  - (c) to inspect the Site, related equipment and appurtenances;
  - (d) to inspect the practices, procedures, or operations required by the conditions of this Approval; and
  - (e) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Approval or the EPA, the OWRA, the PA, the SDWA or the NMA.

### **Information and Record Retention**

- (18) (a) Except as authorized in writing by the Director, all records required by this ECA

shall be retained at the Site for a minimum of two (2) years from their date of creation.

- (b) The Owner shall retain all documentation listed in Schedule "A" for as long as this ECA is valid.
  - (c) All daily logs are to be kept at the Site for the current operating year.
  - (d) The Owner shall retain employee training records as long as the employee is working at the Site.
  - (e) The Owner shall make all of the above documents available for inspection upon request of Ministry staff.
- (19) The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action, under this Approval or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:
- (a) an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any term or condition of this Approval or any statute, regulation or other legal requirement; or
  - (b) acceptance by the Ministry of the information's completeness or accuracy.
- (20) (a) The Owner shall ensure that a copy of this Approval, in its entirety and including all its Notices of Amendment are retained at the Site at all times.
- (b) Copies of all documentation listed in Schedule "A" shall be retained in the Solid Waste Services administration office.
- (21) Any information related to this Approval and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, RSO 1990, CF-31.

## **2. SITE OPERATION**

### **Operation**

- (1) The Site shall be operated and maintained at all times including management and disposal of all waste, in accordance with the EPA, Regulation 347, and the conditions of this Approval. At no time shall the discharge of a contaminant that causes or is likely to cause an adverse effect be permitted.

### **Signs**

- (2) A sign shall be installed and maintained at the main entrance/exit to the Site on which is

legibly displayed the following information:

- (a) the name of the Site and Owner;
  - (b) the number of the Approval;
  - (c) the name of the Operator;
  - (d) the normal hours of operation;
  - (e) the allowable and prohibited waste types;
  - (f) the telephone number to which complaints may be directed;
  - (g) a warning against unauthorized access;
  - (h) a twenty-four (24) hour emergency telephone number (if different from above);  
and
  - (i) a warning against dumping outside the Site.
- (3) The Owner shall install and maintain signs to direct vehicles to working face, recycling, re-use and transfer area.
- (4) The Owner shall provide signs at recycling storage areas, HHW Depot and re-use centre informing users what materials are acceptable and directing users to appropriate storage areas.

#### **Vermin, Vectors, Dust, Litter, Odour, Noise and Traffic**

- (5) The Site shall be operated and maintained such that the vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.

#### **Burning Waste Prohibited**

- (6) (a) Burning of waste at the Site is prohibited.
- (b) Notwithstanding Condition 2. (6) (a) above, burning of segregated, clean wood and brush at the landfill may be carried out in strict compliance with the Ministry of the Environment Document titled "Guideline C-7, Burning at Landfill Sites" dated April 1994.

#### **Site Access**

- (7) The operating hours for the Site for the receipt of waste for disposal, site preparation, site maintenance and daily cover activities are Monday through Saturday between the hours of 7:00 a.m. and 7:00 p.m.
- (8) On-site equipment used for daily site preparation and closing activities may be operated one (1) hour before and one (1) hour after the hours of operation approved by this Approval.
- (9) With the prior written approval from the District Manager, the time periods may be extended to accommodate seasonal or unusual quantities of waste.

### **Site Security**

- (10) No waste shall be received, landfilled or removed from the Site unless a site supervisor or an attendant is present and supervises the operations during operating hours. The Site shall be closed when a site attendant is not present to supervise landfilling operations.
- (11) The Site shall be operated and maintained in a safe and secure manner. During non-operating hours, the Site entrance and exit gates shall be locked and the Site shall be secured against access by unauthorized persons.

### **Public Review Committee (PRC)**

- (12) The Owner shall forthwith take all reasonable steps to establish, maintain and participate in a Public Review Committee (PRC), which is to function within terms of reference for the PRC, as prepared by the Owner, and as amended from time to time according to appropriate amending procedures. A copy of the terms of reference shall be provided to the District Manager. The PRC shall serve as a focal point for dissemination, consultation, review and exchange of information regarding the operation of the Site.
- (13) The Owner shall develop Terms of Reference for the PRC. The membership of the PRC shall include at least one member from the Owner and at least two members from interested parties.
- (14) Copies of all reports or other submissions required by the conditions of this Approval shall be made available to the PRC.
- (15) The Owner shall provide to members of the PRC and to any neighbouring residents reasonable notice and opportunities to make comments regarding any proposed amendment to this Approval. The Owner shall forward to the Director for consideration any written comments received by the Owner.
- (16) The PRC shall meet twice annually.

## **3. EMPLOYEE TRAINING**

- (1) A training plan for all employees that operate any aspect of the Site shall be developed and implemented by the Operator. Only Trained Personnel shall operate any aspect of the Site or carry out any activity required under this Approval.

## **4. COMPLAINTS RESPONSE PROCEDURE**

- (1) If at any time the Owner receives complaints regarding the operation of the Site, the Owner shall respond to these complaints according to the following procedure:

- (a) The Owner shall record and number each complaint, either electronically or in a log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint;
- (b) The Owner, upon notification of the complaint, shall initiate appropriate steps to determine possible causes of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint and forward a formal reply to the complainant; and
- (c) The Owner shall complete a report written within one (1) week of the complaint date, listing the actions taken to resolve the complaint and any recommendations for remedial measures, and managerial or operational changes to reasonably avoid the recurrence of similar incidents.

## **5. EMERGENCY RESPONSE**

- (1) Any spills, fires or other emergency situations shall be forthwith reported directly to the Ministry's Spills Action Centre (1-800-268-6060) and shall be cleaned up immediately.
- (2) In addition, the Owner shall submit, to the District Manager a written report within one (1) week of the emergency situation, outlining the nature of the incident, remedial measures taken, handling of waste generated as a result of the emergency situation and the measures taken to prevent future occurrences at the Site.
- (3) All wastes resulting from an emergency situation shall be managed and disposed of in accordance with O.Reg. 347, unless otherwise specified by the District Manager.
- (4) The Owner shall ensure that adequate fire extinguishers and contingency spill clean up material is available and that emergency response personnel are familiar with its use and location.

## **6. RECORD KEEPING AND REPORTING**

### **Daily Log Book**

- (1) A daily log shall be maintained and shall include the following information:
  - (a) the type, date and time of arrival, hauler, and quantity (tonnes) of all waste and cover material received at the Site;
  - (b) the area of the Site in which waste disposal operations are taking place;
  - (c) a record of litter collection activities and the application of any dust suppressants;
  - (d) a record of the daily inspections; and
  - (e) a description of any out-of-service period of any control, treatment, disposal or monitoring facilities, the reasons for the loss of service, and action taken to restore

- and maintain service.
- (f) A record shall be kept in the daily log book of all refusals of waste shipments, the reason(s) for refusal, and the origin of the waste, if known.
  - (g) A daily inspection of the Site and all equipment on the site shall be conducted to ensure that: the Site is secure; that the operations of the Site is not causing any nuisances and that the Site is being operated in compliance with this Approval. Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the Site if needed.
- (2) Any information requested, by the Director or a Provincial Officer, concerning the Site and its operation under this Approval, including but not limited to any records required to be kept by this Approval shall be provided to the Ministry, upon request.

### **Inspections and Log Book**

- (3) (a) A comprehensive Site inspection shall occur semi-annually. Inspections shall consider, at a minimum, leachate break-outs, condition of vegetation, erosion, condition of Site access roads, ditches, berms and swales, signs, evidence of nuisance factors such as litter and odours. The results of Site inspections shall be recorded as part of the Condition 6 (4).
  - (b) Within ten (10) business days within noting a leachate outbreak during an inspection, the Owner shall notify the District Manager in writing, including the location of the outbreak on a map of the Site and remedial measures taken.
- (4) A record of the inspections shall be maintained and include:
- (a) the name and signature of person that conducted the inspection;
  - (b) the date and time of the inspection;
  - (c) the list of any deficiencies discovered;
  - (d) the recommendations for remedial action; and
  - (e) the date, time and description of actions taken.

### **Annual Report**

- (5) A written report on the development, operation and monitoring of the Site, shall be completed annually (the "Annual Report"). The Annual Report shall be submitted to the District Manager, by May 31st of the year following the period being reported upon.
- (6) The Annual Report shall include the following:
- (a) the results and an interpretive analysis of the results of all leachate, groundwater, surface water and landfill gas monitoring, including an assessment of the need to amend the monitoring programs;
  - (b) an assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the Site, and the adequacy of and need to implement the contingency plans;

- (c) site plans showing the existing contours of the Site; areas of landfilling operation during the reporting period; areas of intended operation during the next reporting period; areas of excavation during the reporting period; the progress of final cover, vegetative cover, and any intermediate cover application; facilities existing, added or removed during the reporting period; and site preparations and facilities planned for installation during the next reporting period;
- (d) calculations of the volume of waste, daily and intermediate cover, and final cover deposited or placed at the Site during the reporting period and a calculation of the total volume of Site capacity used during the reporting period;
- (e) a calculation of the remaining capacity of the Site and an estimate of the remaining Site life;
- (f) total annual quantity (tonnes) of waste received at the Site;
- (g) a summary of any complaints received and the responses made;
- (h) a discussion of any operational problems encountered at the Site and corrective action taken;
- (i) any changes to the Design and Operations Report and the Closure Plan that have been approved by the Director since the last Annual Report;
- (j) a report on the status of all monitoring wells requiring decommissioning or repair during the reporting period; and
- (k) any other information with respect to the Site which the Regional Director may require from time to time.

## **7. LANDFILL DESIGN AND DEVELOPMENT**

### **Approved Waste Types**

- (1) The site may accept solid non-hazardous waste as defined in Reg. 347 for landfilling.
- (2) The Owner shall develop and implement a program to inspect waste to ensure that the waste received at the Site is of a type approved for acceptance under this Approval.
- (3) The Owner shall ensure that all loads of waste are properly inspected by Trained personnel prior to acceptance at the Site and that the waste vehicles are directed to the appropriate areas for disposal or transfer of the waste. The Owner shall notify the District Manager, in writing, of load rejections at the Site within one (1) week from their occurrence.

### **Approval for Filling of Phase 2**

- (4) Approval is hereby granted for filling of Phase 2, as shown in Figure 15 of the updated Design and Operations Report, November 2015, item 22 of Schedule "A".
- (5) The Owner shall ensure that landfilling in Phase 2 is carried out as described in the proposed (updated) development plan, described in Section 6.5 of the Updated Design

and Operations report, item 22 of Schedule A.

- (6) The containment berms as shown in Figure 19 a, and described in Section 6.5 of the Updated Design and Operations Report, shall be constructed, prior to landfilling of any waste in Phase 2.

### **Capacity**

- (7) No waste shall be landfilled outside of the limit of waste final contours as shown on Figure 15, of the updated Design and Operations Report, item 22 of Schedule "A".
- (8) Final contours shall not exceed 274.5 metres above sea level at any point on the approved landfill area and includes allowances for final cover.
- (9) The total approved remaining capacity inclusive of daily and intermediate cover, but exclusive of final cover for this Site as of October 28, 2003 is 276,000 cubic metres.

### **Service Area**

- (10) Only waste that is generated within the boundaries of the City of Kawartha Lakes may be accepted at the Site.

### **Cover**

- (11) Cover material shall be applied as follows:
  - (a) Daily Cover - Weather permitting, deposited waste shall be covered with 15 centimetres of clean soil or approved alternative daily cover on each operating day in a manner acceptable to the District Manager so that no waste is exposed to the atmosphere;
  - (b) Intermediate Cover - In areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 300 millimetre of soil cover or an approved thickness of alternative cover material shall be placed; and
  - (c) Final Cover - In areas where landfilling has been completed to final waste contours within twelve (12) months from reaching final waste contours, a minimum 600 millimetre thick layer of soil of medium permeability and 150 millimetres of top soil (vegetative cover) shall be placed. Fill areas shall be progressively completed and rehabilitated as landfill development reaches final contours.
- (12) (a) The Owner shall ensure that Phase 1 is progressively capped with final cover.



- (b) By December 31, 2016, final cover shall be placed on Phase 1, up to the Phase 1/2 boundary, as shown in Figure 19, Proposed Filling Plan, in item 22 of Schedule A.

### **Approved Daily Cover and Alternative Daily Cover Materials**

- (13) Alternative materials to soil may be used as daily and interim cover material, based on an application with supporting information and applicable fee for a trial use or permanent use, submitted by the Owner to the Director, copied to the District Manager and as approved by the Director via an amendment to this Approval. The alternative material shall be non-hazardous according to Reg. 347 and will be expected to perform at least as well as soil in relation to the following functions:
  - (a) Control of blowing litter, odours, dust, landfill gas, gulls, vectors, vermin and fires;
  - (b) Provision for an aesthetic condition of the landfill during the active life of the Site;
  - (c) Provision for vehicle access to the active tipping face; and
  - (d) Compatibility with the design of the Site for groundwater protection, leachate management and landfill gas management.
- (14) Construction/demolition wastes, clean, dry wood wastes and brush wastes, all of which are segregated from other wastes, are exempted from the daily cover requirement.
- (15) The Owner is hereby permitted to use "paper fibre product" as daily and interim cover at the Fenelon Landfill Site in accordance with the documents in the Schedule "A".
- (16) The Owner is hereby permitted to use soil, Compost, wood chips, foundry sand, shingles, non-hazardous wood/construction waste (fines) and flexible membranes (tarps, enviro cover systems as alternative daily cover material. Flexible membranes shall be removed prior to the next layer of waste is deposited.
- (17)
  - (a) The Owner is permitted to conduct a pilot test for the use of steel plates as alternative daily cover at the Site. Steel plates may be used for a two (2) year period, expiring at two calendar years from the date of this Approval.
  - (b) If the Owner will seek continued use of the plates as alternative daily cover, an application to amend this Approval shall be submitted to the Director prior to the expiry date, including a pilot report with an assessment on the performance of the plates in consideration of the requirements in Condition 7. (13).
- (18) Partially composted Leaf and Yard Waste may be used as alternative daily cover at the Site.

- (19) Contaminated (non-hazardous) soils may not be used as alternative daily cover at the Site.

### **Compaction of Waste**

- (20) The Owner shall ensure that waste is compacted with a minimum of three (3) passes over each lift of waste.

## **8. LANDFILL MONITORING**

### **Landfill Gas**

- (1) The Owner shall ensure that any buildings or structures at the Site contain adequate ventilation systems to relieve any possible landfill gas accumulation to prevent methane concentration reaching the levels within its explosive range. Routine monitoring for explosive methane gas levels shall be conducted in all buildings or structures at the Site, especially enclosed structures which at times are occupied by people.

### **Compliance**

- (2) The Site shall be operated in such a way as to ensure compliance with the following:
- (a) Reasonable Use Guideline B-7 for the protection of the groundwater at the Site; and
  - (b) Provincial Water Quality Objectives included in the July 1994 publication entitled Water Management Policies, Guidelines, Provincial Water Quality Objectives, as amended from time to time or limits set by the Regional Director, for the protection of the surface water at and off the Site.

### **Surface Water and Ground Water**

- (3) The Owner shall monitor surface water and ground water in accordance with appendix H of the Updated Design and Operations Report, November 2015, item 22 in Schedule "A".
- (4) In addition to Condition (3), the Owner shall:
- Monitor monitoring well nest MW27 and MW28 on a quarterly basis for the following two calendar years from the date of issue of this Approval.
  - Include spring and fall sampling for volatile organic compounds at wells WP1-10, WP2-10, WP3-10, and WP4-10.
- (5) A certified Professional Geoscientist or Engineer possessing appropriate hydrogeologic training and experience shall oversee the execution of the groundwater monitoring and

reporting program.

### **Groundwater Wells and Monitors**

- (6) The Owner shall ensure that all groundwater monitoring wells which form part of the monitoring program are properly capped, locked and protected from damage.
- (7) Where landfilling is to proceed around monitoring wells, suitable extensions shall be added to the wells and the wells shall be properly re-secured.
- (8) Any groundwater monitoring well included in the on-going monitoring program that are damaged shall be assessed, repaired, replaced or decommissioned by the Owner, as required.
  - (a) The Owner shall repair or replace any monitoring well which is destroyed or in any way made to be inoperable for sampling such that no more than one regular sampling event is missed.
  - (b) All monitoring wells which are no longer required as part of the groundwater monitoring program, and have been approved by the Director for abandonment, shall be decommissioned by the Owner, as required, in accordance with O.Reg. 903, that will prevent contamination through the abandoned well. A report on the decommissioning of the well shall be included in the Annual Report for the period during which the well was decommissioned.

### **Changes to the Monitoring Plan**

- (9) The Site monitoring programs may be amended with approval from the Director.

### **Trigger Mechanisms and Contingency Plans**

- (10) (a) The Site surface water trigger mechanism is established as follows:
  - two consecutive exceedances of one or more of the trigger parameter concentrations; with the exceedance confirmed by a third sample within thirty (30 ) days of exceedance.
  - the triggers are applied to the surface water stations located 30 m from the toe of the landfill, at transect lines WP4, SW13, and SW15.
- (b) The Owner shall initiate the following steps upon confirmation of an exceedance as follows:
  - notification of the District Manager within thirty (30) working days of receipt of confirmation of results;

- initiation of an assessment of potential sources of the exceedance;
  - the assessment shall include an evaluation of biological impacts (including vegetation and toxicity surveys);
  - provision of a written assessment of the results, to the District Manager within one (1) calendar year of the date of receipt of confirmation of the exceedance, and included in the Annual Site Monitoring Report for the year in which the exceedance was confirmed.
- (c) If monitoring results, investigative activities and/or trigger mechanisms indicate the need to implement contingency measures, the *Owner* shall ensure that the following steps are taken:
- i. The *Owner* shall notify the *Director* and *District Manager* , in writing, of the need to implement contingency measures, no later than 30 days after confirmation of the exceedances;
  - ii. Detailed plans, specifications and descriptions for the design, operation and maintenance of the contingency measures shall be prepared and submitted by the *Owner* to the *Director* and *District Manager* for approval within 90 days after confirmation of the exceedances; and
  - iii.. The contingency measures shall be implemented by the *Owner* upon approval by the *Director* .
- (d) The *Owner* shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to surface water or groundwater, shall be approved in advance by the *Director* prior to implementation
- (e) The *Owner* shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to the surface water or groundwater, are approved in advance by the *Director* via an amendment to this *Approval* .

## 9. CLOSURE PLAN

- (1) At least three (3) years prior to the anticipated date of closure of this Site, the Owner shall submit to the Director for approval, with copies to the District Manager, a detailed Site closure plan pertaining to the termination of landfilling operations at this Site, post-closure inspection, maintenance and monitoring, and end use. The plan shall include the following:
- (a) a plan showing Site appearance after closure;
  - (b) a description of the proposed end use of the Site;

- (c) a description of the procedures for closure of the Site, including:
  - (i) advance notification of the public of the landfill closure;
  - (ii) posting of a sign at the Site entrance indicating the landfill is closed and identifying any alternative waste disposal arrangements for a period of one year after closure;
  - (iii) completion, inspection and maintenance of the final cover and landscaping;
  - (iv) Site security;
  - (v) removal of unnecessary landfill-related structures, buildings and facilities;
  - (vi) final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas; and
  - (vii) a schedule indicating the time-period for implementing sub-conditions (i) to (vi) above;
- (d) descriptions of the procedures for post-closure care of the Site, including:
  - (i) operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
  - (ii) record keeping and reporting; and
  - (iii) complaint contact and response procedures;
- (e) an assessment of the adequacy of and need to implement the contingency plans for leachate and methane gas; and
- (f) an updated estimate of the Contaminating Life Span of the Site, based on the results of the monitoring programs to date.

(2) The Site shall be closed in accordance with the closure plan as approved by the Director.

## **10. LEAF AND YARD WASTE COMPOSTING**

- (1) The Owner shall ensure that the Leaf and Yard Waste Compost facility accepts:
  - (a) not more than 250 tonnes of Leaf and Yard Waste in any given day; and
  - (b) not more than 2000 tonnes of Leaf and Yard Waste annually.
- (2) The Owner shall ensure that composting and curing are conducted in accordance with Sections 31 to 33 of Regulation 101/94, Part V - Leaf and Yard Waste Composting Sites.
- (3) Notwithstanding any of the provisions in Section 31 to 33 of Part V of the Regulation 101/94, the Owner shall operate subject to the following Conditions;
  - (a) waste accepted for composting shall be limited to Leaf and Yard Waste and chipped wood.
  - (b) all activities associated with the Leaf and Yard Waste composting operation shall take place on the designated pad constructed of wood chips;

- (c) Leaf and Yard Waste segregated fine material may not be stored for more than four days before it is placed in windrows.
- (d) Coarse Leaf and Yard Waste that is segregated for grinding shall be ground twice per year at a minimum.
- (e) The maximum quantity of the segregated/stored Coarse Leaf and Yard Waste at any time at the Leaf and Yard composting facility shall not be greater than 1500 tonnes.
- (f) On a trial basis, during the year 2016, 2017 and 2018, the temperature of each composting mass shall be measured and recorded weekly, at a minimum until the requirements in paragraphs 4 and 5 of Section 31 of Part V of the Regulation 101/94 have been satisfied. During the curing phase the temperature shall be measured and recorded weekly.
- (g) The Owner shall prepare and submit a written summary providing results of the monitoring of the Leaf and Yard composting process and compliance with Conditions 10 (2) and (3) (f). The summary shall be provided with the annual monitoring report for 2018, and shall include at a minimum, the sampling analysis of the Compost and document recommendations for continuation or amendment of Conditions 10 (2) and (3).
- (h) The Owner shall maintain, at the Leaf and Yard Waste Compost facility for a minimum of two (2) years, a log book or electronic file format which records daily the following information:
  - date of record;
  - quantities and source of Leaf and Yard Waste received;
  - the amount of Compost and/or rejected Compost shipped from the Site;
  - a record of daily inspections including the following information as a minimum;
    - (i) time and date of inspection;
    - (ii) name and title of inspector;
    - (iii) potential impacts noted;
    - (iv) remedial actions taken; and
    - (v) measures to prevent the problem from recurring;
  - windrow temperature readings;
  - composting activities undertaken (e.g. windrow formation, turning, screening etc);
  - meteorological information including ambient temperature, wind direction and wind speed; and
  - with respect to the Compost sampling required by Condition 10 (2) and (3) (f), the Owner shall maintain the following records as a minimum:
    - (i) sample collection locations and volume of the samples collected;
    - (ii) day and time of collection;
    - (iii) sample handling procedures;
    - (iv) parameters tested for and the resulting concentrations;
    - (v) name of the laboratory facility doing the testing; and
    - (vi) conclusions drawn with respect to the results of the monitoring and testing.

- (4) By May 31st of each year, the Owner shall include the following information as a minimum in the Annual Report required under the Condition 6 (5):
- (a) a monthly summary of the quantity of Leaf and Yard Waste received;
  - (b) a monthly summary of Compost transferred and the amount and destination of any rejected Compost;
  - (c) analytical results of samples taken from the Compost;
  - (d) a description of any environmental or operational problems, that could negatively impact the environment, encountered during the operation of the Leaf and Yard Waste Compost facility and the mitigative actions taken;
  - (e) a statement as to compliance with all Conditions of this Approval and with the inspection and reporting requirements of the Conditions herein; and
  - (f) any recommendations to minimize environmental impacts from, or improve the operations of, the Leaf and Yard Waste Compost facility.

## **11. HOUSEHOLD HAZARDOUS WASTE**

- (1)
  - (a) The HHW Depot shall operate in accordance with Item 10 of Schedule "A". Administrative amendments to Item 12 of Schedule "A" (i.e. HHW Depot Operations Manual) shall be submitted to the District Office for approval;
  - (b) The operation of the HHW Depot is limited to the receipt and transfer of household hazardous waste consisting of classes 112, 113, 114, 122, 123, 135, 145, 146, 147, 148, 212, 213, 221, 232, 241, 242, 252, 261, 263, 269, 312 and 331 as defined in the "New Ontario Waste Classes" dated January 1986 or as amended; and
  - (c) The HHW Depot shall not receive any pathological waste (class 312) other than syringes, lancets and needles.
- (2)
  - (a) The total amount of liquid waste stored at the HHW Depot, at any one time, shall not exceed 7,000 litres (7 cubic metres) or equivalent;
  - (b) The total amount of solid waste stored at the HHW Depot, at any one time, shall not exceed 40 tonnes;
  - (c) No HHW waste shall be stored at the Depot for a period longer than three (3) months without written approval of the District Manager.
- (3) The Depot may receive HHW only during hours of operation of the Site unless prior approval is given in writing, by the District Manager.
- (4) The Depot shall be maintained in a secure manner such that unauthorized persons cannot enter the HHW building nor access the storage areas outside.
- (5) No radioactive wastes shall be accepted at the Depot.
- (6) No PCBs (243) shall be accepted at the Depot. Oil and oil based paints which have been

manufactured prior to 1972, or whose manufacturing date cannot be determined, may contain PCBs, shall be handled in the following manner:

- (a) Oil and oil based paints shall not be mixed or bulked with other paints prior to testing. Paints which are lab-packed are not considered to be mixed under this Approval.
  - (b) Oil and oil-based paints shall be tested by a certified laboratory for PCB content and shall be handled in the manner as prescribed in this Approval.
  - (c) If the oil and oil-based paints are found to have PCBs at 50 parts per million or above, it shall be forthwith reported to the District Manager and shall be managed in accordance with Regulation 362/92 and stored or removed from the Depot to an approved PCB storage facility in accordance with written instructions from the District Manager.
  - (d) Oil and oil-based paints shall not be distributed for reuse if any measurable PCBs are found after being tested by a certified laboratory for PCBs.
- (7) Except for oil and oil-based paints having any measurable PCB content, paints collected at the Depot may be returned or sold to the general public for reuse provided all transactions are recorded by invoice. Information on the type and volume of paint returned to the public through this Depot shall be recorded in a log book kept at the Depot.
- (8) The Log Book shall record, on each day of operation:
- (a) date of record;
  - (b) types, quantities and source of waste received;
  - (c) quantities of waste stored at the Depot;
  - (d) quantities and destination of waste shipped from the Depot;
  - (e) quantities of paints returned or sold to the general public;
  - (f) results of routine, visual inspection of the Depot; and
  - (g) any reporting of spills or upsets and actions taken to contain and manage the waste.
- (9) Sufficient numbers of drums and lab-packed containers shall be available at the Depot such that all HHW, in quantities unanticipated or otherwise, can be safely stored.
- (10) The Owner shall conduct routine, visual inspection of the entire Depot area to ensure its security and to minimize off-site impacts such as odour, dust, litter and other nuisance factors.
- (11) Emergency response in the event of a spill or upset shall be undertaken in accordance with the "Spill Contingency and Emergency Response Plan" prepared by the City of Kawartha Lakes, as contained in Item 5 of Schedule "A".
- (12) A copy of the "Spill Contingency and Emergency Response Plan" shall be kept at the Depot at all times and made easily available to all staff.



- (13) The Owner shall ensure that all contingency equipment and materials as outlined in Item 5 of Schedule "A" are immediately available at the Depot at all times, in a good state of repair and fully operational.
- (14) All operators of the Depot shall be trained with respect to the following areas:
- (a) terms, conditions and operating requirements of this Approval as related to the operation of the Depot;
  - (b) operation and management of the Depot;
  - (c) responsibilities of Depot personnel;
  - (d) personnel training protocols;
  - (e) environmental concerns pertaining to wastes to be handled, mixed, transferred;
  - (f) receiving and recording procedures including procedures to record wastes which are refused at the Depot;
  - (g) waste paint identification, analysis information and separating procedures;
  - (h) storage, handling, sorting and shipping procedures;
  - (i) occupational health and safety concerns pertaining to the wastes;
  - (j) relevant waste management legislation and regulations;
  - (k) use, operation of contingency equipment and related materials; and
  - (l) emergency procedures.
- (15) Within four (4) months of the scheduled closure of the Depot, the Owner shall submit a detailed Closure Plan for approval by the Director. The Closure Plan shall include, as a minimum, description of the work required to close the Depot, schedule of works and decommissioning of the HHW area.

## **12. REUSE CENTRE**

- (1) The Owner may operate a "Reuse Centre" located adjacent to the HHW Depot for the handling, temporary storage of reusable items.
- (2) The Owner shall ensure that the "Reuse Centre" is only open during regular Site hours and that the facility is securely locked during other times.
- (3) Any solid, non-hazardous residual wastes arising from the operation of the Reuse Centre shall be disposed of at the Site as part of regular and normal operations.

## **13. WASTE DIVERSION**

- (1) The Owner shall ensure that:
- (a) all bins and waste storage areas are clearly labelled;
  - (b) all lids or doors on bins shall be kept closed during non-operating hours and during high wind events; and
  - (c) if necessary to prevent litter, waste storage areas shall be covered during high winds events.

- (2) The Owner shall transfer waste and recyclable materials from the Site as follows:
  - (a) recyclable materials shall be transferred off-site once their storage bins are full;
  - (b) scrap metal shall be transferred off-site at least twice a year;
  - (c) tires shall be transferred off-site as soon as a load for the contractor hired by the Owner has accumulated or as soon as the accumulated volume exceeds the storage capacity of its storage container; and
  - (d) immediately, in the event that waste is creating an odour or vector problem.
- (3) Collection, storage and transfer of Waste Electrical and Electronic Equipment shall be in accordance with the documents in the Schedule "A".

## **SCHEDULE "A"**

1. Hydrogeology Study, Phase 3, Fenelon Landfill, Fenelon TP, Victoria County, prepared by Middle Earth Hydrogeology Inc., dated 31 March 2000.
2. Fenelon Landfill Site-Design and Operations Report, prepared by Gartner Lee Limited, dated March 2000.
3. Fenelon Landfill, Natural Environment Assessment, prepared by D.G. Cunningham & Associates and Michael Michalski Associates, dated April 2000.
4. Design and Operations Report For the Establishment of Permanent Household Hazardous Waste (HHW) Depot at the Fenelon Landfill Site, prepared by the County of Victoria, dated November 2000.
5. City of Kawartha Lakes, Household Hazardous Waste Depot, Spill Contingency and Emergency Response Plan, prepared by the City of Kawartha Lakes, undated.
6. Landfill Safety and Emergency Response Procedures, prepared by the City of Kawartha Lakes, dated February 2002.
7. Letter dated February 22, 2001 from the City to MOE regarding responses to questions posed in letter from MOE to the City dated January 23, 2001, complete with Figures 1, 2 and 3, and Attachments A to F inclusive.
8. The application dated May 15, 1996, and the supporting information as provided in the document entitled "The Use of Paper Fibre Product as Daily, Interim and Final Cover at Municipal Solid Waste Landfill Sites" prepared by Transportation and Public Works Department dated February 1996.
9. The letter dated May 15, 1996 to Mr. Wilfrid Ng, MOE, from P. Jeffrey Seaton, County Engineer, The Corporation of the County of Victoria outlining the operational considerations for the use of "paper fibre product" as daily and interim cover.
10. Letter dated August 22, 2005 from Bill Pickard, Manager of Solid Waste Services, City of Kawartha Lakes, to Chris Johnston, MOE, with information regarding the continued operations plan.
11. Letter dated September 19, 2007 from Bill Pickard, Manager of Solid Waste Services, City of Kawartha Lakes, with further information on vehicle counts and dealing with leachate seeps.
12. Application for a Provisional Certificate of Approval for a Waste Disposal Site dated January 16, 2009 and signed by Andrew Boyd, Supervisor, Solid Waste Services including the City of Kawartha Lakes Household Hazardous Waste Depot Operations Manual dated January 2009.
13. E-mail dated August 21, 2009 (4:08 PM) from Heather Van Bruinessen, Regulatory Compliance Officer to B. Wilkinson, MOE re: storage of batteries (on shelving unit with roof) & oil bins (double-lined walls).
14. Application for a Provisional Certificate of Approval for a Waste Disposal Site, signed by Bill Packard, Manager of Solid Waste Services, dated February 1, 2008.
15. Design and Operations Report, Compost Facility at Fenelon Landfill, City of Kawartha Lakes, prepared by Totten Sims Hubicki Associates, dated December 2007.
16. Letter from R. Perdue, City of Kawartha Lakes, to MOE Environmental Assessment and Approvals Branch, dated July 17, 2008 re: additional information on the source separated organics compost pilot project.

17. Application for an Environmental Compliance Approval dated December 7, 2011 including supporting documentation attached to the application for the contaminant attenuation zone and a revision to the record retention condition.
18. Application for an Environmental Compliance Approval dated December 7, 2011 including supporting documentation attached to the application requesting the increasing of storage times for the composting operation.
19. Letter report dated November 12, 2012 from Amy Burke, Golder Associates to Ranjani Munasinghe, Ministry of the Environment in response to Ministry's letter dated September 12, 2012.
20. Report titled "Annual Status Report (2011) - Fenelon Waste Disposal Site" dated July, 2012 prepared by Golder Associates.
21. Application for an Environmental Compliance Approval, signed by David Kerr, dated 2013/10/15
22. Updated Design and Operation Report, Fenelon Landfill Site (rev. B)., by Golder Associates, dated November, 2015

*The reasons for the imposition of these terms and conditions are as follows:*

### **GENERAL**

1. The reason for Conditions 1(1), (2), (4), (5), (6), (7), (8), (9), (10), (18), (19) and (20) is to clarify the legal rights and responsibilities of the Owner and Operator under this Approval.
2. The reasons for Condition 1(3) are to ensure that the Site is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.
3. The reasons for Condition 1(11) are to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.
4. The reasons for Condition 1(12) are to restrict potential transfer or encumbrance of the Site without the approval of the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Approval.
5. The reason for Condition 1(13) is to ensure that the successor is aware of its legal responsibilities.
6. Conditions 1 (14), (15) and (16) are included, pursuant to subsection 197(1) of the EPA, to provide that any persons having an interest in the Site are aware that the land has been approved and used for the purposes of waste disposal.
7. The reason for Condition 1(17) is to ensure that appropriate Ministry staff has ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this Approval. This Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the Act, the OWRA, the PA, the NMA and the SDWA.
8. Condition 1 (21) has been included in order to clarify what information may be subject to the Freedom of Information Act.

### **SITE OPERATION**

9. The reasons for Conditions 2(1), 2(5) and 6(3) are to ensure that the Site is operated, inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.
10. The reason for Conditions 2 (2), 2(3) and 2(4) is to ensure that users of the Site are fully aware of

important information and restrictions related to Site operations and access under this Approval.

11. The reasons for Condition 2(6) (a) and (b) are open burning of municipal waste is unacceptable because of concerns with air emissions, smoke and other nuisance effects, and the potential fire hazard and to make sure burning of brush and wood are carried out in accordance with Ministry guidelines.
12. The reasons for Condition 2(7), 2(8) and 2(9) are to specify the hours of operation for the landfill site and a mechanism for amendment of the hours of operation, as required.
13. The reasons for Condition 2(10) and 2(11) are to ensure that the Site is supervised by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person and to ensure the controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site attendant is on duty.
14. The reason for Conditions 2(12) to 2(16) inclusive is to establish a forum for the exchange of information and public dialogue on activities carried out at the landfill Site. Open communication with the public and local authorities is important in helping to maintain high standards for site operation and protection of the natural environment.

#### **EMPLOYEE TRAINING**

15. The reason for Condition 3(1) is to ensure that the Site is supervised and operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.

#### **COMPLAINTS RESPONSE PROCEDURE**

16. The reason for Condition 4(1) is to ensure that any complaints regarding landfill operations at this Site are responded to in a timely and efficient manner.

#### **EMERGENCY RESPONSE**

17. Conditions 5(1) and 5(2) are included to ensure that emergency situations are reported to the Ministry to ensure public health and safety and environmental protection.
18. Conditions 5(3) and 5(4) are included to ensure that emergency situations are handled in a manner to minimize the likelihood of an adverse effect and to ensure public health and safety and environmental protection.

#### **RECORD KEEPING AND REPORTING**

19. The reason for Conditions 6(1) and 6(2) is to ensure that accurate waste records are maintained to ensure compliance with the conditions in this Approval (such as fill rate, site capacity, record keeping, annual reporting, and financial assurance requirements), the EPA and its regulations.

20. The reason for Condition 6(4) is to ensure that detailed records of Site inspections are recorded and maintained for inspection and information purposes.
21. The reasons for Conditions 6(5) and 6(6) are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified. An annual report is an important tool used in reviewing site activities and for determining the effectiveness of site design.

#### **LANDFILL DESIGN AND DEVELOPMENT**

22. The reason for Conditions 7(1) to 7(3) and 7(10) is to specify the approved areas from which waste may be accepted at the Site and the types and amounts of waste that may be accepted for disposal at the Site, based on the Owner's application and supporting documentation.
23. The reason for Conditions 7(4) to 7(6) is to approve landfilling in Phase 2, and to ensure measures are in place to protect the adjacent wetland.
24. The reason for Conditions 7(7) to 7(9) is to clarify the approved capacity for the Site, and ensure landfilling takes place within the approved fill area.
25. Condition 7(13) is to provide the Owner the process for getting the approval for alternative daily and intermediate cover material.
26. The reasons for Condition 7(11) are to ensure that daily and intermediate cover are used to control potential nuisance effects, to facilitate vehicle access on the Site, and to ensure an acceptable site appearance is maintained. The proper closure of a landfill site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the Site.
27. The reason for conditions 7 (14) to 7(19) is to state the alternative cover materials approved for this Site.
28. The reason for Condition 7(20) is to ensure minimum waste compaction is achieved as per industry standards.

#### **LANDFILL MONITORING**

29. Reasons for Condition 8(1) are to ensure that off-site migration of landfill gas is monitored and all buildings at the Site are free of any landfill gas accumulation, which due to a methane gas component may be explosive and thus create a danger to any persons at the Site.
30. Condition 8(2) is included to provide the groundwater and surface water limits to prevent water

pollution at the Site.

31. Conditions 8(3) and 8(4) are included to require the Owner to demonstrate that the Site is performing as designed and the impacts on the natural environment are acceptable. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.
32. Conditions 8(5), 8(6), 8(7) and 8(8) are included to ensure the integrity of the groundwater monitoring network so that accurate monitoring results are achieved and the natural environment is protected.
33. Conditions 8(8) to 8(10) inclusive are added to ensure the Owner has a plan with an organized set of procedures for identifying and responding to potential issues relating to groundwater and surface water contamination at the Site's compliance point.
34. Condition 8(9) is included to streamline the approval of the changes to the monitoring plan.

#### **CLOSURE PLAN**

35. The reasons for Condition 9 are to ensure that final closure of the Site is completed in an aesthetically pleasing manner, in accordance with Ministry standards, and to ensure the long-term protection of the health and safety of the public and the environment.

#### **COMPOSTING**

36. Condition 10(1), 10(2) and 10(3) have been included to ensure that the leaf and yard waste compost facility is built, maintained and operated in accordance with the application and supporting documentation and not in a manner in which the Director has not been asked to consider.
37. An additional reason for condition 10 (3) is to ensure the Owner use the compost in a manner that doesn't result in a negative environmental or health and safety impact to the environment or the public, and to allow for processing on a trial basis.
38. Condition 10 (4) is included to ensure that the Owner can demonstrate that the leaf and yard waste compost facility is operating according to this Approval.
39. The reasons for Condition 11 are to approve the establishment and operation of a household hazardous waste collection depot and to ensure that the wastes are managed in a manner that protects the environment and the health and safety of the public.
40. The reason for Condition 12 is to ensure Reuse centre is built, maintained and operated in a manner as to minimize a likelihood of an adverse effect or a hazard to the natural environment or any person.



## **WASTE DIVERSION**

41. Condition 13 is included to ensure that the recyclable materials are stored in their temporary storage locations in a manner as to minimize a likelihood of an adverse effect or a hazard to the natural environment or any person.

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A321206 issued on December 14, 2012**

*In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

*Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.*

*The Notice should also include:*

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

*And the Notice should be signed and dated by the appellant.*

*This Notice must be served upon:*

The Secretary\*  
Environmental Review Tribunal  
655 Bay Street, Suite 1500  
Toronto, Ontario  
M5G 1E5

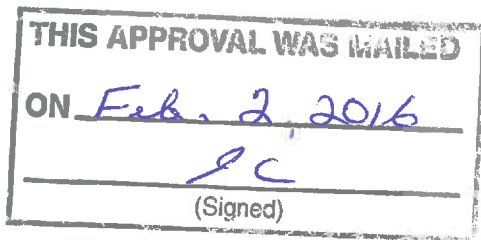
AND

The Director appointed for the purposes of  
Part II.1 of the Environmental Protection Act  
Ministry of the Environment and  
Climate Change  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

**\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)**

*The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.*

DATED AT TORONTO this 20th day of January, 2016



*Dale I. Gable*

Dale Gable, P.Eng.

Director

appointed for the purposes of Part II.1 of the  
*Environmental Protection Act*

LM/

c: District Manager, MOECC Peterborough  
Frank Barone, Golder Associates Ltd. ✓

**AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER A321206

Notice No. 1

Issue Date: January 11, 2019

The Corporation of the City of Kawartha Lakes  
12 Peel St  
Post Office Box, No. 9000  
Lindsay, Ontario  
K9V 5R8

Site Location: Fenelon Landfill Site  
341 Mark Rd Lot 16, Concession 4, former Township of Fenelon  
Kawartha Lakes City,

*You are hereby notified that I have amended Approval No. A321206 issued on January 20, 2016 for the use and operation of 21.3 hectare waste disposal/transfer/composting and reuse site, and 102.6 hectares of contaminant attenuation zone, as follows:*

**Condition 7(17) is hereby revoked and replaced with the following:**

**7. LANDFILL DESIGN AND DEVELOPMENT****Approved Daily Cover and Alternative Daily Cover Materials**

(17) The Owner is hereby permitted to use steel plates as alternative daily cover at the Site.

The reason for this amendment to the Approval is as follows:

*The reason for amending Condition 7(17) is to allow the Owner to use steel plates as an alternative daily cover at the waste site.*

**This Notice shall constitute part of the approval issued under Approval No. A321206 dated January 20, 2016**

*In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall*



## Solid Non-Hazardous Waste Disposal Site Inspection Report

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                |                       |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------|
| <b>Client:</b>                  | The Corporation of the City of Kawartha Lakes<br>Mailing Address: 12 Peel St, Post Office Box, 9000, Lindsay, Ontario, Canada, K9V 5R8<br>Physical Address: 12 Peel St Lindsay, Kawartha Lakes, City, Ontario, Canada, K9V 5R8<br>Telephone: (705)324-9411, Extension: 1151, email: rmacpherson@kawarthalakes.ca<br>Client #: 4353-78NJW9, Client Type: Municipal Government, NAICS: 913910<br>Additional Address Info: Lindsay                                        |                                |                       |
| <b>Inspection Site Address:</b> | Fenelon Landfill Site<br>Address: 341 Mark Rd Lot 16 Concession 4 former Township of Fenelon, Kawartha Lakes, City<br>District Office: Peterborough<br>GeoReference: Map Datum: NAD83, Zone: 17, Accuracy Estimate: 1-10 metres eg. Good Quality GPS, Method: GIS Software, UTM Easting: 674066, UTM Northing: 4927117, , LIO GeoReference: Zone: 17, UTM Easting: 673824.0, UTM Northing: 4926928.5, Latitude: 44.474754, Longitude: -78.81442<br>Site #: 8466-4GTKTF |                                |                       |
| <b>Contact Name:</b>            | Shayne Hartin                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Title:</b>                  | Operations Supervisor |
| <b>Contact Telephone:</b>       | (705)324-9411 ext1133                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Contact Fax:</b>            |                       |
| <b>Last Inspection Date:</b>    | 2011/10/28                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                |                       |
| <b>Inspection Start Date:</b>   | 2018/06/21                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Inspection Finish Date:</b> | 2018/06/21            |
| <b>Region:</b>                  | Eastern                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                |                       |

### 1.0 INTRODUCTION

The City of Kawartha Lakes operates a solid non-hazardous waste landfill site at 341 Mark Road, in the former Township of Fenelon. The site is known as the Fenelon Landfill Site.

The landfill accepts solid, non-hazardous wastes from a service area consisting of the City of Kawartha Lakes. Amended Environmental Compliance Approval (ECA) No. A321206, dated January 20, 2016, allows for the use and operation of a 21.3 hectare site including a waste disposal area, a Household Hazardous Waste (HHW) depot, a collection and transfer facility for waste electronics and electrical equipment, a Reuse Centre and an outdoor leaf and yard waste composting facility. The site also accepts agricultural bale wrap, scrap metal, and used tires.

The Fenelon Landfill Site is open to the public on:

Monday 9 am - 5 pm  
Wednesday 9 am - 5 pm  
Saturday 9 am - 5 pm

On the day of the inspection, an interview was conducted with Shayne Hartin, Operations Supervisor, David Kerr, Manager of Environmental Services, and Kerri Snoddy, Waste Technician, of the City of Kawartha Lakes. The inspection was conducted by Provincial Officer Glenn Rutherford and Environmental Assistant Jami Cernele. The inspection was undertaken to determine compliance with the Environmental Protection Act (EPA), Regulation 347 (O. Reg. 347), Amended ECA #A321206 issued January 20, 2016, and other relevant ministry legislation, policies and guidelines. At the time of the inspection, the landfill was closed to the public. On the day of the inspection, the weather was sunny and warm.

INSPECTION NOTE: Changes to the EPA effective October 2011 have resulted in Certificates of Approval (CofA) now being referred to as Environmental Compliance Approvals (ECA). The electronic template for this inspection report form has not been updated to reflect this change, however, the text entered in the report reflects this change in terminology.

## 2.0 INSPECTION OBSERVATIONS

### **Certificate of Approval Number(s):**

Amended ECA #A321206, dated January 20, 2016.

## 2.1 FINANCIAL ASSURANCE:

### **Specifics:**

Financial assurance is not required for this municipally owned waste disposal site.

## 2.2 APPROVED AREA OF THE SITE:

### **Specifics:**

The site has an approved total area of 21.3 hectares. The approved landfill footprint is comprised of Phase 1 and Phase 2, with areas of 6.1 hectares and 1.9 hectares, respectively. The approval also allows for a 102.6 hectare Contaminant Attenuation Zone (CAZ) south and east of the waste fill area and within the wetland in close proximity to the landfill.

At the time of the inspection, waste was being disposed of within the approved Phase 2 waste fill area, and the waste footprint was identifiable.

## 2.3 APPROVED CAPACITY:

### **Specifics:**

Condition 7(8) and (9) of ECA #A321206 states that:

*(8) Final contours shall not exceed 274.5 metres above sea level at any point on the approved landfill area and includes allowances for final cover.*

*(9) The total approved remaining capacity inclusive of daily and intermediate cover, but exclusive of final cover for this Site as of October 28, 2003 is 276,000 cubic metres.*

At the start of 2017, landfilling commenced in Phase 2 of the waste disposal area after Phase 1 reached capacity at the end of 2016. Final cover has been applied to Phase 1 and a pollinator seed mix has been used to re-vegetate the capped area.

At the time of the inspection, it was indicated that Phase 2 has an estimated remaining capacity of seven (7) years.

## 2.4 ACCESS CONTROL:

### **Specifics:**

Condition 2(11) of the ECA#A321206 states:

*(11). The Site shall be operated and maintained in a safe and secure manner. During non-operating hours, the Site entrance and exit gates shall be locked and the Site shall be secured against access by unauthorized persons.*

Access to the site is controlled. The site is fenced and gated, with required signage. An attendant is present to receive waste whenever the landfill is open.

## 2.5 COVER MATERIAL:

### **Specifics:**

Condition 7(11)(a) states that daily cover material should be applied as follows:

*Daily Cover - Weather permitting, deposited waste shall be covered with 15 centimetres of clean soil or approved alternative daily cover on each operating day in a manner acceptable to the District Manager so that no waste is*

*exposed to the atmosphere.*

On the day of the inspection, metal plates were in place as daily cover, along with some soil. ECA #A321206 approves the use of clean soil or approved daily cover. A stockpile of soil and wood chips for use as cover is maintained at the site. A number of the materials are approved as daily cover.

ECA #A321206 had approved the use of steel plates for a pilot project. The pilot expired on January 20, 2018, with the stipulation that an amendment to the ECA would be required to continue the use of metal plates. See Section 5 below, for required actions.

Final cover appeared to be adequate while some areas with interim cover needed additional cover due to the effects of rainfall.

At the time of the inspection overall adequate cover was evident in the active area of the landfill, however, a significant number of gulls were attracted to the tipping face where the metal plates were in place as daily cover.

## **2.6 WASTE BURNING:**

### **Specifics:**

The burning of wastes at the Site is prohibited by Condition 2(6) of ECA #A321206, with the exception of controlled burning of brush and other clean wood wastes as may be necessary from time to time, at the discretion of the Operations Manager, and in accordance with the ministry Guideline C-7.

At the time of the inspection, there was no evidence of waste burning at the site. City of Kawartha Lakes staff noted that waste burning is not an operational practice at the site.

## **2.7 GROUNDWATER/SURFACEWATER IMPACT:**

### **Specifics:**

During the time of the inspection, there was no leachate springs or seeps observed.

According to the ministry Technical Support groundwater review, dated June 13, 2014, the site is in compliance with the B-7 Reasonable Use Guideline (RUG) along its licensed property boundary with the inclusion of the acquired 23.8 hectares southeast of the landfill to act as a CAZ. The City of Kawartha Lakes have now acquired a total of 102.6 hectares of CAZ land to ensure they continue to meet this ministry guideline.

A response to questions in the surface water review was prepared by Golder Associates on behalf of the City of Kawartha Lakes. According to the Technical Support surface water review, dated October 17, 2016, there are no exceedances of the Martin Creek Wetland trigger concentrations, and no significant leachate impacts on the wetland.

## **2.8 LEACHATE CONTROL SYSTEM:**

### **Specifics:**

There is no leachate control system at the site. The site has been approved and is currently operated as a natural attenuation facility, with the attenuation of leachate occurring in the CAZ to the south and east of the waste fill area, and within the wetland in close proximity to the landfill. ECA #A321206 allows for 102.6 hectares of CAZ for this purpose.

## **2.9 METHANE GAS CONTROL SYSTEM:**

### **Specifics:**

Condition 8(1) of ECA #A321206

*(1) The Owner shall ensure that any buildings or structures at the Site contain adequate ventilation systems to relieve any possible landfill gas accumulation to prevent methane concentration reaching the levels within its explosive range. Routine monitoring for explosive methane gas levels shall be conducted in all buildings or structures at the Site, especially enclosed structures which at times are occupied by people.*

The facility is not equipped with a landfill gas collection system. Permanent methane monitors were installed in the on-site buildings as of March 2016 and City of Kawartha Lakes staff indicated that the monitors are currently operating.

According to the 2017 Annual Status Report, prepared by Golder Associates, dated May 25, 2018, the potential for lateral migration of landfill gas outside of the footprint to nearby residences are considered negligible.

## 2.10 OTHER WASTES:

### Specifics:

The site also operates as a Household Hazardous Waste (HHW) Depot (Waste Generator No. ON0293706). The site also collects for diversion electronics and electrical equipment, leaf and yard waste, tires, scrap metal, white goods, blue box materials and bale wrap. The site also operates a Reuse Centre.

## 3.0 REVIEW OF PREVIOUS NON-COMPLIANCE ISSUES

The inspection on November 5, 2014, resulted in the following action items:

1. By April 15, 2015, provide written confirmation to the undersigned Provincial Officer that in order to ensure the efficient use of approved landfill space, that industry standards and the recommendations of your consultant (Golder) will be followed when compacting and constructing fill lifts at the site.
2. By April 15, 2015, submit written confirmation to the undersigned Provincial Officer confirming that VOC monitoring was completed at WP1, WP2, WP3 and WP4 in the fall of 2014 and will be completed again in the spring of 2015 as requested by the ministry's technical support staff.
3. By April 15, 2015, submit written confirmation to the undersigned Provincial Officer confirming that chloroethane, dichloromethane and methylchloride have been added to the VOC parameter analysis list.
4. By April 15, 2015, submit to the undersigned Provincial Officer, details regarding the status of (i.e. proposed installation date) the additional monitoring wells requested by Frank Crossley in his technical memorandum dated June 13, 2014.
5. By May 31, 2015, prepare and submit along with the annual monitoring report, an action plan for monitoring landfill gas at the site in accordance with condition 8(1) of ECA #A321206 or as amended.
6. By April 15, 2015, submit written confirmation to the undersigned Provincial Officer that landfill inspections will be completed in accordance with Condition 6(3) and (4) of ECA #A321206 and that leachate seeps occurrences and locations will be recorded and reported in the AMR for that year.

According to the Incident Report (Ref No. 7717-9UNND3) action items #1-6 have been satisfied.

## 4.0 SUMMARY OF INSPECTION FINDINGS (HEALTH/ENVIRONMENTAL IMPACT)

**Was there any indication of a known or anticipated human health impact during the inspection and/or review of relevant material, related to this Ministry's mandate?**

No

### Specifics:

None were observed at the time of the inspection.

**Was there any indication of a known or anticipated environmental impact during the inspection and/or review of relevant material ?**

No

### Specifics:

None were observed at the time of the inspection.

**Was there any indication of a known or suspected violation of a legal requirement during the inspection and/or review of relevant material which could cause a human health impact or environmental impairment ?**

Yes

### Specifics:

Metal plates were in place as daily cover. ECA #321206 approved the use of steel plates for a pilot project, with an expiry date of January 20, 2018. An amendment to the ECA is required to continue the use of metal plates for daily cover.

**Was there any indication of a potential for environmental impairment during the inspection and/or the review**

of relevant material ?

No

**Specifics:**

None were observed at the time of the inspection.

**Was there any indication of minor administrative non-compliance?**

No

**Specifics:**

None were observed at the time of the inspection.

## 5.0 ACTION(S) REQUIRED

1. It was noted at the time of the inspection that the use of steel plates as alternative daily cover was no longer approved. Prior to completing this inspection report, City of Kawartha Lakes staff emailed the undersigned to confirm that the city will be applying to amend the ECA in the fall of 2018 (see Section 6, below) and will include a request to permanently include the use of steel plates as daily cover. Therefore, no further action will be required at this time.

## 6.0 OTHER INSPECTION FINDINGS

The facility is currently in the process of applying for an amendment to ECA#A321206 to transition part of the facility into a transfer station once the site has reached capacity. A teleconference with ministry staff, the City of Kawartha Lakes and their consultant WSP was held on June 19, 2018 to initiate this process.

## 7.0 INCIDENT REPORT

Applicable  
4452-B2HQ8K 

## 8.0 ATTACHMENTS

**PREPARED BY:**

**Environmental Officer:**

**Name:**

Glenn M Rutherford

**District Office:**

Peterborough District Office

**Date:**

2018/07/31

**Signature**



**REVIEWED BY:**

**District Supervisor:**

**Name:**

Courtney Redmond

**District Office:**

Peterborough District Office

**Date:**

2018/08/01

**Signature:**



*CBRedmond.*

**File Storage Number:** KL FE C4 250  
(341 MARK ROAD)

**Note:**

"This inspection report does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they may apply to this facility. It is, and remains, the responsibility of the owner and/or the operating authority to ensure compliance with all applicable legislative and regulatory requirements"

state:

- a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

*Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.*

*The Notice should also include:*

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

*And the Notice should be signed and dated by the appellant.*

*This Notice must be served upon:*

The Secretary\*  
Environmental Review Tribunal  
655 Bay Street, Suite 1500  
Toronto, Ontario  
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of  
the Environmental Protection Act  
Ministry of the Environment, Conservation and Parks  
135 St. Clair Avenue West, 1st Floor  
Toronto, Ontario  
M4V 1P5

**\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)**

*The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.*

DATED AT TORONTO this 11th day of January, 2019



Mohsen Keyvani, P.Eng.

Director

appointed for the purposes of Part II.1 of the  
*Environmental Protection Act*

CF/

- c: District Manager, MECP Peterborough  
David Kerr, The Corporation of the City of Kawartha Lakes



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## **APPENDIX F**

### **Ground Water Elevation Tables**

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## Ground Water Elevations

| Monitor No. | Ground Elevation (mASL) | Top of Pipe Elevation (mASL) | Monitored Unit | Jul-02 | Oct-02 | Jul-03 | Nov-03 | Jun-04 | Nov-04 | May-05 | Nov-05 | Jun-06 | Oct-06 | Jun-07 | May-08 | Sep-08 |
|-------------|-------------------------|------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1           | 271.47                  | 272.25                       | Lower OB       | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 2           | 267.79                  | 268.35                       | Shallow OB     | 260.02 | 259.63 | 259.87 | 260.10 | 260.21 | 259.82 | 260.10 | 259.33 | 260.06 | 259.73 | 260.01 | 260.10 | 259.93 |
| 3           | 261.15                  | 261.65                       | Lower OB       | 259.98 | 259.37 | 259.85 | 259.72 | 260.18 | 258.60 | 260.09 | 259.16 | 260.02 | 259.63 | 260.00 | 260.05 | 259.92 |
| 3A          | 261.25                  | 261.93                       | Shallow OB     | 260.01 | 259.91 | 259.87 | 259.73 | 260.20 | 259.50 | 260.10 | 259.08 | 259.03 | 258.66 | 260.00 | 259.93 | 259.95 |
| 5           | 268.56                  | 269.33                       | Shallow OB     | 259.86 | 259.42 | 259.70 | 259.48 | 260.02 | 259.40 | 259.92 | 259.16 | 259.90 | 259.53 | 259.81 | 259.93 | 259.99 |
| 5A          | 268.10                  | 269.50                       | Lower OB       | 260.08 | 259.69 | 259.95 | 259.72 | 260.29 | 259.65 | 260.19 | 261.39 | 260.15 | 259.80 | 260.10 | 260.17 | 259.70 |
| 6-07        | 260.91                  | 261.53                       | Lower OB       | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | 259.74 | 259.47 |
| 6A-07       | 260.93                  | 260.65                       | Shallow OB     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | 259.68 | 259.64 |
| 7-17        | 270.87                  | 271.67                       | Leachate       | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 10          | 262.43                  | 262.71                       | Shallow OB     | 260.03 | 259.66 | 259.89 | 259.77 | 260.22 | 259.61 | 260.11 | 259.21 | 260.08 | 259.66 | 260.03 | 260.12 | 259.85 |
| 11A         | 261.354                 | 261.82                       | Shallow OB     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 12          | 263.70                  | 264.24                       | Shallow OB     | 259.79 | 259.51 | 259.65 | 259.56 | 259.95 | 259.46 | 259.88 | 259.29 | 259.81 | 259.61 | 259.77 | 259.86 | 259.71 |
| 13          | 259.84                  | 260.59                       | Shallow OB     | 259.88 | 259.56 | 259.76 | 259.67 | 260.07 | 259.39 | 259.97 | 259.14 | 258.93 | 259.56 | 259.87 | 259.98 | 259.81 |
| 14          | 259.18                  | 260.52                       | Shallow OB     | 259.23 | 259.13 | 259.06 | 259.26 | 259.26 | 258.94 | 259.16 | 258.30 | 259.20 | 259.08 | 259.11 | 259.14 | 259.08 |
| 15          | 261.53                  | 262.44                       | Shallow OB     | 259.59 | 259.37 | 259.47 | 259.46 | 259.74 | 259.31 | 259.65 | 259.04 | 259.62 | 259.40 | 259.52 | 259.68 | 259.49 |
| 15A         | 261.45                  | 262.11                       | Lower OB       | 260.03 | 259.78 | 259.92 | 259.87 | 260.20 | 259.74 | 260.12 | 259.41 | 260.07 | 259.89 | 259.99 | 260.12 | 259.97 |
| 15B         | 261.45                  | 262.30                       | Bedrock        | 259.37 | 259.09 | 259.21 | 259.17 | 259.51 | 259.06 | 259.42 | 258.78 | 259.19 | 259.18 | 259.31 | 259.39 | 259.25 |
| 16          | 267.11                  | 267.82                       | Shallow OB     | 259.81 | 259.53 | 259.68 | 259.57 | 259.98 | 259.49 | 259.90 | 259.25 | 259.85 | 259.62 | 259.81 | 259.72 | 259.74 |
| 17          | 274.06                  | 274.53                       | Lower OB       | 259.88 | 259.55 | 259.74 | 259.60 | 260.06 | 259.38 | 260.38 | 259.22 | 259.73 | 259.21 | 259.40 | 259.93 | -      |
| 18          | 267.07                  | 267.62                       | Shallow OB     | 259.89 | 259.54 | 259.75 | 259.58 | 260.07 | 259.47 | 260.10 | 259.24 | 259.97 | 259.64 | 259.91 | 260.01 | 259.81 |
| 18A         | 267.17                  | 268.06                       | Bedrock        | 259.88 | 259.11 | 259.75 | 259.61 | 260.06 | 259.50 | 259.96 | 259.37 | 259.95 | 259.67 | 259.89 | 259.98 | 259.79 |
| 18B         | 267.17                  | 268.07                       | Lower OB       | 259.88 | 259.54 | 259.74 | 259.60 | 260.06 | 259.49 | 259.96 | 259.34 | 259.94 | 259.63 | 259.85 | 259.97 | 259.79 |
| 19          | 264.43                  | 265.04                       | Lower OB       | 259.83 | 259.56 | 259.71 | 259.60 | 260.01 | 259.56 | 259.99 | 259.32 | 259.59 | 259.71 | 259.89 | 259.99 | 259.82 |
| 22          | 269.81                  | 270.84                       | Bedrock        | 260.41 | 259.96 | 260.25 | 260.10 | 260.57 | 259.98 | 260.49 | 259.84 | 260.48 | 260.18 | 260.42 | 260.68 | 260.19 |
| 22A         | 269.81                  | 270.74                       | Lower OB       | 260.63 | 260.22 | 260.29 | 260.12 | 260.80 | 259.97 | 259.70 | 259.81 | 260.51 | 260.18 | 260.42 | 260.53 | 260.18 |
| 22B         | 269.81                  | 270.80                       | Shallow OB     | 260.44 | 260.03 | 260.31 | 260.12 | 260.62 | 259.99 | 260.52 | 259.81 | 260.50 | 260.18 | 260.44 | 262.16 | 260.19 |
| 23          | 259.44                  | 260.68                       | Bedrock        | 259.32 | 259.15 | 259.22 | 259.29 | 259.49 | 259.10 | 259.14 | 259.01 | 259.40 | 259.27 | 259.33 | 259.32 | 259.27 |
| 23A         | 259.44                  | 260.68                       | Lower OB       | 259.24 | 247.92 | 259.16 | 259.26 | 259.42 | 259.09 | 259.34 | 258.91 | 259.36 | 259.26 | 259.27 | 259.31 | 259.24 |
| 23B         | 259.44                  | 260.65                       | Shallow OB     | 259.25 | 259.14 | 259.17 | 259.28 | 259.43 | 259.08 | 258.73 | 258.93 | 259.36 | 259.23 | 259.24 | 259.30 | 259.25 |
| 26          | 258.036                 | 259.00                       | Shallow OB     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | 259.12 |
| 26-1        | 258.08                  | 258.87                       | Bedrock        | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 26-2        | 258.22                  | 259.01                       | Lower OB       | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 27-I        | 257.25                  | 258.48                       | Bedrock        | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 27-II       | 257.34                  | 258.32                       | Lower OB       | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 27-III      | 257.40                  | 258.44                       | Shallow OB     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 28-I        | 258.30                  | 259.41                       | Bedrock        | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 28-II       | 258.44                  | 259.47                       | Lower OB       | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| 28-III      | 258.32                  | 259.48                       | Shallow OB     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| WP1-18      | 259.77                  | 260.62                       | Shallow OB     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| WP2-18      | 259.54                  | 260.64                       | Shallow OB     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| WP3-18      | 259.43                  | 260.34                       | Shallow OB     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| WP4-18      | 259.43                  | 260.05                       | Shallow OB     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| WP5-18      | 259.16                  | 260.18                       | Shallow OB     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| WP6-13      | 257.84                  | 258.61                       | Shallow OB     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |

### Notes:

new survey completed in 2019, many reference elevations shifted from previous years

OB - Overburden

reference elevation adjusted but not surveyed in 2020 /2021 such that the GW elevations will need to be corrected in 2022

## Ground Water Elevations

| Monitor No. | Ground Elevation (mASL) | Top of Pipe Elevation (mASL) | Monitored Unit | Jun-09 | Aug-09 | Apr-10 | Oct-10 | Jun-11  | Nov-11 | May-22 | Oct-12 | May-13 | Oct-13 | Apr-14 | Oct-14 | Apr-15  |
|-------------|-------------------------|------------------------------|----------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|---------|
| 1           | 271.47                  | 272.25                       | Lower OB       | -      | -      | -      | -      | -       | -      | dry    | dry    | Dry    | Dry    | 260.70 | 260.12 | Dry     |
| 2           | 267.79                  | 268.35                       | Shallow OB     | 260.08 | 259.72 | 260.03 | 259.93 | 260.10  | 259.94 | 259.97 | 259.52 | 260.09 | 259.91 | 260.51 | 259.90 | 260.10  |
| 3           | 261.15                  | 261.65                       | Lower OB       | 260.05 | 259.90 | 260.05 | 259.93 | 260.08  | 259.94 | 259.95 | 259.51 | 260.09 | 259.90 | 260.48 | 259.86 | 260.10  |
| 3A          | 261.25                  | 261.93                       | Shallow OB     | 260.07 | 259.87 | 260.06 | 259.93 | 260.09  | 259.95 | 259.97 | 259.53 | -      | 259.92 | 260.40 | 259.88 | 260.12  |
| 5           | 268.56                  | 269.33                       | Shallow OB     | 260.17 | 259.78 | 259.85 | 259.73 | 259.925 | 259.74 | 259.75 | 259.33 | 259.90 | 259.71 | 260.36 | 259.67 | 259.89  |
| 5A          | 268.10                  | 269.50                       | Lower OB       | 259.89 | 259.54 | 260.12 | 259.99 | 260.175 | 260.01 | 260.04 | 259.60 | 260.17 | 259.98 | 260.59 | 259.94 | 260.16  |
| 6-07        | 260.91                  | 261.53                       | Lower OB       | 259.60 | 259.50 | 259.80 | 259.77 | 259.90  | 259.76 | 259.75 | 259.38 | 259.89 | 259.71 | 260.03 | 259.68 | 259.87  |
| 6A-07       | 260.93                  | 260.65                       | Shallow OB     | 259.75 | 259.55 | 259.89 | 259.93 | 260.18  | 259.95 | 259.93 | 259.56 | 260.08 | 259.91 | 260.46 | 259.85 | 260.03  |
| 7-17        | 270.87                  | 271.67                       | Leachate       | -      | -      | -      | -      | -       | -      | -      | -      | -      | -      | -      | -      | -       |
| 10          | 262.43                  | 262.71                       | Shallow OB     | 260.24 | 261.87 | 258.95 | 259.02 | 259.17  | -      | 259.05 | 259.05 | 259.19 | 259.01 | 258.57 | 259.04 | 259.19  |
| 11A         | 261.354                 | 261.82                       | Shallow OB     | 260.76 | 260.67 | 260.98 | 260.89 | 261.00  | 260.85 | 260.86 | 260.36 | 261.00 | 260.87 | 261.27 | 260.82 | 261.00  |
| 12          | 263.70                  | 264.24                       | Shallow OB     | 259.88 | 259.67 | 259.81 | 259.72 | 259.86  | 259.74 | 259.75 | 259.38 | 259.87 | 259.72 | 260.22 | 259.68 | 259.90  |
| 13          | 259.84                  | 260.59                       | Shallow OB     | 259.95 | 259.70 | 259.90 | 259.82 | 259.93  | 259.80 | 259.80 | 259.41 | 259.95 | 259.77 | 260.31 | 259.73 | 259.95  |
| 14          | 259.18                  | 260.52                       | Shallow OB     | 258.74 | 258.96 | 259.11 | 259.07 | 259.05  | 259.03 | 258.95 | 258.69 | 259.06 | 258.92 | 259.18 | 258.96 | 259.03  |
| 15          | 261.53                  | 262.44                       | Shallow OB     | 259.98 | 259.45 | 259.64 | 259.51 | 259.62  | 259.50 | 259.51 | 259.16 | 259.41 | 259.47 | 259.96 | 259.44 | 259.66  |
| 15A         | 261.45                  | 262.11                       | Lower OB       | 259.76 | 259.93 | 260.10 | 259.99 | 260.11  | 260.00 | 260.00 | 259.64 | 260.11 | 259.97 | 261.22 | 259.93 | 260.15  |
| 15B         | 261.45                  | 262.30                       | Bedrock        | 259.42 | 259.23 | 259.41 | 259.30 | 259.43  | 259.30 | 259.32 | 258.92 | 259.42 | 259.28 | 259.74 | 259.24 | 259.46  |
| 16          | 267.11                  | 267.82                       | Shallow OB     | 259.91 | 259.70 | 259.84 | 259.75 | 259.90  | 259.77 | 259.78 | 259.41 | 259.89 | 259.75 | 260.22 | 259.70 | 259.92  |
| 17          | 274.06                  | 274.53                       | Lower OB       | 259.95 | 259.65 | 259.89 | 259.63 | 259.95  | 259.82 | 259.84 | 259.42 | 259.95 | 259.81 | 260.34 | 259.79 | 259.99  |
| 18          | 267.07                  | 267.62                       | Shallow OB     | 260.01 | 259.79 | 259.46 | 259.80 | 259.98  | 259.72 | 259.86 | 259.44 | 259.98 | 259.80 | 260.41 | 259.77 | 259.98  |
| 18A         | 267.17                  | 268.06                       | Bedrock        | 260.07 | 259.42 | 259.56 | 259.83 | 259.97  | 259.83 | 259.86 | 259.47 | 259.98 | 259.80 | 264.35 | 259.75 | 259.99  |
| 18B         | 267.17                  | 268.07                       | Lower OB       | 259.97 | 259.78 | 259.67 | 259.80 | 259.97  | 259.82 | 259.84 | 259.42 | 259.96 | 259.78 | 260.35 | 259.79 | 259.99  |
| 19          | 264.43                  | 265.04                       | Lower OB       | 259.99 | 259.79 | 259.93 | 259.84 | 259.98  | 259.84 | 259.86 | 259.49 | 259.92 | 259.79 | 260.32 | 259.45 | 260.00  |
| 22          | 269.81                  | 270.84                       | Bedrock        | 260.53 | 260.20 | 260.51 | 260.41 | 260.53  | 260.39 | 260.50 | 259.98 | 260.54 | 260.39 | 260.88 | 260.34 | 260.54  |
| 22A         | 269.81                  | 270.74                       | Lower OB       | 260.70 | 260.33 | 260.68 | 260.59 | 260.71  | 260.56 | 260.60 | 260.15 | 260.72 | 260.56 | 261.07 | 260.48 | 260.54  |
| 22B         | 269.81                  | 270.80                       | Shallow OB     | 260.53 | 260.18 | 260.52 | 260.43 | 260.56  | 260.41 | 260.42 | 259.96 | 260.58 | 260.40 | 260.91 | 260.33 | 260.71  |
| 23          | 259.44                  | 260.68                       | Bedrock        | 259.37 | 259.24 | 259.36 | 259.32 | 259.42  | 259.33 | 259.31 | 258.99 | 259.42 | 259.30 | 259.67 | 259.28 | 259.48  |
| 23A         | 259.44                  | 260.68                       | Lower OB       | 259.32 | 259.19 | 259.31 | 259.30 | 259.35  | 259.28 | 259.27 | 258.96 | 259.37 | 259.25 | 259.59 | 259.26 | 259.44  |
| 23B         | 259.44                  | 260.65                       | Shallow OB     | 259.33 | 259.22 | 259.08 | 259.30 | 259.36  | 259.29 | 259.28 | 258.98 | 259.38 | 259.27 | 259.61 | 259.20 | 259.46  |
| 26          | 258.036                 | 259.00                       | Shallow OB     | 259.08 | 258.95 | 258.89 | 259.16 | 258.19  | 258.16 | 259.13 | 258.93 | 258.21 | 258.15 | 258.23 | 258.18 | 258.26  |
| 26-1        | 258.08                  | 258.87                       | Bedrock        | 259.29 | 259.23 | 259.35 | 259.34 | 258.22  | 258.18 | 259.29 | 259.10 | 258.22 | 258.16 | 258.29 | 258.17 | 258.27  |
| 26-2        | 258.22                  | 259.01                       | Lower OB       | -      | -      | -      | -      | 258.21  | 258.17 | 258.14 | 257.95 | 258.21 | 258.15 | 258.18 | 258.19 | 258.26  |
| 27-I        | 257.25                  | 258.48                       | Bedrock        | -      | -      | -      | -      | -       | -      | -      | -      | -      | -      | -      | -      | 258.336 |
| 27-II       | 257.34                  | 258.32                       | Lower OB       | -      | -      | -      | -      | -       | -      | -      | -      | -      | -      | -      | -      | -       |
| 27-III      | 257.40                  | 258.44                       | Shallow OB     | -      | -      | -      | -      | -       | -      | -      | -      | -      | -      | -      | -      | 257.338 |
| 28-I        | 258.30                  | 259.41                       | Bedrock        | -      | -      | -      | -      | -       | -      | -      | -      | -      | -      | -      | -      | 258.544 |
| 28-II       | 258.44                  | 259.47                       | Lower OB       | -      | -      | -      | -      | -       | -      | -      | -      | -      | -      | -      | -      | 258.461 |
| 28-III      | 258.32                  | 259.48                       | Shallow OB     | -      | -      | -      | -      | -       | -      | -      | -      | -      | -      | -      | -      | 258.454 |
| WP1-18      | 259.77                  | 260.62                       | Shallow OB     | -      | -      | -      | -      | -       | -      | -      | -      | -      | -      | -      | -      | -       |
| WP2-18      | 259.54                  | 260.64                       | Shallow OB     | -      | -      | -      | -      | -       | -      | -      | -      | -      | -      | -      | -      | -       |
| WP3-18      | 259.43                  | 260.34                       | Shallow OB     | -      | -      | -      | -      | -       | -      | -      | -      | -      | -      | -      | -      | -       |
| WP4-18      | 259.43                  | 260.05                       | Shallow OB     | -      | -      | -      | -      | -       | -      | -      | -      | -      | -      | -      | -      | -       |
| WP5-18      | 259.16                  | 260.18                       | Shallow OB     | -      | -      | -      | -      | -       | -      | -      | -      | -      | -      | -      | -      | -       |
| WP6-13      | 257.84                  | 258.61                       | Shallow OB     | -      | -      | -      | -      | -       | -      | -      | -      | -      | 257.31 | 257.57 | 257.33 | 257.47  |

### Notes:

new survey completed in 2019, many reference elevations shifted from previous years

OB - Overburden

reference elevation adjusted but not surveyed in 2020 /2021 such that the GW elevations will need to be corrected in 2022

## Ground Water Elevations

| Monitor No. | Ground Elevation (mASL) | Top of Pipe Elevation (mASL) | Monitored Unit | Oct-15  | Apr-16 | Oct-16  | Feb-17  | Apr-17  | Jul-17  | Oct-17  | Apr-18        | Oct-18  | Apr-19  | Oct-19  | Apr-20  | Oct-20  | Apr-21  |
|-------------|-------------------------|------------------------------|----------------|---------|--------|---------|---------|---------|---------|---------|---------------|---------|---------|---------|---------|---------|---------|
| 1           | 271.47                  | 272.25                       | Lower OB       | Dry     | 260.22 | Dry     | -       | 260.47  | -       | 260.11  | 260.49        | Dry     | 259.63  | Dry     | Dry     | Dry     | Dry     |
| 2           | 267.79                  | 268.35                       | Shallow OB     | 259.58  | 260.27 | 259.64  | -       | 260.33  | -       | 259.93  | 260.36        | 259.62  | 259.49  | 258.74  | 259.47  | 258.95  | 259.32  |
| 3           | 261.15                  | 261.65                       | Lower OB       | 259.56  | 260.25 | 259.62  | -       | 260.27  | -       | 259.64  | 260.37        | 259.62  | 259.47  | 258.71  | 259.44  | 258.92  | 259.30  |
| 3A          | 261.25                  | 261.93                       | Shallow OB     | 259.58  | 260.26 | 259.62  | -       | 260.30  | -       | 260.21  | 260.38        | 259.63  | 259.51  | 258.73  | 259.45  | 258.95  | 259.30  |
| 5           | 268.56                  | 269.33                       | Shallow OB     | 259.41  | 260.08 | 259.46  | -       | 260.14  | -       | 259.73  | 260.07        | 258.91  | 259.53  | 258.75  | 259.52  | 257.98  | 261.16  |
| 5A          | 268.10                  | 269.50                       | Lower OB       | 259.66  | 260.35 | 259.71  | -       | 260.40  | -       | 257.70  | 259.92        | Dry     | Dry     | Dry     | Dry     | Dry     | 259.34  |
| 6-07        | 260.91                  | 261.53                       | Lower OB       | 259.38  | 259.87 | 259.45  | -       | 259.88  | -       | 259.69  | 259.97        | 259.52  | 259.92  | 259.29  | 259.85  | 258.52  | 259.78  |
| 6A-07       | 260.93                  | 260.65                       | Shallow OB     | 259.37  | 259.85 | 259.45  | -       | 259.85  | -       | 259.62  | 259.98        | 260.40  | 259.95  | 259.45  | 259.75  | 257.71  | 258.98  |
| 7-17        | 270.87                  | 271.67                       | Leachate       | -       | -      | -       | -       | 260.11  | -       | -       | 260.47        | 260.15  | 263.67  | 259.99  | 260.47  | 260.02  | 260.30  |
| 10          | 262.43                  | 262.71                       | Shallow OB     | 258.65  | 259.33 | 258.7   | -       | 259.37  | -       | 258.98  | 259.46        | 258.72  | 259.51  | 258.75  | 259.47  | 258.95  | 259.32  |
| 11A         | 261.354                 | 261.82                       | Shallow OB     | 260.45  | 261.08 | 260.52  | -       | 261.14  | -       | 260.87  | 261.18        | 260.56  | 260.12  | 259.37  | 260.11  | 259.62  | 260.02  |
| 12          | 263.70                  | 264.24                       | Shallow OB     | 259.5   | 260.01 | 259.45  | -       | 260.09  | -       | 259.70  | 259.85        | 259.49  | 259.24  | 258.60  | 259.18  | 258.18  | 259.07  |
| 13          | 259.84                  | 260.59                       | Shallow OB     | 259.34  | 260.08 | 259.46  | -       | 260.11  | -       | 259.77  | 260.19        | 259.49  | 259.38  | 258.65  | 259.34  | 258.87  | 259.21  |
| 14          | 259.18                  | 260.52                       | Shallow OB     | 258.53  | 258.98 | 258.58  | -       | 258.99  | -       | 258.81  | 259.11        | 258.66  | 258.77  | 258.25  | 258.59  | 258.41  | 258.57  |
| 15          | 261.53                  | 262.44                       | Shallow OB     | 259.17  | 259.73 | 259.22  | -       | 259.80  | -       | 259.47  | 259.70        | 259.23  | 259.09  | 258.49  | 259.05  | 258.65  | 258.96  |
| 15A         | 261.45                  | 262.11                       | Lower OB       | 260.67  | 260.22 | 259.72  | -       | 260.28  | -       | 259.67  | 260.33        | 259.74  | 259.14  | 258.55  | 259.08  | 258.71  | 258.97  |
| 15B         | 261.45                  | 262.30                       | Bedrock        | 258.96  | 259.53 | 260.02  | -       | 259.57  | -       | 259.64  | 259.60        | 259.12  | 259.03  | 258.33  | 259.05  | 258.55  | 258.84  |
| 16          | 267.11                  | 267.82                       | Shallow OB     | 260.42  | 260.03 | 259.47  | -       | 260.08  | -       | 259.77  | 260.08        | 259.51  | 259.27  | 258.44  | 259.21  | 258.55  | 259.09  |
| 17          | 274.06                  | 274.53                       | Lower OB       | 259.48  | 260.11 | 259.53  | -       | 260.15  | -       | 259.80  | 260.22        | 259.57  | 259.36  | 258.56  | 259.30  | 258.55  | 259.17  |
| 18          | 267.07                  | 267.62                       | Shallow OB     | 259.49  | 260.15 | 259.54  | -       | 260.17  | -       | 259.81  | 260.22        | 259.54  | 259.36  | 258.65  | 259.36  | 258.83  | 259.18  |
| 18A         | 267.17                  | 268.06                       | Bedrock        | 259.49  | 260.12 | 259.54  | -       | 260.15  | -       | 259.81  | 260.23        | 259.54  | 259.35  | 258.66  | 259.32  | 258.83  | 259.17  |
| 18B         | 267.17                  | 268.07                       | Lower OB       | 259.47  | 260.12 | 259.53  | -       | 260.16  | -       | 259.80  | 260.21        | 259.53  | 259.36  | 258.66  | 259.32  | 258.84  | 259.18  |
| 19          | 264.43                  | 265.04                       | Lower OB       | 259.49  | 260.11 | 259.55  | -       | 260.15  | -       | 259.83  | 260.20        | 259.59  | 259.30  | 258.65  | 259.23  | 258.82  | 259.12  |
| 22          | 269.81                  | 270.84                       | Bedrock        | 260.03  | 260.65 | 260.25  | -       | 261.73  | -       | 260.40  | 259.97        | 259.32  | 261.34  | 260.65  | 261.33  | 259.30  | 259.67  |
| 22A         | 269.81                  | 270.74                       | Lower OB       | 260.14  | 260.83 | 260.09  | -       | 260.70  | -       | 260.56  | 260.01        | 259.24  | 261.31  | 260.62  | 261.32  | 259.27  | 259.64  |
| 22B         | 269.81                  | 270.80                       | Shallow OB     | 260.04  | 260.69 | 260.1   | -       | 260.75  | -       | 260.40  | 260.11        | 259.38  | 261.47  | 260.59  | 261.29  | 259.32  | 259.64  |
| 23          | 259.44                  | 260.68                       | Bedrock        | 258.95  | 259.49 | 259.01  | -       | 259.46  | -       | 259.29  | 259.65        | 259.10  | 258.82  | 258.21  | 258.70  | 258.38  | 258.64  |
| 23A         | 259.44                  | 260.68                       | Lower OB       | 258.94  | 259.44 | 258.99  | -       | 259.45  | -       | 259.26  | 259.57        | 259.08  | 258.76  | 258.21  | 258.64  | 258.37  | 258.60  |
| 23B         | 259.44                  | 260.65                       | Shallow OB     | 258.96  | 259.41 | 259.01  | -       | 259.47  | -       | 259.28  | 259.60        | 259.09  | dry     | 258.20  | 258.63  | 258.15  | 258.58  |
| 26          | 258.036                 | 259.00                       | Shallow OB     | 257.90  | 258.21 | 257.949 | -       | 258.21  | -       | 258.15  | 258.42        | 258.04  | 258.32  | 258.01  | 258.21  | 258.12  | 258.20  |
| 26-1        | 258.08                  | 258.87                       | Bedrock        | 257.91  | 258.23 | 257.954 | -       | 258.22  | -       | 258.17  | 258.15        | 258.05  | 258.34  | 258.02  | 258.23  | 258.13  | 258.21  |
| 26-2        | 258.22                  | 259.01                       | Lower OB       | 257.90  | 258.22 | 257.948 | -       | 258.21  | -       | 258.15  | 258.29        | 258.02  | 258.31  | 258.01  | 258.21  | 258.11  | 258.21  |
| 27-I        | 257.25                  | 258.48                       | Bedrock        | 257.226 | 258.37 | 258.126 | 258.35  | 258.31  | Flowing | 258.34  | 258.44        | 258.19  | 258.40  | 258.14  | 258.33  | 258.37  | 258.46  |
| 27-II       | 257.34                  | 258.32                       | Lower OB       | 257.155 | -      | Flowing | Flowing | Flowing | Flowing | Flowing | couldn't open | Flowing | Flowing | Flowing | Flowing | Flowing | Flowing |
| 27-III      | 257.40                  | 258.44                       | Shallow OB     | 257.118 | 257.38 | 257.238 | 257.34  | 257.38  | 257.44  | 257.33  | 257.52        | 257.28  | 257.58  | 257.28  | 257.35  | 257.31  | 257.35  |
| 28-I        | 258.30                  | 259.41                       | Bedrock        | 258.154 | 258.53 | 258.264 | 258.48  | 258.54  | 258.54  | 258.46  | 258.59        | 258.31  | 258.58  | 258.28  | 258.57  | 258.39  | 258.51  |
| 28-II       | 258.44                  | 259.47                       | Lower OB       | 258.371 | 258.47 | 258.241 | 258.43  | 258.45  | 258.47  | 258.39  | 258.51        | 258.29  | 258.44  | 258.19  | 258.39  | 258.33  | 258.40  |
| 28-III      | 258.32                  | 259.48                       | Shallow OB     | 258.224 | 258.46 | 258.244 | 258.39  | 258.47  | 258.51  | 258.40  | 258.49        | 258.29  | 258.42  | 258.21  | 258.38  | 258.30  | 258.38  |
| WP1-18      | 259.77                  | 260.62                       | Shallow OB     | -       | -      | -       | -       | -       | -       | -       | -             | 259.67  | 260.12  | 259.43  | 259.99  | 259.67  | 259.96  |
| WP2-18      | 259.54                  | 260.64                       | Shallow OB     | -       | -      | -       | -       | -       | -       | -       | -             | 259.62  | plugged | 259.70  | 259.92  | 259.86  | 259.92  |
| WP3-18      | 259.43                  | 260.34                       | Shallow OB     | -       | -      | -       | -       | -       | -       | -       | -             | 259.28  | 259.64  | 259.10  | 259.52  | 259.40  | 259.51  |
| WP4-18      | 259.43                  | 260.05                       | Shallow OB     | -       | -      | -       | -       | -       | -       | -       | -             | 259.04  | 259.40  | 258.84  | 259.34  | 259.08  | 259.33  |
| WP5-18      | 259.16                  | 260.18                       | Shallow OB     | -       | -      | -       | -       | -       | -       | -       | -             | 258.92  | 259.31  | 258.77  | 259.24  | 259.07  | 259.24  |
| WP6-13      | 257.84                  | 258.61                       | Shallow OB     | 257.19  | 257.37 | 257.27  | -       | 257.46  | -       | 257.42  | 257.63        | 257.22  | 257.70  | 257.25  | 257.35  | 257.30  | 257.37  |

### Notes:

new survey completed in 2019, many reference elevations shifted from previous years

OB - Overburden

reference elevation adjusted but not surveyed in 2020 /2021 such that the GW elevations will need to be corrected in 2022

## Ground Water Elevations

| Monitor No. | Ground Elevation (mASL) | Top of Pipe Elevation (mASL) | Monitored Unit | Oct-21  | May-22  | Nov-22  | Apr-23  | Oct-23  |
|-------------|-------------------------|------------------------------|----------------|---------|---------|---------|---------|---------|
| 1           | 271.47                  | 272.25                       | Lower OB       | Dry     | Dry     | Dry     | Dry     | Dry     |
| 2           | 267.79                  | 268.35                       | Shallow OB     | 259.25  | 259.44  | 259.18  | 259.54  | 259.08  |
| 3           | 261.15                  | 261.65                       | Lower OB       | 259.23  | 259.42  | 259.14  | 259.47  | 259.06  |
| 3A          | 261.25                  | 261.93                       | Shallow OB     | 259.25  | 259.43  | 259.15  | 259.52  | 259.08  |
| 5           | 268.56                  | 269.33                       | Shallow OB     | 259.28  | 259.49  | 259.19  | 259.59  | 259.12  |
| 5A          | 268.10                  | 269.50                       | Lower OB       | 259.30  | 259.50  | 259.20  | 259.62  | 259.13  |
| 6-07        | 260.91                  | 261.53                       | Lower OB       | 259.68  | 259.86  | 259.61  | 259.88  | 259.59  |
| 6A-07       | 260.93                  | 260.65                       | Shallow OB     | 258.89  | 259.06  | 258.81  | 259.15  | 258.79  |
| 7-17        | 270.87                  | 271.67                       | Leachate       | 260.17  | 260.47  | 260.12  | 260.13  | 263.97  |
| 10          | 262.43                  | 262.71                       | Shallow OB     | 259.19  | 259.47  | Dry     | 259.55  | Dry     |
| 11A         | 261.354                 | 261.82                       | Shallow OB     | 260.01  | 260.10  | 259.89  | 260.14  | 259.82  |
| 12          | 263.70                  | 264.24                       | Shallow OB     | 259.00  | 259.17  | 258.92  | 259.26  | 258.86  |
| 13          | 259.84                  | 260.59                       | Shallow OB     | 259.15  | 259.32  | 259.04  | 259.41  | 258.99  |
| 14          | 259.18                  | 260.52                       | Shallow OB     | 258.58  | 258.56  | 258.47  | 258.60  | 258.51  |
| 15          | 261.53                  | 262.44                       | Shallow OB     | 258.87  | 259.02  | 258.78  | 259.09  | 258.75  |
| 15A         | 261.45                  | 262.11                       | Lower OB       | 258.93  | 259.08  | 258.83  | 259.14  | 258.81  |
| 15B         | 261.45                  | 262.30                       | Bedrock        | 258.77  | 258.92  | 258.67  | 258.98  | 258.65  |
| 16          | 267.11                  | 267.82                       | Shallow OB     | 259.05  | 259.19  | 258.94  | 259.29  | 258.90  |
| 17          | 274.06                  | 274.53                       | Lower OB       | 259.11  | 259.27  | Dry     | 259.38  | Dry     |
| 18          | 267.07                  | 267.62                       | Shallow OB     | 259.11  | 259.32  | 259.02  | 259.42  | 258.96  |
| 18A         | 267.17                  | 268.06                       | Bedrock        | 259.12  | 259.30  | 259.02  | 259.38  | 258.97  |
| 18B         | 267.17                  | 268.07                       | Lower OB       | 259.11  | 259.29  | 259.02  | 259.29  | 258.97  |
| 19          | 264.43                  | 265.04                       | Lower OB       | 259.06  | 259.22  | 258.97  | 259.30  | 258.93  |
| 22          | 269.81                  | 270.84                       | Bedrock        | 259.67  | 260.67  | 259.57  | 260.67  | 259.52  |
| 22A         | 269.81                  | 270.74                       | Lower OB       | 259.62  | 260.64  | 259.47  | 260.64  | 263.35  |
| 22B         | 269.81                  | 270.80                       | Shallow OB     | 259.64  | 260.64  | 259.57  | 260.64  | 259.47  |
| 23          | 259.44                  | 260.68                       | Bedrock        | 258.58  | 258.73  | 258.52  | 258.74  | 258.49  |
| 23A         | 259.44                  | 260.68                       | Lower OB       | 258.56  | 258.65  | 258.48  | 258.66  | 258.47  |
| 23B         | 259.44                  | 260.65                       | Shallow OB     | 258.55  | 258.63  | 258.49  | 258.63  | 258.48  |
| 26          | 258.036                 | 259.00                       | Shallow OB     | 258.20  | 258.24  | 258.17  | 258.23  | 258.17  |
| 26-1        | 258.08                  | 258.87                       | Bedrock        | 258.21  | 258.24  | 258.17  | 258.24  | 258.24  |
| 26-2        | 258.22                  | 259.01                       | Lower OB       | 258.20  | 258.22  | 258.16  | 258.22  | 258.17  |
| 27-I        | 257.25                  | 258.48                       | Bedrock        | 258.48  | 258.40  | 258.48  | 258.48  | 258.47  |
| 27-II       | 257.34                  | 258.32                       | Lower OB       | Flowing | Flowing | Flowing | Flowing | Flowing |
| 27-III      | 257.40                  | 258.44                       | Shallow OB     | 257.38  | 257.40  | 257.33  | 257.39  | 257.35  |
| 28-I        | 258.30                  | 259.41                       | Bedrock        | 258.51  | 258.53  | 258.44  | 258.54  | 258.47  |
| 28-II       | 258.44                  | 259.47                       | Lower OB       | 258.41  | 258.39  | 258.34  | 258.41  | 258.37  |
| 28-III      | 258.32                  | 259.48                       | Shallow OB     | 258.39  | 258.39  | 258.32  | 258.40  | 258.36  |
| WP1-18      | 259.77                  | 260.62                       | Shallow OB     | 259.97  | 259.99  | 259.84  | 260.01  | 259.79  |
| WP2-18      | 259.54                  | 260.64                       | Shallow OB     | 259.90  | 259.96  | 259.90  | 259.97  | 259.89  |
| WP3-18      | 259.43                  | 260.34                       | Shallow OB     | 259.51  | 259.53  | 259.47  | 259.54  | 258.36  |
| WP4-18      | 259.43                  | 260.05                       | Shallow OB     | 259.33  | 259.36  | 259.24  | 259.38  | 259.24  |
| WP5-18      | 259.16                  | 260.18                       | Shallow OB     | 259.25  | 259.26  | 259.21  | 259.26  | 259.23  |
| WP6-13      | 257.84                  | 258.61                       | Shallow OB     | 257.41  | 257.46  | 257.33  | 256.89  | 257.40  |

Notes:

new survey completed in 2019, many reference elevations shifted from previous years

OB - Overburden

reference elevation adjusted but not surveyed in 2020 /2021 such that the GW elevations will need to be corrected in 2022



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## **APPENDIX G**

### **2023 MECP Correspondence**

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Ministry of the  
Environment,  
Conservation and Parks  
Eastern Region  
1259 Gardiners Road, Unit 3  
Kingston ON K7P 3J6  
Phone : 613.549.4000  
or 1.800.267.0974

Ministère de l'Environnement,  
de la Protection de la nature  
et des Parcs  
Région de l'Est  
1259, rue Gardiners, unité 3  
Kingston (Ontario) K7P 3J6  
Tél: 613 549-4000  
ou 1 800 267-0974



## MEMORANDUM

September 7, 2023

TO: G. Rutherford, Senior Environmental Officer  
Peterborough District Office, Eastern Region

FROM: B. Gilbert, Surface Water Specialist  
Technical Support Section, Eastern Region

RE: Fenelon Landfill Site 2022 Annual Status Report, Proposed Expansion  
341 Mark Road  
Lot 16, Concession 4  
Former Township of Fenelon, City of Kawartha Lakes  
Certificate of Approval No. A321206

As requested, I have reviewed the following documents:

1. Fenelon Landfill Expansion. WSP Inc. March 8, 2023.
2. 2022 Fenelon Landfill Water Quality Data Update. Azimuth Environmental Consulting Inc. February 28, 2023
3. Fenelon Waste Disposal Site 2022 Annual Monitoring Report. Azimuth Environmental Consulting Inc. May 20, 2023.

Information (as presented by Azimuth) relevant to the assessment of surface water impact is summarized below. This is followed by my comments and recommendations for your consideration with respect to surface water impacts only.

### **Environmental Compliance Approval**

The Fenelon Landfill Site (WDS) has been in operation since 1972 and is operated by the City of Kawartha Lakes under Environmental compliance Approval (CofA) A321206. The ECA allows for the use and operation of a 21.3-hectare site and a 102.6 ha contaminant attenuation zone south and east of the site. The site is approved for the disposal of solid non-hazardous, domestic, commercial, and industrial wastes and is also licensed as a household hazardous waste (HHW) depot. The site also includes a household hazardous waste depot, a collection and transfer facility for waste electronics and electrical equipment, a reuse centre, and an outdoor leaf and yard waste composting facility.

A Provincially Significant Wetland (Martin Creek Wetland) surrounds the site with the exception of the northeast boundary which is adjoined by agricultural land and a sand and gravel pit. The site is operated as a natural attenuation facility with no engineered liner and no leachate collection system.

The waste fill area is comprised of Phase 1 (6.1 ha – historic) and Phase 2 (1.9 ha – active). An updated Design and Operations (D&O) Report was incorporated into an amended ECA (January 20, 2016) which describes updates to the surface water and groundwater monitoring programs and associated trigger mechanisms.

The amended ECA allows filling in Phase 2 (1.9 ha) of the site and requires final cover on Phase 1 up to the Phase 1-2 boundary by December 31, 2016.

Groundwater would be expected to migrate in a radial direction from the waste mound/esker. Beyond the waste mound a southeastern flow path is observed in the shallow overburden. A leachate mound is present at the site.

Given that the potential receptors of contaminant migration from the landfill also include the Martin Creek Wetland complex and Martin Creek to the south/southeast of the landfill, the trigger program provides early warning of potential adverse impacts to surface water.

Martin Creek flows in a northeast direction and drains into Cameron Lake, approximately 11.3 km northeast of the site.

### **Site Drainage**

Surface water runoff from 75% of the landfill drains to the north and west into the wetland, with the remaining 25% draining to the wetland to the south of the landfill. Drainage within the wetland is toward the southeast toward Martin Creek with no direct surface water course between the landfill and the creek. The creek is approximately 900m south of the waste mound and separated by the upland area of the esker in which the landfill is located, resulting in very slow and indirect drainage over relatively flat ground through the wetland near the landfill.

### **Leachate Quality**

The best available estimate of leachate quality is obtained from MW7. Leachate indicator parameters in 2022 were similar to previous years and are: Alkalinity, Chloride, Iron, COD, TDS, Ammonia, Boron, DOC, Manganese, Potassium, and TKN.

### **Active Waste Area**

The active fill area during 2022 was located at the west to centre part of Phase 2 in proximity to monitoring wells MW5, MW22A, and MW22B.

## Surface Water Monitoring Program

Surface water sampling consists of twelve locations within Martin Creek Wetland and stations along Martin Creek. Samples are collected in spring, summer, and fall. Samples are analyzed for a comprehensive list of parameters including general water quality, VOC's and PCB's.

Shallow groundwater monitoring probes are established in the Martin Creek Wetland at five locations surrounding the toe of Phase 1 waste at WP1-10, WP2-10, WP3-10, SW4-10, and WP5-10. Additionally, WP6-13 is a sixth shallow groundwater monitoring probe south of the WDS adjacent to Martin Creek where surface water station SW3 is located.

Additional monitoring required by the ECA includes electrical conductivity monitoring in the spring of each year along six transect lines extending from the toe of the landfill to approximately 30m into the wetland. Transect lines coincide with the locations of existing surface water sampling locations and wetland probes (standpipes) that are about 10m into the wetland from the toe of the landfill. At three transect lines (WP4, SW-13 and SW-15), surface water samples are collected at 30m distance from the landfill in spring, summer, and fall for analysis of the comprehensive list of parameters. These transect lines were selected for water quality sampling as they indicated the greatest level of impact during the initial (May 2014) transect line monitoring event.

Sampling locations are described below:

- SW2 (2004) –Martin Creek, west and south of WDS at Killarney Bay Road (background)
- SW16 (2013) –Tributary to Martin Creek, south of WDS at County Road 21 (background)
- SW3 (2004) – Martin Creek, south of the WDS, at Mark Road (downstream)
- SW4 (2004) – Martin Creek, further east of the WDS, at Cameron Road (downstream)
- SW11 (2005) – Martin Creek, southeast of the WDS, approximately midway between Mark and Cameron Road (inactive due to landowner access issues).
- SW14 (2006) - Martin Creek Wetland, north of HHW depot (background)
- SW12 (2006) – Martin Creek Wetland adjacent to toe of waste, northwest toe of Phase 1
- SW13 (2006) – Martin Creek Wetland adjacent to toe of waste, north toe of Phase 1
- SW15 (2006) – Martin Creek Wetland adjacent to toe of waste, south toe of Phase 1
- SW17 – Martin Creek Wetland north of Phase 2; 10 m into wetland.
- Conductivity Transect Lines WP2, WP3, WP4, SW12, SW13, SW15 – Martin Creek Wetland, every 5m along transect to a distance where background conductivity occurs.
- Transect WP4 – Martin Creek Wetland 30m from toe of landfill (trigger location)
- Transect SW13 – Martin Creek Wetland 30m from toe of landfill (trigger location)
- Transect SW15 – Martin Creek Wetland 30m from toe of landfill (trigger location)

Surface water samples are unfiltered samples collected at about half the total depth. Samples from WP6-13 have a second additional filtered sample for analysis of metals.

## **2022 Surface Water and Shallow Groundwater Monitoring Program Results**

In 2022, surface water sampling occurred in April and October as well as additional surface water monitoring events in April (later in month) and July.

### Wetland Probe Water Quality

Azimuth note the following regarding shallow groundwater wetland probes:

- It is interpreted that groundwater discharges to surface water within this wetland.
- As observed at WP1 and WP6 (background wetland probes), naturally elevated iron concentrations are present with the naturally anoxic wetland conditions beyond the influence of the landfill.
- The average iron concentration at WP5 (61mg/L) is strongly influenced by a single concentration from April 2019 (391 mg/L).
- Leachate influence is observed within the three closest locations WP2, WP3, and WP4, while a potentially more subtle influence is observed at WP5, suggesting attenuative processes are active, limiting the extent of influence with distance from the waste mound.
- Elevated concentrations relative to PWQO for these wetland monitors in 2022 include iron, aluminium, zinc, phenols, phosphorus, and unionized ammonia at various locations.
- Zinc exceedances and elevated concentrations at WP1 to WP5 were associated with the galvanized steel drivepoint monitor construction historically and are not interpreted to be sourced to the landfill.
- The chemistry shows most locations have variability over time, although limited defined trends for most parameters suggesting that landfill leachate influence is generally measured within a predictable range.
- Given the western area of the waste mound now being fully covered and seeded, there is no expectation that leachate conditions along the north, south, or western periphery will significantly increase as evidenced by the more recent stability in concentrations in these perimeter locations.

### Surface Water Quality:

Azimuth note the following regarding surface water quality:

- There is generally consistent water quality between the up and downstream locations with the exception of slightly elevated iron, manganese, COD, TKN, and DOC in the downstream locations in Martin Creek. Overall, there is no leachate influence in Martin Creek.
- Perimeter surface water locations (SW12, WP2, WP3, SW13, SW17, SW15, WP4(30m) indicate leachate influence is present around the entire periphery in close proximity to the toe of the landfill with varying levels of impact. Significant elevations are not observed on average beyond background.
- WP4 shows slightly higher but limited impacts (in comparison to WP2 and WP3). WP4 is further south than SW15 (30m) such that full attenuation is likely occurring a short distance from the waste mound.
- Time trend chemistry plots for SW2 and SW4 in Martin Creek show seasonal variability and long-term stability; Perimeter monitoring locations around the toe of the landfill show stable to long term declining trends for many to all LIPs with the most decline noted at SW15.
- Declining concentrations is likely because the active waste area has progressed eastward over time with an increased buffer distance from the wetland. Additionally, the Phase 1 area has been progressively capped over the past number of years resulting in reduced leachate generation. These conditions are expected to continue over time as the leachate source in Phase 1 depletes.
- 2022 results were compared to PWQO in Table 11 and identify a number of exceedances at both background and upstream and downstream locations. Since iron, phosphorus, cobalt, un-ionized ammonia and zinc exceedances are noted historically, these exceedances are interpreted not to be related to the landfill or at least only partially when considered with other elevations or exceedances of landfill related parameters.
- Similar to previous years, the apparent zone of Electrical Conductivity impacts on the wetland extends about 15 to 25m. EC data indicates a general decreasing trend in conductivity with distance from the toe of the landfill at all locations with the exception of SW13 which showed variability across the transect, but at levels below background (SW14).
- In 2017, MECP requested that the transect lines at WP and SW15 be extended beyond 30m of the waste to achieve background conductivity. This was not completed in 2022 at those transects as they were dry beyond 30m.

- Samples were collected during the conductivity survey at the closest and furthest locations along the transect where water was available to sample. The water quality indicated a similar declining trend to LIPs as was observed in the EC profile with distance from the waste mound. PWQO exceedances for the furthest off set stations were for iron at SW12 (0.04 mg/L), unionized ammonia at SW13 (0.04 mg/L), iron at SW15 (0.394 mg/L), iron at WP4 (5.21 mg/L) and unionized ammonia at WP2 (0.04 mg/L). Total phosphorus exceeded the PWQO at SW13, SW15, WP3, and WP4, however the concentrations were within historical ranges of the background location and are interpreted to represent natural sources.
- Bromomethane was detected at WP-1 (2.1 ug/L). Sporadic detections of this parameter have been observed at other perimeter locations, but it is not observed in the leachate well or any downgradient well such that these concentrations are likely anomalous.
- 2022 results for organics sampling (VOCs and PCBs) indicate a lack of detections in surface water and surrounding wetland points and would suggest that the organic sampling at these locations could be eliminated since it is perceived that any pathway would likely be through the overburden to the southeast.

### **Martin Creek / Wetland Protection Trigger Mechanism**

The Martin Creek trigger monitoring wells are WP6 and shallow overburden wells ME26, MW27-III and MW28-III which are the closest monitoring points upgradient of Martin Creek.

The Martin Creek Wetland Trigger locations are shallow overburden wells MW12, MW14, MW15 and MW16 located along the west side of Mark Road in proximity to the wetland east of the esker. The trigger criteria are: chloride (120 mg/L), un-ionized ammonia (0.02 mg/L), boron (0.2 mg/L), and toluene (0.0008 mg/L).

For 2022, all locations met the trigger concentrations with the exception of WP-6; however, this exceedance was for the filtered sample, which would suggest the exceedance is related to sediment.

### **Surface Water Trigger Mechanism**

The surface water trigger mechanism is in place to provide protection against leachate impacts reaching local surface water features. The trigger locations are the 30m offset locations at SW13, SW15 and WP4. Azimuth state that the landfill was originally licensed as a natural attenuation facility with the wetland representing a key component of the natural attenuation system. The trigger criteria are: chloride (120 mg/L), un-ionized ammonia (0.02 mg/L) and boron (0.2 mg/L).

During 2022 there were no parameter exceedances except for un-ionized ammonia at SW13 (0.04 mg/L) and WP-4 (0.03 mg/L) during the April 28<sup>th</sup> transect monitoring event. Similar exceedances were not noted the previous week during the spring monitoring event or subsequent monitoring event at SW13, while WP-4 was dry in July and October.

Compliance with the trigger program has not been exceeded as two consecutive parameter concentrations are required. This will need to be confirmed following the Spring 2022 sample at WP-4.

### **Final Cover**

The final cover is to be constructed progressively as areas of landfilling reach the final waste contours. The final cover is required to be placed within twelve months after reaching final contours in any given area. Topsoil is required to meet O. Reg. 153 Table 9 standards which apply because the landfill is situated within 30m of a water body (i.e., Martin Creek Wetland).

### **Consultant's Recommendations for Surface Water Monitoring**

The consultant states that the surface water monitoring program is sufficient, but that the electrical conductivity monitoring could be curtailed to target locations 30m from the waste edge at all perimeter sampling locations. The rationale given is 30m is the general extent of leachate impacts, the more distant locations tend not to dry out as the proximal locations do, and there is an expectation that there will be a measurable leachate influence at the toe of the waste and will continue to be into the future.

It was recommended that monitoring could be reduced from three times annually to just spring and fall given the consistency in water quality and lack of observable detection of leachate within Martin Creek.

Lastly, there was a recommendation to remove PCB and pesticide parameters from the surface water monitoring program given the lack of detections over the past number of years.

### **Proposed Expansion**

The City of Kawartha Lakes is currently looking into long-term waste disposal options to meet the City's future needs. Until that disposal option is confirmed, expansion of Fenelon along with another site (Laxton Landfill) are being considered to ensure capacity in the interim.

The remaining capacity at the Fenelon Waste Disposal Site (WDS) is expected to be depleted in the next four years. A vertical and lateral expansion southeast of Phase 2 is being contemplated within the approved waste disposal area boundary. This

would allow an additional 39,950 m<sup>3</sup> of waste and extend the site life by three years approximately. The additional volume would come from a change in side slopes (from 3H:1V to 4H:1V) along the perimeter slopes and transition to 5% at the top of the landfill for a final peak elevation of 275.5 masl. The height of the landfill would be increased by 4.5m compared to the existing approved top of waste contours in Phase 2.

Containment berms presently exist along the north and south boundaries to prevent potentially impacted run-off from the active landfill area from discharging to the adjacent wetland. Azimuth indicate the surface water management system will change slightly with the additional lateral expansion.

### **Reviewer's Comments**

I offer the following comments and recommendations, for your consideration, regarding surface water impacts and proposed changes to the surface water monitoring program and proposed expansion.

Condition 7(12) (a) and (b) of the ECA states December 31, 2016, for final cover placement over Phase 1, up to the Phase 1-2 boundary. Based on Figure 12, it appears the southeastern portion of Phase 1 has interim cover but not final cover. I defer to the Peterborough District to evaluate compliance with this condition. Compliance with this condition should be confirmed before considering an expansion considering final cover would be anticipated to reduce leachate generation.

The transect lines WP4, SW-13, and SW-15 selected in 2014 showed the greatest level of impact. The electrical conductivity transect monitoring lines are intended to be selected each year based on examination of monitoring data and modified if warranted, ensuring the electrical conductivity transects being monitored are those that show the worst level of impacts.

Shallow groundwater in the wetland at WP-4 had un-ionized ammonia concentrations on April 21, 2022, that would be acutely toxic to aquatic life (1.06 mg/L, well in excess of PWQO of 0.02 mg/L). Surface water near the toe of the waste at WP4 was absent in spring 2022; however, surface water at the 30m distance from the toe of the waste had un-ionized ammonia concentrations of (0.03 mg/L) exceeding the PWQO of 0.02 mg/L on April 28, 2022.

WP-4 shows an historical record with extremely high total ammonia nitrogen ranging from 198 to 4.51 mg/L and chloride concentrations frequently in excess of 120 mg/L (with the exception of 2021 and 2022). Given the high TAN concentrations in WP-4 since the Phase 2 expansion (up to 76.6 mg/L), prior to considering another expansion, it would be prudent to evaluate the groundwater surface water interaction in this area. Based on discussions with the hydrogeologist for this file, the MECP is interested to know if there are upward or downward gradients at WP-4. MECP is also interested to know the construction details of WP-4 to confirm it's depth.



Some results obtained from filtered versus unfiltered iron concentrations are unusual. For example, on Oct/22 the filtered iron sample was 0.512 mg/L while the unfiltered sample was 0.039 mg/L whereas in April the filtered iron sample was lower (0.512 mg/L) than the unfiltered sample (1.78 mg/L). Typically, iron will decrease in samples which are filtered as only the dissolved component is analyzed.

The consultant states that the trigger mechanism for WP-4 will need to be confirmed in Spring 2022, however they likely mean Spring 2023.

The tables in the 2022 AMR report present average leachate indicator parameter concentrations for wetland probes, perimeter locations, and Martin Creek. Minimum, maximum, and 75<sup>th</sup> percentile values should be presented in addition to the average.

### **Recommendations:**

**With respect to the 2022 Annual Report and on-going surface water monitoring, I recommend the following:**

1. The drive point monitors at WP1 to WP5 should be replaced with an inert material.
2. The consultant recommends a reduction in frequency of surface water sampling at locations within Martin Creek. I am agreeable to this reduction two times annually for SW1, SW16, SW2, SW3 and SW4; however, should leachate impacts become evident at sentinel monitoring wells, or if leachate impacts become evident in Martin's Creek, MECP may recommend to re-instate a higher frequency of monitoring.
3. The consultant recommends a reduction in PCB and pesticide sampling. I am agreeable to this given the lack of detections.
4. I am not in favour of altering the electrical conductivity monitoring. I recommend that the electrical conductivity monitoring remain as is, in light of the expansion proposal. The electrical conductivity transect monitoring lines should be selected each year based on examination of prior years monitoring data and modified if warranted, ensuring the electrical conductivity transects being monitored reflect those that show the worst level of impacts.
5. Photographs of the 5m incremental distances along the length of each of the wetland transects should be included in the annual report.
6. Electronic data should be included in the annual reports so that the reviewer can confirm summary statistics (min, max, median, 75<sup>th</sup> percentile) for the surface water monitoring locations.

**With respect to the proposed expansion, I recommend the following:**

7. It is challenging to interpret the surface water data and shallow groundwater data for the wetland adjacent to Phase 2 considering several of the leachate indicator are common to wetland environments (i.e., iron, nitrogen species, DOC). I would recommend PFAS analysis be undertaken at shallow drive point monitors WP1 to WP5 at the 30m mark to ensure leachate impacts are fully delineated. This should take place once in the spring and once in the fall to confirm the extent of leachate impacted surface water. A shallow groundwater sample from WP-4 would be beneficial to compare to surface water PFAS concentrations.
8. The proposed expansion is moving further away (east) from the wetland surrounding the Phase 1 area, similar to the previous expansion for Phase 2 waste placement. However, the Phase 2 expansion also moved further away from the wetland (east), yet TAN concentrations in the shallow groundwater in the wetland at WP-4 remain a concern. Given the high TAN concentrations at WP4, there is concern for potential discharge to surface water and potential un-ionized ammonia issues. Establishing ground-surface water interaction in this area would be useful prior to assessing the expansion. The MECP is interested to know the well construction details for WP-4 along with whether there are upward (discharging) or downward (recharging) gradients at this location.
9. The amount of leachate expected to be generated by the proposed expansion has been calculated to be a 10% increase. The wetland should not be used as a means of attenuating landfill leachate. If it becomes apparent that the adjacent surface waters are affected by the increase in leachate generation (either directly through surface water runoff or indirectly through the discharge of impacted groundwater), then appropriate mitigation/contingency measures would need to be taken.

Please do not hesitate to contact me if you have any questions.

B. Gilbert, M.Sc.

ec: V. Castro, Water Resources Unit Supervisor  
C. Klein, Technical Support Section Manager  
C. Redmond, Peterborough District Supervisor

c: N. Battye, Groundwater Unit  
File SW KL MA 03 06 Fenelon Landfill Site  
File SW 11 02 07 02 MA, Martin Creek, Trent River Basin  
BG ECHO# 1-203855494

**Ministry of the  
Environment,  
Conservation and Parks**  
Eastern Region  
1259 Gardiners Road, Unit 3  
Kingston ON K7P 3J6  
Phone: 613.549.4000  
or 1.800.267.0974

**Ministère de l'Environnement,  
de la Protection de la nature  
et des Parcs**  
Région de l'Est  
1259, rue Gardiners, unité 3  
Kingston (Ontario) K7P 3J6  
Tél: 613 549-4000  
ou 1 800 267-0974



## MEMORANDUM

July 26, 2023

**TO:** Glenn Rutherford  
Senior Environmental Officer  
Peterborough District Office  
Eastern Region

**FROM:** Nick Battye  
Hydrogeologist  
Technical Support Section  
Eastern Region

**RE:** Expansion Proposal, Fenelon Waste Disposal Site, City of Kawartha  
Lakes, Ontario

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The remaining capacity at the Fenelon Waste Disposal Site (WDS) is expected to be depleted in the next 4 years. A vertical and lateral expansion southeast of Phase 2 has been proposed within the approved waste disposal area boundary that would allow an additional 39,950 m<sup>3</sup> of waste and extend the life of the Site by about 3 years.

I have reviewed the following reports:

1. Fenelon Landfill Expansion. WSP Global Inc. March 8, 2023.
2. 2022 Fenelon Landfill Water Quality Data Update. Azimuth Environmental Consulting Inc. February 28, 2023.
3. 2021 Annual Monitoring Report, Fenelon Waste Disposal Site. Azimuth Environmental Consulting Inc. May 20, 2022.

Pertinent information is summarized below along with my comments and recommendations.

### **Environmental Compliance Approval**

The Site is located at 341 Mark Road, in the southeast corner of Lot 16, Concession 4, in the Township of Fenelon, 9 km southwest of the Village of Fenelon Falls. It has been operating since 1972 and is currently under the responsibility of the City of Kawartha Lakes. Operating under Environmental Compliance Approval (ECA) No. A321206, the Site is licensed for the disposal of solid, non-hazardous, domestic, commercial, and industrial wastes, on 21.3-hectares (ha). The Site includes a waste disposal area, a Household Hazardous Waste (HHW) Depot, a collection and transfer facility for waste electronics and electrical equipment, a Reuse Centre, and an outdoor leaf and yard

waste composting facility. The waste disposal area is comprised of two Phases: Phase 1 (6.1 ha - historic) and Phase 2 (1.9 ha - active). The ECA also includes a 102.6 ha contaminant attenuation zone (CAZ) south and east of the Site. The Site is a natural attenuation facility with no engineered liner and no leachate collection system. Natural attenuation of leachate occurs within the CAZ south and east of the waste disposal area and within the wetland near the landfill.

## **Physical Setting**

The Site is located within the physiographic region referred to as the Peterborough Drumlin Field. Based on geological mapping of the area, the Site is located along an esker complex that extends along a southwest – northeast axis that is surrounded by low lying wetland areas. A provincially significant wetland referred to as the Martin Creek Wetland surrounds the Site, except for the northeast boundary, which is adjoined by agricultural land and a sand and gravel pit. The nearest residential dwellings are located on Mark Road, approximately 700 m south and 450 m north of the waste fill area.

## **Geology**

The local geological sequence is Ordovician limestone of the Verulam Formation (Layer 1) beneath clay till material (~5 m thick) (Layer 2), beneath glaciolacustrine silty fine sand (~8 m thick) (Layer 4), which has been scoured and replaced by glaciofluvial sediments (~20 m thick) of the esker (Layer 3) and flanked by a peat bog (Layer 5). Generally, the soils underlying the Site vary from coarse sands and gravel along the centre line of the esker, while a more extensive sand unit and underlying till deposit are located beneath. Peat deposits are present away from the landfill into the wetland areas that surround the landfill. The silty fine sand and till units have limited thickness or are not present in the centre of the esker (MW18, 23), which is likely the result of glacial meltwater erosion prior to the deposition of the esker. Outside the immediate area of the Site, local MECP water well record data suggest that the overburden thickness is moderate to thin (i.e., dominated by discrete laterally bedded fracture planes that would be expected to limit vertical migration deeper into the bedrock formations).

## **Hydrogeology**

Groundwater flows principally through both the underlying sand and gravel unit from the esker as well as the more regional silty fine sand aquifer, which due to their high permeability forms the preferred migration pathway. These units are underlain by a regional till unit that is locally discontinuous due to glaciofluvial processes. The groundwater elevation data shows typical seasonal variation that includes some radial dispersion from the waste mound in the spring, but otherwise, a southeastern flow in the shallow overburden. The groundwater flow patterns in the lower overburden and bedrock show a similar south to southeast flow. Much of the waste area is deposited atop a 1.5 m layer of compacted peat soils associated with the surrounding wetland. Given the low hydraulic conductivities in the peat and presence of leachate mounding, it is likely that this unit provides a hydraulic barrier between the waste and underlying sand unit; however, as the peat layer does not extend completely across the base of the waste mound, there is still expected to be a hydraulic connection between the waste mound and underlying sand unit closest to the esker. The monitoring network is

subdivided into three target aquifer units: shallow overburden, lower overburden, and shallow bedrock.

### **Existing Groundwater Monitoring Program**

The 2021 monitoring program occurred in April and October 2021. The program includes 45 groundwater monitoring wells and 12 surface water locations.

### **Background Groundwater Quality**

Background groundwater chemistry is monitored at two upgradient locations northeast of the waste area: MW11A and the Office Well. MW11A monitors the shallow overburden aquifer and the Office well the shallow bedrock aquifer. Some differences in chemistry have been noted between these background locations, including elevated sodium, chloride, and TDS in the shallow overburden aquifer, which likely come from road salting activities along Mark Road. There are consistent exceedances of the Ontario Drinking Water Quality Standards (ODWQS) in both units, notably for iron, manganese, DOC, and hardness. TDS is also exceeded occasionally at MW11A. The elevated iron and manganese are attributed to anoxic (reduced) conditions caused by the natural organic-rich peat environment, DOC from the surrounding wetlands through the decay of natural organic materials, hardness from carbonate-rich soils and minerals in both the overburden and bedrock, and TDS from road salting on Mark Road (primarily elevated sodium and chloride).

### **Leachate**

The best indication of leachate comes from MW7, which is screened within the waste. Leachate indicator parameters (LIPs) identified in 2021 are:

- Alkalinity
- Ammonia
- Boron
- Chemical Oxygen Demand (COD)
- Chloride
- Dissolved Organic Carbon (DOC)
- Iron
- Manganese
- Potassium
- Total Dissolved Solids (TDS)
- Total Kjeldahl Nitrogen (TKN)

MW7 has been replaced several times including 2013 and 2017. The parameter concentrations have all remained elevated and within a consistent range for the period of record except for COD, TKN, chloride and iron, which have shown some variability since the monitor was last replaced in 2017.

### **Downgradient Groundwater Quality**

The following statements were made regarding downgradient water quality:

1. Leachate influence is present in all directions from the landfill.
2. Leachate influences both the shallow and lower overburden near the waste area (i.e., perimeter wells), but mostly the lower overburden moving away from the waste area.
3. MW3 indicates greater leachate impacts in the lower overburden relative to the shallow unit, MW3A, while the perimeter locations to the east at MW5 and MW22 indicate greater influence in the shallow overburden relative to the lower.
4. Increasing trends were observed at MW5, MW22A, and MW22B, starting around 2018, owing to the active waste area becoming closer in proximity to these monitoring locations. Except for an increasing trend for ammonia at MW5, the other locations have shown relative stability in concentrations following the initial increases.
5. Only slightly elevated concentrations are noted at MW13 and MW18 in the shallow overburden, while the lower overburden appears to be most influenced at MW15A and MW18B.
6. MW12, MW13, MW23, and MW23B have shown some variability, potentially due to leachate influences. MW12 has more variability in ammonia, TKN and COD, but no obvious trend and the concentrations are still relatively minimal, MW13 has shown decreasing trends for select LIPs since 2005/2006, and MW23 and MW23B have steadily declining trends.
7. MW26 and MW26-2, as well as MW28-II and MW28-III, indicate concentrations similar to, or below background, indicating the extent of leachate does not likely extend east beyond Mark Road.
8. The water quality from MW27-I indicates a drastically different signature than the remaining monitoring wells with most LIPs as well as other parameters (i.e., barium, sodium, selenium, hardness, and strontium) significantly elevated even above the concentrations observed in the leachate well MW7; this seems to indicate a natural mineralization within the bedrock, although the most distant bedrock wells, MW26-1 and MW28-I, are similar to background.
9. Concentration differences between locations and with distance from the waste mound were variable and did not show declining trends, which suggests natural sources are contributing to these parameters, which is supported by the fact that many of these parameters also exceed in the background wells.
10. Numerous LIPs exceed ODWQS along the perimeter of the landfill. Further downgradient, LIP exceedances include hardness, iron, manganese, DOC, aluminum, and TDS, with the most elevated concentrations and number of exceeded parameters found in the lower overburden and bedrock.
11. Results for volatile organic compounds (VOCs) were similar to previous years with multiple parameters detected at MW7, but only cis-1,2-dichloroethene detected at MW26, MW26-1, and MW26-2, and benzene at MW27-I. No downgradient concentrations exceeded the ODWQS.
12. There were no PCBs or pesticides detected at any location, similar to past years.
13. A comparison of major ion ratios (Piper diagrams) showed the following:

- a. Geochemical signature consistency and trends that demonstrate mixing or chemical reactions over time.
- b. The overburden and bedrock locations are not distinguishable, except for MW27-I, which shows a drastically different signature to all others owing to the natural bedrock mineralization.
- c. The leachate signature is defined by MW7, which shows a significant deviation from most other locations.
- d. Several locations show some minor evidence of leachate; these include MW3, MW5, MW6, MW10, MW22B, WP4 and WP5.
- e. The fact the rest of the monitoring network does not show similar trends would indicate that the leachate influence at the Site is localized to a short distance around the waste mound and attenuative processes are active and working.

### **Guideline B-7**

Same as in previous years, MECP's Reasonable Use Policy (RUP) (Guideline B-7) was applied in 2021. Reasonable Use Criteria (RUC) were calculated using MW11A and the Office well for background concentrations (5-year average). Parameters were eliminated if they exceeded the ODWQS at these locations; this included iron, DOC, manganese, hardness, and aluminum. RUC were applied at MW26 and MW27-III for the overburden aquifer, and MW26-1, MW26-2, MW27-I, and MW27-II for the lower overburden and bedrock aquifers.

As in previous years, several parameters exceeded the RUC at MW27-I (bedrock), which is considered to be naturally elevated. The TDS exceedances at MW26-1 and MW26-2 are considered to be at least partially caused by road salting along Mark Road. The marginal RUC exceedance for alkalinity at MW26-2 was not considered a concern and met the ODWQS.

Ultimately, it is interpreted that groundwater discharges into Martin Creek and the associated wetland feature, which intersects along the southern property boundary such that any exceedances would not extend beyond the southern property boundary. Given this, it was concluded that the Site is in compliance with the RUP and no further actions are required.

### **Trigger Mechanisms and Contingency Action Plan**

Given the proximity of the Martin Creek Wetland complex and Martin Creek to the south/southeast of the landfill, the trigger program seeks to provide early warning of potential adverse impacts to surface water. Trigger parameters are based on PWQO and CWQG, and include chloride, unionized ammonia, boron, and toluene (120, 0.02, 0.2, and 0.0008 mg/L, respectively). The Martin Creek trigger monitoring wells include WP6, MW26, MW27-III, and MW28-III, and the Martin Creek Wetland Trigger monitoring wells include MW12, MW14, MW15, and MW16.

Boron at WP4 was exceeded for the trigger concentration during the April monitoring event; however, the location was dry in October. Compliance with respect to the trigger criteria will need to be evaluated following the April 2023 monitoring event as non-compliance is based on consecutive parameter exceedances. An MECP surface water specialist should be consulted regarding this occurrence.

### **Groundwater-Surface Water Interaction**

The expectation is that groundwater will flow toward and discharge to Martin Creek and the adjacent wetland area.

### **Potable Supply Wells**

The nearest residential dwellings are located on Mark Road, approximately 700 m south and 450 m north of the waste area. Impacts to these wells are not expected.

### **Landfill Gas**

Given the shallow depth to the groundwater table, surrounding wetland feature and the distance between the waste area and the nearest residences, the potential for lateral migration of landfill gas beyond the Site boundaries is considered negligible. Permanent methane monitors were installed in the on-Site buildings in March 2016 and are currently operating; landfill gas has not been detected in any of the buildings to date. A full evaluation of potential landfill gas production/migration is beyond the scope of this review.

### **Ongoing Groundwater Monitoring and Reporting**

It was stated that the current monitoring network is sufficient, but that the large number of downgradient wells creates redundancy. As such, it was recommended that MW19 be removed since MW17 covers water quality in the overburden in this area. Similarly, MW12 and MW15 are recommended to be removed as MW16 provides water quality from the shallow overburden at the north end of this area, while MW14 provides water quality data to the south. Lastly, the lack of PCB and pesticide detections over the past number of years was given as a reason to remove these parameters from the program. Changes to the surface water monitoring network were also proposed. These should be reviewed by an MECP surface water specialist.

### **Proposed Landfill Expansion**

A vertical and lateral expansion southeast of Phase 2 has been proposed within the approved landfill boundary. The proposed development plan includes side slopes of 3H:1V between Phase 1 and 2 and 4H:1V along the perimeter slopes, transitioning to 5% at the top of the landfill to a peak elevation 275.5 m above sea level (asl) (an increase of 4.5 m compared to the approved top of waste contours of the Phase 2 active landfill area). Containment berms will be constructed along the north and south boundaries to hold potentially impacted run-off from the active waste disposal area from discharging to the adjacent wetland. The additional capacity gained with this option is estimated to be 39,950 m<sup>3</sup>. Considering an average fill rate of 14,000 m<sup>3</sup>/year, the additional capacity would extend the life of the Site by about 3 years. During this time,



the City will be looking into long-term waste disposal options to meet future needs. The amount of additional leachate generated through the proposed expansion is expected to be around 1,540 m<sup>3</sup>/year, an increase of approximately 10%. A contaminant lifespan evaluation is recommended to confirm if this additional leachate can be managed by the existing contaminant attenuation zone.

## **Conclusions and Recommendations**

I offer the following conclusions and recommendations:

1. It was concluded that the environmental setting at the Fenelon WDS is well understood based on almost 30 years of monitoring, with data trends over this period yielding a relatively consistent geochemical signature, indicating near steady state conditions; however, the complexities of distinguishing the organic rich geochemical signatures of the wetland complex from that in proximity to the WDS was noted to be the most challenging aspect to Site interpretation since several leachate indicator parameters are also associated with the naturally occurring geochemically reduced conditions present in the downgradient wetland. To simplify this interpretation, I recommend PFAS analysis be undertaken. PFAS are common landfill constituents and are not naturally formed, so their presence would provide certainty on the locations of leachate impacts.
2. Additional wells were requested in the MECP memorandum, dated June 19, 2014, including a bedrock well at MW26 (which appears to have been completed), and additional sets of monitoring wells between the landfill and the wetland (Martins Creek) and in proximity to Martins Creek. I would not consider these additional wells to be required provided current boundary wells show non-detectable PFAS results in concurrence with the conceptual site model.
3. With changes being proposed (i.e., landfill expansion) I recommend the monitoring program remain the same for the time being. However, I agree that PCBs and pesticides can be removed.
4. The issue of the boron trigger at WP4 and proposed changes to the surface water monitoring network should be reviewed by an MECP surface water specialist.
5. In the WSP report (2023) it was stated that a contaminant lifespan evaluation is recommended to confirm if this additional leachate can be managed by the existing contaminant attenuation zone. Endorsement of the proposed expansion will be based on this evaluation, as well as fall PFAS results. I would be pleased to provide further comment on the feasibility of the expansion proposal following review of this information.

Should you have any questions regarding these comments please do not hesitate to contact me.

A handwritten signature in black ink, appearing to read 'Nick Battye', with a long horizontal flourish extending to the right.

Nick Battye, MSc, PGeo

ec: Courtney Redmond  
Victor Castro  
Christina Klein  
Beth Gilbert

c: ECHO Ref #1-203855246



Environmental Assessments & Approvals

November 21, 2023

AEC 23-327

City of Kawartha Lakes  
Waste Management Department  
322 Kent St. W.  
Lindsay, ON  
K9V 4T7

Attention: David Kerr, P. Geo.  
Manager of Environmental Services

Re: **MECP Review Comment Response - Fenelon Landfill Expansion**

Dear Dave:

The purpose of this correspondence is to provide response and additional information relating to review comments provided by the Ministry of Environment, Conservation & Parks (MECP) for the proposed expansion of the Fenelon Landfill Site (Site).

The following outlines each comment presented by the MECP in their July 26<sup>th</sup>, 2023 ground water correspondence and September 7<sup>th</sup>, 2023 surface water correspondence.

### **GROUND WATER:**

The following MECP conclusion and recommendations are included which were interpreted to represent response and / or additional comment, with numbering associated with the MECP document:

- 1. It was concluded that the environmental setting at the Fenelon WDS is well understood based on almost 30 years of monitoring, with data trends over this period yielding a relatively consistent geochemical signature, indicating near steady state conditions; however, the complexities of distinguishing the organic rich geochemical signatures of the wetland complex from that in proximity to the WDS was noted to be the most challenging aspect to Site interpretation since several leachate indicator parameters are also associated with the naturally occurring geochemically reduced conditions present in the downgradient*



*wetland. To simplify this interpretation, I recommend PFAS analysis be undertaken. PFAS are common landfill constituents and are not naturally formed, so their presence would provide certainty on the locations of leachate impacts.*

Azimuth undertook PFAS sampling as part of the routine October 2023 monitoring program at the Site. Given the significant laboratory cost associated with PFAS analysis (\$450/sample), locations at the Site were targeted to select locations representing reference leachate, background, as well as perimeter and downgradient locations as summarized in the table below.

The results, which have been appended, as well as summarized below indicate the most parameter detections and elevated concentrations at MW7 (leachate well), MW22B (in waste area) and wetland perimeter locations (WP2-10, WP3-10 and WP4-10). These results generally correlate with the general water quality results for the Site which indicate that all of these locations have very definable leachate influence. However, the location with the most elevated PFAS concentrations (WP3-10) shows a much more dilute leachate signature with the general water quality. This variance is likely attributable to variability in leachate signature across the Site.

The remaining locations with detections had lower concentrations with only single parameter detections. The locations are found southeast of the waste mound and are generally located within the centerline of the dilute leachate plume that has been interpreted to extend from the waste mound based on the historical interpretation of ground water flow direction and general water quality data. The detections within the deep overburden and bedrock at MW18 would suggest a preferential pathway deeper within the profile, which supports the Site interpretation summarized in the annual monitoring reports indicating a plunging leachate plume with distance from the Site. The relatively low PFAS concentrations compared to the waste area also supports the historical interpretation that a dilute leachate signature is found at this location as well as at MW19.



**Table 1: PFAS Results Summary**

| Monitor No. | Location                  | Total PFAS Concentration (µg/L) | No. of Parameters Detected |
|-------------|---------------------------|---------------------------------|----------------------------|
| MW7         | Leachate                  | <b>1.114</b>                    | 6                          |
| MW11A       | Background - Shallow OB   | <1.1                            | 0                          |
| MW13        | Downgradient - Shallow OB | <1.1                            | 0                          |
| MW15        | Downgradient - Shallow OB | <1.1                            | 0                          |
| MW15A       | Downgradient - Deep OB    | <1.1                            | 0                          |
| MW15B       | Downgradient - Bedrock    | <1.1                            | 0                          |
| MW18        | Downgradient - Shallow OB | <1.1                            | 0                          |
| MW18A       | Downgradient - Bedrock    | 0.024                           | 1                          |
| MW18B       | Downgradient - Deep OB    | 0.036                           | 1                          |
| MW19        | Downgradient - Deep OB    | 0.03                            | 1                          |
| MW22B       | Leachate                  | <b>0.906</b>                    | 4                          |
| MW26        | Downgradient - Distant    | <1.1                            | 0                          |
| MW26-1      | Downgradient - Bedrock    | <1.1                            | 0                          |
| MW26-2      | Downgradient - Deep OB    | <1.1                            | 0                          |
| MW27-I      | Downgradient - Bedrock    | <1.1                            | 0                          |
| MW27-II     | Downgradient - Deep OB    | <1.1                            | 0                          |
| MW27-III    | Downgradient - Shallow OB | <1.1                            | 0                          |
| MW28-I      | Downgradient - Bedrock    | <1.1                            | 0                          |
| MW28-II     | Downgradient - Deep OB    | <1.1                            | 0                          |
| MW28-III    | Downgradient - Shallow OB | <1.1                            | 0                          |
| WP2-10      | Perimeter - North         | <b>0.234</b>                    | 5                          |
| WP3-10      | Perimeter - West          | <b>2.072</b>                    | 7                          |
| WP4-10      | Perimeter - South         | <b>0.706</b>                    | 5                          |

Bold indicates MECF Guideline of 0.07 µg/L

OB - Overburden

The lack of detection further west at MW13 would suggest the plume orientation is more southeast, following the ground water flow patterns illustrated in the annual monitoring reports, while the lack of detections further southeast of MW18 and MW19 would indicate that attenuative processes are active in limiting the leachate influence west of or slightly east of Mark Road. This again, falls in line with the overall Site interpretation presented in the annual monitoring reports for the past number of years.

The final item of note is that the PFAS results for MW27-I, which has indicated significantly elevated concentrations of many parameters, including leachate indicator parameters and at more elevated concentrations than that observed in the leachate (*i.e.* chloride, sodium, strontium and barium). As a result, this location has been interpreted to represent naturally mineralized bedrock water quality. As the PFAS results for this location did not indicate any detection, it would further support the historical interpretation that the source of the elevations is natural mineralization and not leachate influence. As a result, this location does not represent an appropriate monitoring location and should be removed from the monitoring program.



2. *Additional wells were requested in the MECP memorandum, dated June 19, 2014, including a bedrock well at MW26 (which appears to have been completed), and additional sets of monitoring wells between the landfill and the wetland (Martins Creek) and in proximity to Martins Creek. I would not consider these additional wells to be required provided current boundary wells show non-detectable PFAS results in concurrence with the conceptual site model.*

Based on a lack of PFAS detections at MW26, MW27 and MW28 (all intervals) and previous interpretation that these wells have not indicated any definable leachate influence, it is assumed that these additional wells will not be required.

3. *With changes being proposed (i.e., landfill expansion) I recommend the monitoring program remain the same for the time being. However, I agree that PCBs and pesticides can be removed.*

Azimuth acknowledges this recommendation, however, it is suggested that consideration be given to elimination of MW27-I from the program given the naturally mineralized water observed at this location and the confirmation through PFAS analysis that leachate is not influencing this location, or elevated the observed elevated concentrations.

4. *The issue of the boron trigger at WP4 and proposed changes to the surface water monitoring network should be reviewed by an MECP surface water specialist.*

It is noted that the boron trigger at surface water location WP4 (30m) was not exceeded in 2023; however, it was noted that this location was dry during all three monitoring events.

## **SURFACE WATER:**

The following MECP conclusion and recommendations are included which were interpreted to require response and / or additional comment, with numbering associated with the MECP document:

1. *The drive point monitors at WP1 to WP5 should be replaced with an inert material.*

This was done in 2018, borehole logs for these revised construction have been included in Appendix D of the annual monitoring reports.



2. *The consultant recommends a reduction in frequency of surface water sampling at locations within Martin Creek. I am agreeable to this reduction two times annually for SW1, SW16, SW2, SW3 and SW4; however, should leachate impacts become evident at sentinel monitoring wells, or if leachate impacts become evident in Martin's Creek, MECP may recommend to re-instate a higher frequency of monitoring.*

Can the MECP provide confirmation regarding this comment as to whether they approve reduction to semi-annual monitoring for all surface water locations or just those noted above. Our recommendation for reduction had included all surface water monitoring locations. Azimuth agrees with the approach that monitoring could increase in frequency back to three times annually, but this should apply for all locations.

3. *The consultant recommends a reduction in PCB and pesticide sampling. I am agreeable to this given the lack of detections.*

Acknowledged.

4. *I am not in favour of altering the electrical conductivity monitoring. I recommend that the electrical conductivity monitoring remain as is, in light of the expansion proposal. The electrical conductivity transect monitoring lines should be selected each year based on examination of prior years monitoring data and modified if warranted, ensuring the electrical conductivity transects being monitored reflect those that show the worst level of impacts.*

Acknowledged.

5. *Photographs of the 5m incremental distances along the length of each of the wetland transects should be included in the annual report.*

Acknowledged.

6. *Electronic data should be included in the annual reports so that the reviewer can confirm summary statistics (min, max, median, 75th percentile) for the surface water monitoring locations.*

Acknowledged.



7. *It is challenging to interpret the surface water data and shallow groundwater data for the wetland adjacent to Phase 2 considering several of the leachate indicator are common to wetland environments (i.e., iron, nitrogen species, DOC). I would recommend PFAS analysis be undertaken at shallow drive point monitors WP1 to WP5 at the 30m mark to ensure leachate impacts are fully delineated. This should take place once in the spring and once in the fall to confirm the extent of leachate impacted surface water. A shallow groundwater sample from WP-4 would be beneficial to compare to surface water PFAS concentrations.*

The WP-4 ground water results are summarized in the ground water section above, which indicate detections for a number of PFAS parameters. These concentrations are not unexpected given the overall leachate impacts observed in the shallow ground water along the periphery of the waste mound. However, the results from the 30m surface water samples at the WP locations did not indicate any detections, which would indicate that leachate impacts are localized in nature and not creating significant impacts away from the waste mound. It is noted that many of these locations were found to be dry during the October monitoring events, such that additional data will be collected in April as recommended by the MECF.

8. *The proposed expansion is moving further away (east) from the wetland surrounding the Phase 1 area, similar to the previous expansion for Phase 2 waste placement. However, the Phase 2 expansion also moved further away from the wetland (east), yet TAN concentrations in the shallow groundwater in the wetland at WP-4 remain a concern. Given the high TAN concentrations at WP4, there is concern for potential discharge to surface water and potential un-ionized ammonia issues. Establishing ground-surface water interaction in this area would be useful prior to assessing the expansion. The MECF is interested to know the well construction details for WP-4 along with whether there are upward (discharging) or downward (recharging) gradients at this location.*

The data collected and summarized in the annual monitoring reports includes both ground water and surface water from the western perimeter of the waste mound. Overall, the water quality indicates that parameter concentrations remain elevated in the perimeter ground water, while largely reduced in the surface water. This would indicate that there is ground water / leachate discharge to the adjacent surface water, but attenuative processes are active reducing both the level of leachate impacts as well as horizontal extent from the waste mound. A review of gradients between the wetland and waste mound was completed for WP-4, which has waste mound monitors MW3A and MW10 in





close proximity. The measured ground water elevations between the locations indicate a small western gradient towards the wetland (discharge) is present during the spring monitoring events, but this is generally reversed during the October events. Despite this, ground water levels at WP4 have consistently indicated elevations below ground surface, even during the spring monitoring events, further supporting conditions which would limit the amount of ground water contributing to the adjacent surface water. These conditions are not unexpected and would indicate that water levels in the waste mound are more variable, while water levels in the wetland maintain more consistency owing to the presence of surface water, which maintain shallow water table conditions. These limited and variable gradients also limit the potential for significant ground water seepage and horizontal migration distance for ground water originating from the waste mound area.

9. *The amount of leachate expected to be generated by the proposed expansion has been calculated to be a 10% increase. The wetland should not be used as a means of attenuating landfill leachate. If it becomes apparent that the adjacent surface waters are affected by the increase in leachate generation (either directly through surface water runoff or indirectly through the discharge of impacted groundwater), then appropriate mitigation/contingency measures would need to be taken.*

Based on the separation distance between the expansion area and wetland (>200 m) and southeastern ground water flow patterns consistently measured at the Site, the expansion of the Site is not interpreted to have a measurable influence on the wetland feature west of the landfill. Leachate influence will likely continue to be observed in the wetland adjacent to the Phase I mound area, albeit will decline over time owing the closure and capping of this area.



We trust the above noted information is sufficient to address the comments provided; however, if there are any questions, please do not hesitate to contact us.

Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

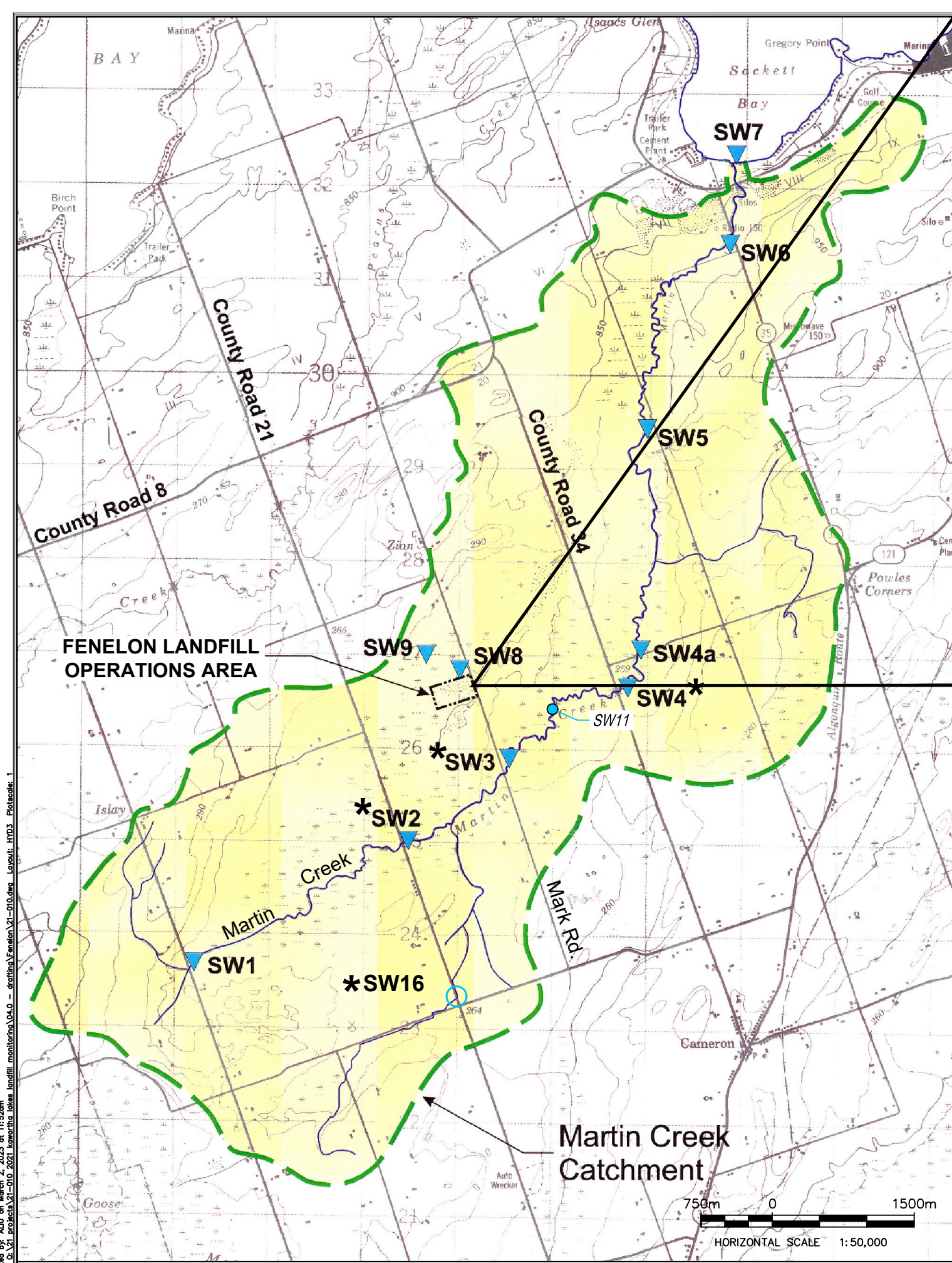


Colin Ross, B.Sc., P.Geo.  
Senior Hydrogeologist

Attach:

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Resposes - FINAL.docx





**LEGEND:**

- Approx. Property Boundary
- ▼ Historical Surface Water Monitoring Station
- Surface Water Station Established in 2005
- \* Denotes Current Surface Water Monitoring Location
- New Background Station (2013)
- Conductivity Monitoring Transect Line
- ⊕ Wetland Monitor Locations

**REFERENCE:**

- MAP BASED ON FIGURE 3 TITLED "SURFACE WATER FEATURES" FROM REPORT NO. GLL 99-521, "FENELON LANDFILL SITE - DESIGN AND OPERATIONS REPORT", DATED MARCH 2000, BY GARTNER LEE LTD.
- CONTOURS FOR THE ACTIVE FILL AREA UPDATED TO REFLECT 2012 LANDFILL SURFACE CONTOURS PROVIDED BY THE CITY OF KAWARTHA LAKES, SURVEYED BY COE, FISHER, CAMERON DATED DECEMBER 4, 2012.

**AZIMUTH ENVIRONMENTAL CONSULTING, INC.**

**Surface Water Monitoring Network**

**Fenelon Falls Landfill, Fenelon Falls, ON**

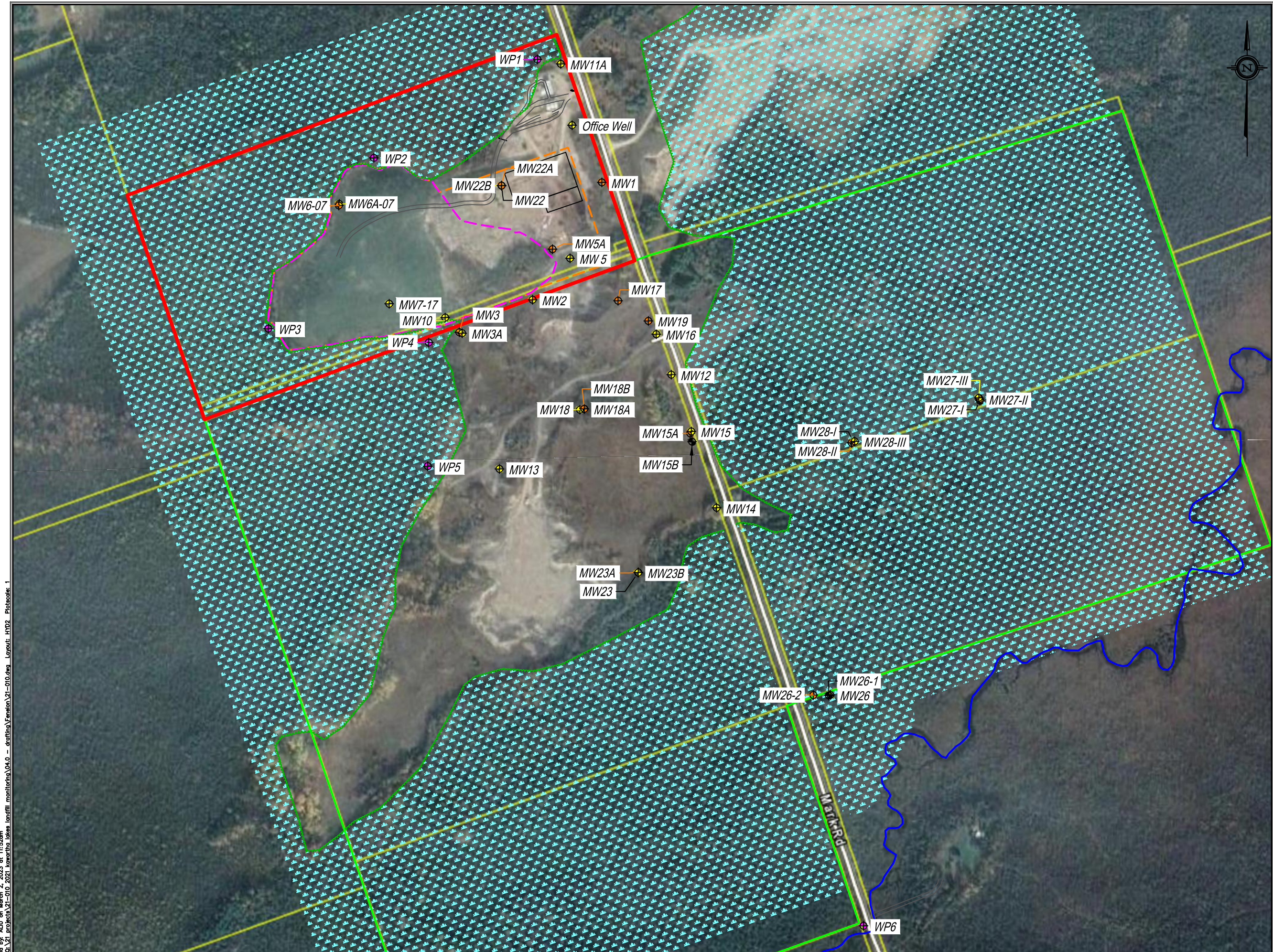
|              |                      |                        |
|--------------|----------------------|------------------------|
| DATE ISSUED: | March 2023           | Figure No.<br><b>3</b> |
| CREATED BY:  | JLM                  |                        |
| PROJECT NO.: | 23-010               |                        |
| REFERENCE:   | First Base Solutions |                        |

Printed by: AUJ on March 2, 2023 at 11:52am  
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LEGEND:

- Approx. Property Boundary (~XXha)
- Contaminant Attenuation Zone
- Watercourse
- Landfill Limits Phase I
- Landfill Limits Phase II
- Shallow Overburden Well Locations
- Lower Overburden Well Locations
- Bedrock Well Locations
- Wetland Monitor Locations

75m 0 150m  
HORIZONTAL SCALE 1:5,000



Ground Water Monitoring Network

Fenelon Falls Landfill,  
Fenelon Falls, ON

|              |                      |                     |
|--------------|----------------------|---------------------|
| DATE ISSUED: | March 2023           | Figure No.<br><br>2 |
| CREATED BY:  | JLM                  |                     |
| PROJECT NO.: | 23-010               |                     |
| REFERENCE:   | First Base Solutions |                     |



## Fenelon Landfill Site - PFAS Results

| Location ID                                                          | Guideline* | MW7                 | MW11A     | MW13      | MW15      | MW15A     | MW15B     | MW18      | MW18A               | MW18B               | MW19               | MW22B               | MW26      | MW-26-2   |
|----------------------------------------------------------------------|------------|---------------------|-----------|-----------|-----------|-----------|-----------|-----------|---------------------|---------------------|--------------------|---------------------|-----------|-----------|
| Sample Date                                                          |            | 11-Oct-23           | 11-Oct-23 | 11-Oct-23 | 11-Oct-23 | 11-Oct-23 | 11-Oct-23 | 11-Oct-23 | 11-Oct-23           | 11-Oct-23           | 11-Oct-23          | 11-Oct-23           | 11-Oct-23 | 11-Oct-23 |
| Eicosafuoro-3-oxaundecane-1-sulfonic acid, 11-chloro- [11Cl-PF3OUdS] |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Ethyl perfluorooctanesulfonamide, n- [NEtFOSA]                       |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Ethyl perfluorooctanesulfonamidoacetic acid, n- [NEtFOSAA]           |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Ethyl perfluorooctanesulfonamidoethanol, n- [NEtFOSE]                |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Fluorotelomer carboxylic acid, 3:3 [3:3 FTCA]                        |            | <0.030              | <0.030    | <0.030    | <0.030    | <0.030    | <0.030    | <0.030    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Fluorotelomer carboxylic acid, 5:3 [5:3 FTCA]                        |            | <b><u>0.122</u></b> | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <b><u>0.298</u></b> | <0.020    | <0.020    |
| Fluorotelomer carboxylic acid, 7:3 [7:3 FTCA]                        |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Fluorotelomer sulfonic acid, 4:2 [4:2 FTS]                           |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Fluorotelomer sulfonic acid, 6:2 [6:2 FTS]                           |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Fluorotelomer sulfonic acid, 8:2 [8:2 FTS]                           |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Hexadecafluoro-3-oxanonane-1-sulfonic acid, 9-chloro- [9Cl-PF3ONS]   |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Hexafluoropropylene oxide dimer acid [HFPO-DA]                       |            | <1.0                | <1.0      | <1.0      | <1.0      | <1.0      | <1.0      | <1.0      | <1.0                | <1.0                | <1.0               | <1.0                | <1.0      | <1.0      |
| Methyl perfluorooctanesulfonamide, N- [NMeFOSA]                      |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Methyl perfluorooctanesulfonamidoacetic acid, n- [NMeFOSAA]          |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Methyl perfluorooctanesulfonamidoethanol, n- [NMeFOSE]               |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Nonafluoro-3,6-dioxaheptanoic acid [NFDHA]                           |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluoro-3-methoxypropanoic acid [PFMPA]                            |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluoro-4-methoxybutanoic acid [PFMBA]                             |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluorobutanesulfonic acid [PFBS]                                  |            | <0.100              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.100              | <0.020    | <0.020    |
| Perfluorobutanoic acid [PFBA]                                        |            | <0.50               | <0.10     | <0.10     | <0.10     | <0.10     | <0.10     | <0.10     | <0.50               | <0.50               | <0.50              | <1.00               | <0.50     | <0.50     |
| Perfluorodecane sulfonic acid [PFDS]                                 |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluorodecanoic acid [PFDA]                                        |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluorododecanesulfonic acid [PFDoS]                               |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluorododecanoic acid [PFDoA]                                     |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluoroheptanesulfonic acid [PFHpS]                                |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluoroheptanoic acid [PFHpA]                                      |            | <b><u>0.192</u></b> | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.100              | <0.020    | <0.020    |
| Perfluorohexanesulfonic acid [PFHxS]                                 |            | <b><u>0.06</u></b>  | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <b><u>0.31</u></b>  | <0.020    | <0.020    |
| Perfluorohexanoic acid [PFHxA]                                       |            | <b><u>0.304</u></b> | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <b><u>0.024</u></b> | <b><u>0.036</u></b> | <b><u>0.03</u></b> | <b><u>0.24</u></b>  | <0.020    | <0.020    |
| Perfluorononanesulfonic acid [PFNS]                                  |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluorononanoic acid [PFNA]                                        |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluorononanoic acid, 4,8-dioxo-3H- [ADONA]                        |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluorooctanesulfonamide [PFOSA]                                   |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluorooctanesulfonic acid [PFOS]                                  | 0.2        | <b><u>0.06</u></b>  | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.030              | <0.020    | <0.020    |
| Perfluorooctanoic acid [PFOA]                                        | 0.6        | <b><u>0.376</u></b> | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <b><u>0.058</u></b> | <0.020    | <0.020    |
| Perfluoropentanesulfonic acid [PFPeS]                                |            | <0.100              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluoropentanoic acid [PFPeA]                                      |            | <0.300              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.100              | <0.100              | <0.100             | <0.300              | <0.020    | <0.100    |
| Perfluorotetradecanoic acid [PFTeDA]                                 |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluorotridecanoic acid [PFTeDA]                                   |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| Perfluoroundecanoic acid [PFUnA]                                     |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| perfluoro(2-ethoxyethane)sulfonic acid [PFEESA]                      |            | <0.020              | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020             | <0.020              | <0.020    | <0.020    |
| PFAS, total                                                          | 0.07**     | <b><u>1.11</u></b>  | <1.1      | <1.1      | <1.1      | <1.1      | <1.1      | <1.1      | 0.024               | 0.036               | 0.03               | <b><u>0.906</u></b> | <1.1      | <1.1      |

\* Guideline for Canadian Drinking Water Quality

\*\* Interim MECP guideline for drinking water

Bold & Underlined - Detected

Shaded - Exceeds Guideline

# Fenelon Landfill Site - PFAS Results

| Location ID                                                          | Guideline* | MW27-I    | MW27-II   | MW27-III  | MW28-I    | MW28-II   | MW28-III  | WP2-10              | WP3-10              | WP4-10              | MW26-1    | WP-1 (30m) | WP-2 (30m) |
|----------------------------------------------------------------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|---------------------|---------------------|---------------------|-----------|------------|------------|
| Sample Date                                                          |            | 11-Oct-23 | 11-Oct-23 | 11-Oct-23 | 11-Oct-23 | 11-Oct-23 | 11-Oct-23 | 11-Oct-23           | 11-Oct-23           | 11-Oct-23           | 11-Oct-23 | 25-Oct-23  | 25-Oct-23  |
| Eicosafuoro-3-oxaundecane-1-sulfonic acid, 11-chloro- [11Cl-PF3OUdS] |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    | Dry        | <0.020     |
| Ethyl perfluorooctanesulfonamide, n- [NEtFOSA]                       |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Ethyl perfluorooctanesulfonamidoacetic acid, n- [NEtFOSAA]           |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Ethyl perfluorooctanesulfonamidoethanol, n- [NEtFOSE]                |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Fluorotelomer carboxylic acid, 3:3 [3:3 FTCA]                        |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Fluorotelomer carboxylic acid, 5:3 [5:3 FTCA]                        |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <b><u>0.822</u></b> | <0.020              | <0.020    |            | <0.020     |
| Fluorotelomer carboxylic acid, 7:3 [7:3 FTCA]                        |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Fluorotelomer sulfonic acid, 4:2 [4:2 FTS]                           |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Fluorotelomer sulfonic acid, 6:2 [6:2 FTS]                           |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <b><u>0.054</u></b> | <0.020              | <0.020    |            | <0.020     |
| Fluorotelomer sulfonic acid, 8:2 [8:2 FTS]                           |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Hexadecafluoro-3-oxanonane-1-sulfonic acid, 9-chloro- [9Cl-PF3ONS]   |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Hexafluoropropylene oxide dimer acid [HFPO-DA]                       |            | <1.0      | <1.0      | <1.0      | <1.0      | <1.0      | <1.0      | <1.0                | <1.0                | <1.0                | <1.0      |            | <1.0       |
| Methyl perfluorooctanesulfonamide, N- [NMeFOSA]                      |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Methyl perfluorooctanesulfonamidoacetic acid, n- [NMeFOSAA]          |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Methyl perfluorooctanesulfonamidoethanol, n- [NMeFOSE]               |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Nonafluoro-3,6-dioxaheptanoic acid [NFDHA]                           |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluoro-3-methoxypropanoic acid [PFMPA]                            |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluoro-4-methoxybutanoic acid [PFMBA]                             |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluorobutanesulfonic acid [PFBS]                                  |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.100              | <0.020              | <0.020    |            | <0.020     |
| Perfluorobutanoic acid [PFBA]                                        |            | <0.50     | <0.10     | <0.50     | <0.50     | <0.50     | <0.50     | <0.50               | <1.00               | <0.50               | <0.50     |            | <0.10      |
| Perfluorodecane sulfonic acid [PFDS]                                 |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluorodecanoic acid [PFDA]                                        |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluorododecanesulfonic acid [PFDoS]                               |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluorododecanoic acid [PFDoA]                                     |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluoroheptanesulfonic acid [PFHpS]                                |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluoroheptanoic acid [PFHpA]                                      |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <b><u>0.028</u></b> | <b><u>0.25</u></b>  | <b><u>0.068</u></b> | <0.020    |            | <0.020     |
| Perfluorohexanesulfonic acid [PFHxS]                                 |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <b><u>0.02</u></b>  | <b><u>0.12</u></b>  | <b><u>0.036</u></b> | <0.020    |            | <0.020     |
| Perfluorohexanoic acid [PFHxA]                                       |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <b><u>0.044</u></b> | <b><u>0.51</u></b>  | <b><u>0.066</u></b> | <0.020    |            | <0.020     |
| Perfluorononanesulfonic acid [PFNS]                                  |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluorononanoic acid [PFNA]                                        |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluorononanoic acid, 4,8-dioxa-3H- [ADONA]                        |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluorooctanesulfonamide [PFOSA]                                   |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluorooctanesulfonic acid [PFOS]                                  | 0.2        | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <b><u>0.042</u></b> | <b><u>0.072</u></b> | <b><u>0.11</u></b>  | <0.020    |            | <0.020     |
| Perfluorooctanoic acid [PFOA]                                        | 0.6        | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <b><u>0.1</u></b>   | <b><u>0.244</u></b> | <b><u>0.426</u></b> | <0.020    |            | <0.020     |
| Perfluoropentanesulfonic acid [PFPeS]                                |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluoropentanoic acid [PFPeA]                                      |            | <0.100    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.100              | <0.300              | <0.100              | <0.100    |            | <0.020     |
| Perfluorotetradecanoic acid [PFTeDA]                                 |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluorotridecanoic acid [PFTTrDA]                                  |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| Perfluoroundecanoic acid [PFUnA]                                     |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| perfluoro(2-ethoxyethane)sulfonic acid [PFEESA]                      |            | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020    | <0.020              | <0.020              | <0.020              | <0.020    |            | <0.020     |
| PFAS, total                                                          | 0.07**     | <1.1      | <1.1      | <1.1      | <1.1      | <1.1      | <1.1      | <b><u>0.234</u></b> | <b><u>2.072</u></b> | <b><u>0.706</u></b> | <1.1      |            | <1.1       |

\* Guideline for Canadian Drinking Water Quality

\*\* Interim MECP guideline for drinking water

Bold & Underlined - Detected

Shaded - Exceeds Guideline

## Fenelon Landfill Site - PFAS Results

| Location ID                                                          | Guideline* | WP-3 (30m) | WP-4 (30m) | WP-5 (30m) |
|----------------------------------------------------------------------|------------|------------|------------|------------|
| Sample Date                                                          |            | 25-Oct-23  | 25-Oct-23  | 25-Oct-23  |
| Eicosafuoro-3-oxaundecane-1-sulfonic acid, 11-chloro- [11Cl-PF3OUdS] |            | <0.020     | Dry        | Dry        |
| Ethyl perfluorooctanesulfonamide, n- [NEtFOSA]                       |            | <0.020     |            |            |
| Ethyl perfluorooctanesulfonamidoacetic acid, n- [NEtFOSAA]           |            | <0.020     |            |            |
| Ethyl perfluorooctanesulfonamidoethanol, n- [NEtFOSE]                |            | <0.020     |            |            |
| Fluorotelomer carboxylic acid, 3:3 [3:3 FTCA]                        |            | <0.020     |            |            |
| Fluorotelomer carboxylic acid, 5:3 [5:3 FTCA]                        |            | <0.020     |            |            |
| Fluorotelomer carboxylic acid, 7:3 [7:3 FTCA]                        |            | <0.020     |            |            |
| Fluorotelomer sulfonic acid, 4:2 [4:2 FTS]                           |            | <0.020     |            |            |
| Fluorotelomer sulfonic acid, 6:2 [6:2 FTS]                           |            | <0.020     |            |            |
| Fluorotelomer sulfonic acid, 8:2 [8:2 FTS]                           |            | <0.020     |            |            |
| Hexadecafluoro-3-oxanonane-1-sulfonic acid, 9-chloro- [9Cl-PF3ONS]   |            | <0.020     |            |            |
| Hexafluoropropylene oxide dimer acid [HFPO-DA]                       |            | <1.0       |            |            |
| Methyl perfluorooctanesulfonamide, N- [NMeFOSA]                      |            | <0.020     |            |            |
| Methyl perfluorooctanesulfonamidoacetic acid, n- [NMeFOSAA]          |            | <0.020     |            |            |
| Methyl perfluorooctanesulfonamidoethanol, n- [NMeFOSE]               |            | <0.020     |            |            |
| Nonafluoro-3,6-dioxaheptanoic acid [NFDHA]                           |            | <0.020     |            |            |
| Perfluoro-3-methoxypropanoic acid [PFMPA]                            |            | <0.020     |            |            |
| Perfluoro-4-methoxybutanoic acid [PFMBA]                             |            | <0.020     |            |            |
| Perfluorobutanesulfonic acid [PFBS]                                  |            | <0.020     |            |            |
| Perfluorobutanoic acid [PFBA]                                        |            | <0.10      |            |            |
| Perfluorodecane sulfonic acid [PFDS]                                 |            | <0.020     |            |            |
| Perfluorodecanoic acid [PFDA]                                        |            | <0.020     |            |            |
| Perfluorododecanesulfonic acid [PFDoS]                               |            | <0.020     |            |            |
| Perfluorododecanoic acid [PFDoA]                                     |            | <0.020     |            |            |
| Perfluoroheptanesulfonic acid [PFHpS]                                |            | <0.020     |            |            |
| Perfluoroheptanoic acid [PFHpA]                                      |            | <0.020     |            |            |
| Perfluorohexanesulfonic acid [PFHxS]                                 |            | <0.020     |            |            |
| Perfluorohexanoic acid [PFHxA]                                       |            | <0.020     |            |            |
| Perfluorononanesulfonic acid [PFNS]                                  |            | <0.020     |            |            |
| Perfluorononanoic acid [PFNA]                                        |            | <0.020     |            |            |
| Perfluorononanoic acid, 4,8-dioxa-3H- [ADONA]                        |            | <0.020     |            |            |
| Perfluorooctanesulfonamide [PFOSA]                                   |            | <0.020     |            |            |
| Perfluorooctanesulfonic acid [PFOS]                                  | 0.2        | <0.020     |            |            |
| Perfluorooctanoic acid [PFOA]                                        | 0.6        | <0.020     |            |            |
| Perfluoropentanesulfonic acid [PFPeS]                                |            | <0.020     |            |            |
| Perfluoropentanoic acid [PFPeA]                                      |            | <0.020     |            |            |
| Perfluorotetradecanoic acid [PFTeDA]                                 |            | <0.020     |            |            |
| Perfluorotridecanoic acid [PFTTrDA]                                  |            | <0.020     |            |            |
| Perfluoroundecanoic acid [PFUnA]                                     |            | <0.020     |            |            |
| perfluoro(2-ethoxyethane)sulfonic acid [PFEESA]                      |            | <0.020     |            |            |
| PFAS, total                                                          | 0.07**     | <1.1       |            |            |

\* Guideline for Canadian Drinking Water Quality

\*\* Interim MECP guideline for drinking water

**Bold & Underlined** - Detected

**Shaded** - Exceeds Guideline



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## **APPENDIX H**

### **Sampling Protocols**

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**FIELD SAMPLING PROTOCOL FOR CKL LANDFILL SITES**  
**Last updated: November 19, 2018**

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### **Review Sampling Requirements**

- All of the sampling requirements are listed in the monthly sampling requirements spreadsheet S G:\Environmental\Env Ser - SWaste - Gen\W22 LANDFILL MONITORING PROGRAMS. The Waste Technician and Regulatory Compliance Officer will ensure that the sampling requirements spreadsheet is kept up to date.
- Ensure that the sampling requirements spreadsheets and site maps are in the back of each field book, and are current prior to each sampling event.

### **Prepare Equipment**

- Ensure that you have all equipment on the field equipment list. See Appendix A - Field Sampling Equipment List.
- Equipment must be calibrated according to manufacturer's standards. See Appendix B - Equipment Calibration and Maintenance Protocols for a complete set of maintenance and calibration instructions.
- Sampling bottles should be ordered at least 2 weeks before scheduled field sampling. Sample bottles should be stored primarily at 12 Peel Street in the Waste Management Department, or the Lindsay Ops maintenance building if necessary.
- Check the charge on the phone, GPS, YSI (dissolved oxygen, pH, temperature and conductivity) and gas monitor.
- Inspect your vehicle to ensure you have enough fuel, washer fluid and oil. Also check tire pressure and make note of any other alarms present on the vehicle. It is important to fill out the daily log book located in the vehicle to document the checks being conducted. Do not drive the vehicle if it requires servicing – contact Fleet for assistance.
- Leave the Supervisor of Waste Management Operations with your daily schedule. The Administrative Assistant or Regulatory Compliance Officer should also be informed of your schedule. If you will be working alone, you must follow SOP WM-005 – Working Alone. You are required to contact TAS (1-877-885-7337) when you arrive on-site and when you leave the site.
- Contact the Supervisor of Waste Management Operations or Regulatory Compliance Officer as well as TAS in the case of after-hours sampling. Confirm with the Supervisor of Waste Management Operations or Regulatory Compliance Officer and TAS when you arrive back at the office.
- Ensure that you have your cell phone and that it is fully charged at all times when you are out of the vehicle.

### **On-site Arrival**

- Observe your surroundings. Note if gates and offices (if applicable) are locked if site is not in operation. Contact Supervisor of Waste Management Operations immediately if suspicious activity is noted.
- Honk the vehicle horn if you note bear signs in the area.
- Generally always work from areas of less contamination to areas of higher potential contamination to reduce the possibility of sample cross contamination.
- Sampling should not be conducted during a thunderstorm or other severe weather conditions. If severe weather conditions arise while you are at a landfill follow the SOP WM004 – Extreme Weather.
- Appropriate precautions must be followed in extreme cold/heat conditions. See Appendix D - Health and Safety information.
- Ensure that appropriate PPE is worn for sampling including gloves, steel toed boots, long pants, sunscreen, safety glasses, etc.
- Do not proceed with work in isolated areas if you are uncomfortable with the work. Contact the Supervisor of Waste Management Operations to make alternate arrangements.

### **SAMPLING**

#### **Landfill Gas Monitoring**

1. The GMI GT-44 Methane Monitor is a certified Class 1, Div 1 Groups C and D instrument. The GT-44 should be operated and maintained as per manufacture's instructions. See Appendix B for further information; a copy of the manual is available in the Equipment Manuals binder. The monitor uses 3 C batteries as a power source – ensure extra batteries are always available.
2. The GMI GT-44 Gas Monitor can be programmed to read %VOL, %LEL and ppm CH<sub>4</sub>. Readings should be recorded in %VOL. This can be achieved by placing the monitor in Purge Mode. Record the date, site, monitor number and both the %VOL and the %LEL in the methane field book.
3. You must complete a fresh air calibration before each sampling event. Switch the monitor on in an open environment away from any sources of contamination. The monitor will begin a 30 second warm-up and calibration sequence.
4. If gas monitoring is required, it should be done before water level measurements and shall be taken without the removal of the any dedicated sampling device. Place the tube of the gas meter into the monitoring well. Avoid lowering the tube into the well water; water will damage the meter's sensors. If a release valve is

not available hold your hand over the top of the well ensuring a seal. You must wear latex or protective gloves when putting your hand over the monitoring well. If taking measurements from a dedicated gas monitoring probe, insert the tip of the monitor into the well valve and then open the stopcock. The monitor should be attached before opening the stopcock to ensure there is no release of methane gas.

5. Place the monitor in purge mode and allow the automatic pump to run for at least 30 seconds, or until the gas reading reaches a maximum and then begins to decline. In the field book record the highest %VOL displayed on the meter and determine the %LEL. The maximum reading is stored in the monitor for your reference.

## **Groundwater**

### **1. Field Book Setup**

| Monitoring Well Number | Water Level | Well Depth | Casing Volume (WD-WL x F) | Casing Volume x 3 | Volume of Water Purged | Sample Collected (2B4B, VOC etc) | Date Sample Collected | Well Condition, Weather, etc.     |
|------------------------|-------------|------------|---------------------------|-------------------|------------------------|----------------------------------|-----------------------|-----------------------------------|
| <b>MW</b>              | <b>WL</b>   | <b>WD</b>  | <b>V</b>                  | <b>Vx3</b>        | <b>Purge</b>           | <b>Sample</b>                    | <b>Date</b>           | <b>Comments</b>                   |
| e.g. MW1               | 6.2         | 15.2       | 18.18                     | 54.54             | 55                     | 2B4B                             | 25-Oct-10             | overcast, 25°C, well cap replaced |

Table 1: Sample field book format

| <b>Pipe Size (inch)</b> | <b>Factor (F)</b> |
|-------------------------|-------------------|
| 1/2                     | 0.127             |
| 3/4                     | 0.285             |
| 1                       | 0.506             |
| 1 1/4                   | 0.791             |
| 1 1/2                   | 1.140             |
| 1 3/4                   | 1.551             |
| <b>2</b>                | <b>2.026</b>      |

Table 2: Common factors for determining well volume

### **2. Water Level Measurements**

- a. To ensure that water levels are not affected by purging adjacent wells, gas and water levels should be taken from all wells prior to sampling/purging any wells in the area. Sample tubing should not be moved until the gas and water level measurements have been taken.

- b. Water level measurements shall be taken without the removal of any dedicated sampling device (tubing and foot-valve arrangements). Disturbing anything in the well including the tubing and foot-valve can alter the water level reading.
- c. Rinse the water level meter with distilled water prior to lowering it into the well. Make sure the water meter is on and lower the meter into the well until the meter beeps. The meter can be affected by condensation on the walls of the pipe or conductivity levels, so slightly raise and lower the water meter to be sure of your measurement. Water levels shall be measured with an electric depth gauge to the nearest 0.01 meters.
- d. Measurements shall be taken from the top of the monitored well. The measurement will be taken from the top of the PVC casing (well pipe) and not the top of the protective casing. Ensure that the TOP levels are up to date.
- e. Water level measurements shall be recorded in the field book for each specific monitor.
- f. Switch off the water level monitor and continue lowering the tape until it reaches the bottom of the well – the tape should become slack. Raise the tape just until it becomes taught and read the depth from the top of the PVC casing (well pipe). The height of standing water in each well shall be calculated by subtracting the static water level from the total well depth.

### 3. Purging Procedure

- a. Prior to sampling, each well shall be purged to remove stagnant water within the casing.
- b. Three casing volumes shall be removed by the dedicated samplers or by use of a bailer from the wells with moderate inflow. The casing volume can be determined by multiplying the height of standing water by F. The casing volume is then multiplied by 3 to determine the purge volume. Record these values in the field book.
- c. The volume of water required to be purged is calculated as follows:

|                                                                                                  |
|--------------------------------------------------------------------------------------------------|
| $\text{Volume (m}^3\text{)} = 3 \times (F(\text{m}^2) * (\text{Depth of Well-Water Level (m)}))$ |
|--------------------------------------------------------------------------------------------------|

Where:

F is equal to the area ( $F = (3.14 * D^2) / 4 * 1000$ )

D is the diameter measured in meters

- d. The purged water shall be measured into a calibrated container (i.e. bucket with known volume) and the volume of water purged shall be recorded in the field book for the specific monitor. Be sure to purge any sediment that may have accumulated at the bottom of the well.
- e. Slow inflow monitors shall be purged entirely dry. The volume of purged water shall be recorded in the field book for the specific monitor. Staff should leave

the monitor to recharge and return periodically to the well to attempt to purge the full volume.

- f. For slow recharge wells it may be necessary to return the following day to collect your sample.

#### 4. Sampling Procedure

- a. Suitable sample bottles (containing pre-measured preservatives, as required) shall be obtained from the analyzing laboratory in advance of the sampling program.
- b. Each sample bottle shall be labeled to indicate the project name (landfill site), well designation, date, time of sample collection, and preservatives added.
- c. Samples shall be collected by means of the dedicated samplers in all monitoring wells, if present. For slow inflow monitors, samples shall be collected the day following the purging exercise (to permit water-level recovery, if required).
- d. Nitrile gloves should be worn when taking any sample. Change gloves for each sampling location.
- e. When 3 borehole volumes have been purged sample the groundwater in the following order as necessary:
  - i. If required, pH, conductivity, and water temperature
  - ii. VOC glass amber bottles contain preservatives (usually HCl) but need to be filled with no headspace. Carefully fill the VOC bottles to the top without losing the preservative. To help ensure no air in the sample fill the top of the cap with the groundwater as well or ensure there is a convex surface on the mouth of the bottle. After filling the bottle and putting the lid on, invert the bottle and tap the sides to ensure that no air is present in the sample. Add more sample until no air bubbles remain. If a significant volume of water is lost during refilling, the sample must be collected in a new bottle to ensure sufficient preservatives.
  - iii. Poly Aromatic Hydrocarbons (PAHs) - 1 L amber bottles with Teflon lids.
  - iv. Pesticides – 1 or 2 unpreserved 1 L amber bottles may be required (depending on the amount of sediment, check with the lab). Fill bottle leaving a bit of headspace to allow for liquid to expand in temperature changes. Ensure that the lip of the bottle and the lid do not come into contact with anything except the sample.
  - v. Dissolved Organic Carbon (DOC) –bottle may contain preservative
  - vi. Phenols – glass bottle with preservative ( $\text{H}_2\text{SO}_4$  or  $\text{CuSO}_4$ )
  - vii. Mercury – glass bottle contains preservative ( $\text{K}_2\text{Cr}_2\text{O}_7$  or  $\text{HNO}_3$ )
  - viii. General chemistry is taken in PET bottles with no filtration and no preservative
  - ix. Inorganic compounds (metals) – PET bottle with acid preservative (often  $\text{HNO}_3$ ). In Ontario metals are measured in the dissolved state so groundwater samples must be filtered. Use a 45 micron filter, ensure that it is placed on the waterra tubing in the correct direction, purge some water though the filter and then fill the bottle. There is a preservative in metals

bottles. Fill the bottle almost entirely but not all the way to the top. If there is a lot of sediment you may require more than one filter. Alternatively you can request lab filtration of the sample but this must be indicated on the sample bottle and the chain of custody and the sample must be collected in an unpreserved bottle.

- f. Sampling information shall be recorded in the field book. Information includes the well number, date of sample collection, static water level, well casing volume, purge volume, actual volume of water purged, and any repairs necessary on the well and weather conditions. Take any field notes on the condition of the well or the reason if a sample could not be obtained. A pencil is preferred as it won't smudge if wet.
- g. If sampling during the winter ensure that all water is emptied from the waterra tubing before closing the well.

## 5. Laboratory Procedures

Laboratory sample submission protocols should be confirmed with the laboratory where samples will be shipped to. This information should be known ahead of time.

## 6. Troubleshooting in the Field

The following are a number of common issues that may be encountered in the field when groundwater sampling.

| Issue                                                                                  | Solution                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water level meter won't beep                                                           | Check that the meter is on. If the meter is on and will not buzz, try changing the batteries. If the meter still will not buzz, the well may be dry. Attempt purging the well using the dedicated tubing. If no water is present note this in the field book.                                                                    |
| Water level meter won't stop beeping                                                   | Try rinsing the water level meter with distilled water.                                                                                                                                                                                                                                                                          |
| While purging, water stops coming out of Waterra                                       | The foot valve may have become plugged with sediment or small stones or may have fallen off. Remove the waterra (making sure not to rest it on the ground) and inspect the foot valve. If there is no problem with the foot valve, the well may be dry. Confirm this with the water level meter and make note in the field book. |
| When you remove the well cap the Waterra has slid too far down the PVC casing to grab. | Always carry a coat hanger in your field bag. This can be used to hook and raise waterra that has fallen down the standpipe.                                                                                                                                                                                                     |
| The waterra tubing has split and                                                       | If the leak is coming from the connection between                                                                                                                                                                                                                                                                                |



|                                                     |                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| water is spraying out of the side                   | the large diameter and small diameter tubing, ensure they are connected properly and use electrical tape if necessary. If the leak is coming from other parts of the waterra, cut and replace that section. Depending on where the leak is, you may have to replace the entire length of tubing. |
| Well has been purged dry and exhibits slow recharge | Move on and complete the remaining wells, returning to the dry well at the end of the sampling day. If the well is still dry, you may have to return the following day to collect the sample. Note this in the field book.                                                                       |

## **Surface Water**

### **1. Field Book Setup**

Your field book should be set up in the following way, prior to heading out into the field:

| Station | pH   | DO (mg/L) | Cond (uS/cm) | H <sub>2</sub> O Temp | Air Temp | Width (m) | Depth (m) | Flow (m/s) | Sample/Date/Comments    |
|---------|------|-----------|--------------|-----------------------|----------|-----------|-----------|------------|-------------------------|
| SWA     | 7.03 | 2.36      | 456          | 14                    | 17       | 2         | 1         | 0.3        | 2B4B/Aug 3/silty sample |

### **2. Sampling Procedure**

- Sampling should usually be conducted under base flow conditions (to observe maximum quality impact). Thus, there shall be several days without precipitation before the sampling survey. However, sampling of ponding water during stagnant conditions shall be discouraged unless representative of the local conditions. If a sample is collected in a stagnant water body this should be noted in the field book.
- Confirm the monitoring regime. There are some sites where surface water sampling is specified to occur after a rainfall event (e.g. Lindsay Ops and Verulam surface water sampling).
- Samples should be collected from the furthest station downstream from the site first and then progress up stream towards the site. This ensures that downstream samples are not affected by disturbances caused from upstream sampling.
- Ensure that equipment is properly cleaned and gloves are changed between sampling locations, especially prior to taking a background sample.
- Prior to sampling conduct a visual inspection and take photographs of the site. Label the site and the SW location in the photos once they have been uploaded to the computer in the office. Field measurements shall be taken for temperature, conductivity, pH and DO at each sampling

station when samples are collected for chemical analysis. It is best to take these measurements from a location slightly downstream of your collection location before you take samples to avoid influencing results from disturbances during sample collection. You can also take these measurements after sample collection but in this case they should be taken slightly upstream of the sample collection location.

- f. The YSI must be calibrated at the beginning of every day it is being used (see Appendix C). Turn the YSI on 5-15 minutes before use. Allow temperature readings to stabilize. The probe shall be placed perpendicular to flow direction in a flowing stream. In a non-flowing sample, the YSI probe should be stirred at least 6 inches per second (for 1.25 PE membranes). When the DO values plateau and stabilize you may record the measurement in the field book or log the data set. The probe should be completely submerged for accurate conductivity readings; the pH probe may need a bit of time to stabilize so take this reading last.
- g. Nitrile or latex gloves should be worn when taking any sample. Change gloves for each sampling location.
- h. Samples should not be filtered unless directly indicated in the protocol. The general chemistry bottle can be used to fill bottles with preservatives already in the bottle (bottles with preservative should not be filled directly in the surface water).
- i. To take the sample, remove the lid and keep in your fingers of one hand (the lids and mouth of the bottle should only be in contact with the air and sample). Collect the sample from the middle of the stream where possible. Place the sample bottle into the water column facing downwards about half way down the water column. Turn the sample bottle facing upstream to collect the sample.
- j. Weather conditions shall be recorded in the field book.
- k. Flow measurements shall be recorded after samples have been collected.
  - i. For typical stream flow in a distinguished channel, measure the average water depth, stream width, and water velocity using the method below. It is preferable to measure at a minimum of three (3) locations across the stream. The measurement should be taken in an area as straight as possible with similar substrate.
  - ii. Flow can also be measured at culverts by taking the depth of the water in the culvert, and diameter of the culvert, and the velocity of the water entering or exiting the culvert.
  - iii. Water velocity can be measured by the time it takes a floating object to travel a set distance (orange peel and stop-watch method). Make sure that you measure the distance and have a stop watch to measure the time.
- l. Additional observations may include vegetation, substrate, water colour, odour, iron staining, algae etc. All measurements and observations should be recorded in the field book.

- m. Any digitally-metered instrument used to obtain field measurements (other than temperature) shall be calibrated before the sampling survey to ensure reliable results.

### **Lindsay OPS Stormwater Sampling**

Lindsay OPS Stormwater sampling at SW14, SW15 and SW18 must be completed following at least four storm events producing surface water runoff in the spring, summer and fall. At each station, one sample is collected to measure pH using a general chemistry bottle, one sample is collected to measure for ammonia using a nutrients bottle, and an additional sample is collected to conduct an on-site ammonia reading using a general chemistry bottle. One general chemistry bottle and one nutrients bottle will be sent to the lab for certified analysis of pH and ammonia.

When each station has been sampled, immediately bring the additional sample bottle collected to the Lindsay Ops Administration Building. There is a LaMotte Ammonia-Nitrogen kit kept on-site for analysis. Proper PPE, including safety glasses and nitrile gloves should be worn during this procedure. The test kits contain reagents that may be harmful if you come in contact with them.

The following is the procedure for the Ammonia-Nitrogen Kit:

- a. Insert the Ammonia Nitrogen Octa-Slide 2 Bar into the Octa-Slide 2 Viewer.
- b. Fill a test tube to the 5 mL line with the water sample.
- c. Add 10 drops of Salicylate Ammonia #1. Cap the test tube and mix thoroughly.
- d. Add 7 drops of Salicylate Ammonia #2. Cap the test tube and mix thoroughly.
- e. Wait 1 minute. Add 7 drops of Salicylate Ammonia #3. Cap the test tube and mix thoroughly. Wait 20 minutes.
- f. Insert the test tube into the Octa-Slide 2 Viewer. Match the sample colour to a standard colour. Record as ppm of ammonia nitrogen.

Follow the laboratory submission protocol. It is imperative to request that laboratory analysis is completed as quickly as possible.

### **Leachate Pumping Chambers**

#### **Field Book Setup**

Your field book should be set up in the following way prior to heading into the field:

| Station     | pH   | Cond<br>(uS/cm) | H <sub>2</sub> O<br>Temp | Air<br>Temp | Sample/Date/<br>Comments            |
|-------------|------|-----------------|--------------------------|-------------|-------------------------------------|
| LPC<br>WPCP | 7.03 | 456             | 14                       | 17          | 2B4B/Aug<br>3/orange<br>colouration |

## **1. Lindsay Ops and Lindsay St. North Leachate Pumping Chambers**

- Open chamber lid.
- Lower dedicated bailer attached inside the chamber to collect water sample. Lift and lower the bailer until it is full.
- Fill an extra PET bottle with a representative sample of leachate and use the YSI to record sample temperature, pH, DO and conductivity in the field book.
- Samples can be collected directly from the bailer into sample bottles.
- Metals must be collected in an unfiltered metals bottle which must be lab filtered and preserved. This should be indicated on the bottle and laboratory submission sheet.
- Ensure that after sample collection the bailer is emptied and securely tied to the top of the chamber to avoid fouling in the chamber.
- If a bailer is not available use a large bucket to collect a sample. Ensure that the rope on the bucket is secured to something before lowering the bucket into the chamber.

## **2. Emily Purge Wells**

When the system is not turned off and the system is in use, sampling protocol for the purge wells are as follows:

- All pumps should be placed in the off position.
- Open TW1 slightly and turn on Pump 1. Allow TW1 to flush to the lagoons for at least five minutes. This will help dislodge any sediment that has become trapped in the pipes. Once complete turn off Pump1.
- The backflow valve should be closed to prevent water from the force main back flowing into your sample.
- Open the ball valve for TW1 slightly to avoid build up of pressure in the pipes when collecting the sample.
- Turn on TW1 and open the upper tap. Run the tap into a bucket until it runs clear. There is sometimes build up of iron in the pipes that comes loose when the taps are opened.
- After you have run the tap, collect your samples. When you are done collecting the sample turn off the tap and the pump.
- It should be indicated on the bottle and laboratory submission sheet that the sample could not be filtered.
- Follow the same procedure for TW2 and TW3 using the middle and bottom taps, respectively.
- For the composite sample, use the procedure outlined above to fill each sample bottle 1/3 with a sample from each TW. You can fill the combined bottles at the same time as you are filling the sample bottles for each TW.

- To restart the collection system, open the force main valve. Then start all the pumps and follow the procedures outlined in the Emily Operations Manual to set the optimal flow rates for each pump.

### **Residential**

- If possible, notify resident of sampling prior to your arrival at their house. When you arrive at their home, knock on the door and identify yourself as a City employee conducting water sampling, and ask if it is a convenient time to take a sample. If resident is not home but received prior notification, proceed with sampling.
- Ensure sampling location is of raw water (water not treated by a water softener or other treatment device).
- Run the tap for 3-5 minutes prior to sampling. Generally it is good to direct the water away from the foundation of the house with a hose or bucket with running the tap. The home owner may have specific requests which will be noted in the sampling requirements per site sheet.
- Prior to collecting the sample, remove hose if taking sample from an outside tap.
- Take sample.
- Place sample in cooler with ice for transport back to office.
- If taking a sample for bacteria, please follow the directions for sampling and submission provided by the Health Unit with the sample bottle.
- See the residential section of Laboratory Procedures.

### **Compost**

- Samples are to be taken and submitted for analysis once the compost has finished curing and it is ready to be moved. Take 10 grab samples from diverse points within the compost pile; dig in at least 1 meter into the pile.
- Each grab sample will contain a minimum of 20 liters (one pail, ensure pail/tools are clean).
- Mix the 10 grab samples in a separate pile, and from that pile, take one sample for submission to the laboratory.
- Sample will be sent to Caduceon laboratory for compost analysis.

- Samples are to be contained in a clean PET bag, PET bottle, or glass jars and submitted for analysis for the parameters listed below.
- Currently Caduceon laboratory will provide 2 glass jars (one for metals and one for particle size) for the analysis.

**Table 3: Ontario Compost Quality Standards, July 2012**

| Parameter                                      | Category AA                                           | Category A                                            | Category B                                            |
|------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|
|                                                | ppm = mg/kg = ug/g                                    |                                                       |                                                       |
| Arsenic                                        | 13                                                    | 13                                                    | 75                                                    |
| Cadmium                                        | 3                                                     | 3                                                     | 20                                                    |
| Chromium                                       | 210                                                   | 210                                                   | 1060                                                  |
| Cobalt                                         | 34                                                    | 34                                                    | 150                                                   |
| Copper                                         | 100                                                   | 400                                                   | 760                                                   |
| Lead                                           | 150                                                   | 150                                                   | 500                                                   |
| Mercury                                        | 0.8                                                   | 0.8                                                   | 5                                                     |
| Molybdenum                                     | 5                                                     | 5                                                     | 20                                                    |
| Nickel                                         | 62                                                    | 62                                                    | 180                                                   |
| Selenium                                       | 2                                                     | 2                                                     | 14                                                    |
| Zinc                                           | 500                                                   | 700                                                   | 1850                                                  |
| Foreign matter particles greater than 3mm      | 1%                                                    | 1%                                                    | 2%                                                    |
| Plastic foreign matter                         | 0.5%                                                  | 0.5%                                                  | 0.5%                                                  |
| Sharp foreign matter                           | No material that can reasonably cause injury          | No material that can reasonably cause injury          | Max. 3 pieces/500 ml, Max. 12.5 mm in size            |
| Pathogen Testing (SSO only)<br>Fecal coliforms | <1000 MPN/g of total solids on dry weight basis       | <1000 MPN/g of total solids on dry weight basis       | <1000 MPN/g of total solids on dry weight basis       |
| Pathogen Testing (SSO only)<br>Salmonellae     | <3 MPN/4g total solids calculated on dry weight basis | <3 MPN/4g total solids calculated on dry weight basis | <3 MPN/4g total solids calculated on dry weight basis |

## LABORATORY PROCEDURES

Laboratory procedures are subject to change with a new lab. Procedures should be confirmed with the lab if there are any changes in laboratories.

### Groundwater and Surface Water

- QA/QC procedures (i.e. number and type of field and spiked blanks) shall be determined by prior consultation with the laboratory representative. Current practice is 1 duplicate sample taken for every 10 samples collected. Additionally, one travel blank should be included for every couple of sites.
- Place samples into a cooler with pre-frozen ice packs and if possible send the samples to the lab the same day or next morning. Surface water samples must be sent to the laboratory within 48 hours of sample collection because of BOD holding times. Groundwater samples may be kept up to a maximum of 72 hours before they are sent to the laboratory.
- Samples must maintain a temperature below 10°C. Coolers (or samples) must be stored in fridge at Lindsay Ops if keeping overnight. If they cannot be stored in the fridge, make sure to add extra ice in the coolers for overnight keeping, and ensure more ice is added in the morning.
- A chain of custody form shall be completed and submitted together with the samples to the laboratory. A copy of the chain of custody shall be retained by the sample collector.
- Surface water samples should not be sampled on Friday as the sample will not get to the laboratory before holding time expires. Laboratory holding times for samples are currently as follows:

Table 4: Laboratory holding times

| Parameter  | Days |
|------------|------|
| ICP Metals | 60   |
| Mercury    | 14   |
| Nitrite    | 7    |
| Nitrate    | 7    |
| Fluoride   | 30   |
| Turbidity  | 7    |
| Alkalinity | 14   |

|          |      |
|----------|------|
| Chloride | 30   |
| Sulphate | 30   |
| DOC      | 5    |
| TDS      | 7    |
| pH       | ASAP |
| BOD      | 5    |
| VOC      | 14   |

### **Residential Well Sample Submission**

- Residential well samples must be submitted to the laboratory as soon as possible after sampling. Bacti samples are to be submitted to the health unit as soon as possible. Samples cannot sit over the weekend and cannot be shipped on a Friday.
- Complete the chain of custody ensuring all the required information is completed. There may be specific forms from the lab for submitting residential drinking water samples.
- Pack samples in a cooler with LOTS of ice and ship via courier. Residential samples must be 5°C upon receipt at the laboratory.

## **POST MONITORING PROCEDURES**

### **Groundwater**

- Ensure that all equipment is cleaned and stored in the equipment area at Lindsay Ops.
- Transfer water level information into the field notes folder in the G drive. Go to G:\Environmental\Env Ser - SWaste - Gen\W22 LANDFILL MONITORING PROGRAMS.
- If monitoring well repairs are required note these in the MW repair excel sheet in the G drive. Go to G:\Environmental\Env Ser - SWaste - Gen\W22 LANDFILL MONITORING PROGRAMS and select the excel sheet for the appropriate year entitled Monitoring Well Repairs.

### **Surface Water**

- Ensure that all equipment is clean and stored in the equipment area at Lindsay Ops. The YSI and calibration solutions should be stored inside at 12 Peel Street with the Waste Management Department.



- Transfer surface water information into the field notes folder in the G drive. Go to G:\Environmental\Env Ser - SWaste - Gen\W22 LANDFILL MONITORING PROGRAMS.
- Copy pictures into the SW photo folder for the appropriate site in the G drive. Ensure that the date of the picture is included in the name.

### **Landfill Gas**

- Transfer methane information into the field notes folder in the G drive. Go to G:\Environmental\Env Ser - SWaste - Gen\W22 LANDFILL MONITORING PROGRAMS.

### **Monitoring Well Repairs**

- Monitoring wells should be repaired on a regular basis. Repairs include fixing the waterra tubing, fixing loose casings, cutting down well PVC pipe if the casing has sunk and won't close, extending the well if it is too short. etc.
- All repairs should be documented in the monitoring well repairs excel spreadsheet in the landfill general folder in the G drive.
- For some repairs, it may be necessary to contract a licensed well technician to complete the work. Refer to O Reg. 903 for more information.
- \*\*Be sure to measure the length of PVC that is being extended or cut and adjust the well depth in the field book accordingly.
- \*\*Any changes to the elevation of the pipe must be carried out by a certified well technician and must be indicated to the Regulatory Compliance Officer so a new TOP elevation can be surveyed at the end of the year

## **Appendix A – Field Sampling Equipment List**

### All sampling

- Site keys
- Location maps and field sheets
- GPS and locations for the site
- Mobile phone equipped with a camera, or digital camera
- Bear deterrents (bear spray, fog horn, whistle, etc.)
- Cell phone
- Small knife
- Tool box and socket set
- PPE (gloves, bug spray, sunscreen)
- Biodegradable detergent
- Distilled water
- Sharpies
- Hand wipes/hand sanitizer
- Pencils
- Electrical tape
- Measuring tape
- Watch or mobile phone displaying time
- Paper towel

### Groundwater monitoring

- Water level indicator (extra C batteries)
- Sampling bottles
- Purging buckets – at least 2 marked with volumes (i.e. 4L, 8L, etc)
- Filters for GW samples
- Additional tubing and foot valves
- Calculator
- Field book
- Coat hanger or threaded rod
- Extra locks and well caps

### Surface water monitoring

- Sampling bottles
- YSI meter (extra AA batteries)
- Calibration solutions and distilled water
- Swing sampler
- Mobile phone equipped with camera, or digital camera
- Hip waders
- Rubber boots
- Field book

### Gas monitoring

- Methane monitoring device (GMI GT-44)
- Extra C batteries
- Methane field book

### Monitoring well repairs

- Hand held electric saw
- Casing caps and collars
- Well caps
- Bucket
- Concrete
- Bentonite
- Waterra tubing (high and low density)
- Foot valves
- PVC pipe
- Ski pole
- Orange spray paint
- Locks

## **Appendix B – Equipment Calibration and Maintenance Protocols**

### YSI

For detailed information on YSI please consult the Professional Plus User Manual.

#### General Use

- The YSI should be calibrated at the beginning of every day that it will be used.
- Prior to departing for field work the protective sleeve can be removed and the field sleeve can be attached.
- Upon return from the field the probe should be rinsed with clean water.
- At the end of every day the probe should be stored with a damp sponge in the bottom of the storage sleeve, or a small amount of water is to be added to the storage sleeve if no sponge is present. The YSI and calibration solutions should be stored in a temperature regulated room. Check the acceptable range for storage on the calibration solution bottles.
- Calibration solutions should be transferred into smaller glass jars to avoid contaminating the entire bottle of solution. Jars should be labeled with the name and concentration of solution as well as the date of transfer and expiry date.

## Calibration and Maintenance

- DO Meter

- Follow the “Calibrating DO % in Water Saturated Air: 1 Point Calibration” as described in the Professional Plus YSI user manual (pg 27) and below:
- The supplied sensor storage container (a screw on plastic cup) can be used for DO calibration purposes
- Moisten the sponge in the storage sleeve or plastic cup with small amount of clean water. The sponge should be clean since bacterial growth may consume oxygen and interfere with the calibration. If using the cup and you no longer have the sponge, place a small amount of clean water (1/8 inch) in the plastic storage cup instead.
- Make sure there are no water droplets on the DO membrane or temperature sensor. Then install the storage sleeve or cup over the sensors. The storage sleeve ensures venting to the atmosphere. If using the cup, screw it on the cable and then disengage one or two threads to ensure atmospheric venting. Make sure the DO and temperature sensors are not immersed in water. Turn the instrument on and wait approximately 5-15 minutes for the storage container to become completely saturated and to allow the sensors to stabilize.
- Pres Cal. Highlight probe ID (which must be enabled in the GLP menu to appear in calibration menu).
- Highlight DO % and press enter to confirm.
- Wait for the temperature and DO % values under “actual readings” to stabilize then highlight accept calibration and press enter to calibrate. Or press Esc to cancel calibration.
- The potassium chloride solution and membrane cap should be changed at least every 30 days during regular use.

- Conductivity

- Follow the “Calibrating in Specific (Sp.) Conductance or Conductivity” as described in the Professional Plus YSI manual (pg 36) and below:
- Press Cal. Highlight Probe ID
- Place the sensor into a fresh, traceable conductivity calibration solution. The solution must cover the holes of the conductivity sensor that are closest to the cable. Ensure the entire conductivity sensor is submerged in the solution or the instrument will read approximately half the expected value
- Choose the units in SPC-uS/cm
- Highlight Calibration Value and press enter to input the value of the calibration standard
- Once the temperature and conductivity readings stabilize highlight accept calibration and press enter or press esc to cancel

- The openings that allow sample access to the conductivity electrodes should be cleaned regularly (small cleaning brush included in the maintenance kit). Dip the brush into clean water and insert into each hole 10 to 12 times.
- pH
- Follow the instructions “Calibration pH” as described in the Professional Plus SI user manual (pg40).
- Press Calc. Highlight probe ID
- Highlight ISE (pH) and press enter. The message line will show the instrument is “Ready for point 1” (The pH calibration allows up to six points)
- Rinse the sensor with distilled water and pat dry before placing in the buffer solution.
- Place the sensor in a traceable pH buffer solution. The value of the buffer should show up at the top of the calibration screen. If not, highlight calibration value and enter it manually.
- Once the temperature and pH readings stabilize press accept calibration.
- The probe should be rinsed with distilled water and patted dry in between buffer solutions.
- To continue with the second point, place the sensor in the second buffer solution. Again this buffer solution should be recognized or entered manually.
- Once the pH and temperature have stabilized press accept calibration and press enter.
- If you do not wish to perform a 3<sup>rd</sup> calibration point press cal to complete the calibration.

### **Barometer**

- Do not calibrate the barometer unless you have specific reason to believe that the values are untrue. If calibrating the barometer carefully follow the instructions in the Professional Plus YSI user manual (pg 32).

### **GMI GT-44 (Methane Monitor)**

For detailed information on the GT-44 please consult the GMI GT Series User Handbook – CSA.

#### **General Use**

- To turn the unit on hold the PUMP button down for 1 second. The instrument will ask you if all filters are installed and in good condition – check that they are and then select YES.
- The unit will then ask you if you would like to perform a flow fault test. Place your finger over the sensor. The monitor should read successful – select yes to continue.

- Fresh air calibration should be conducted at the beginning of every sampling day. The monitor will do this automatically, counting down from 30 in the top right hand corner.
- The following different modes will read methane concentration in these units:
  - Confined space - %LEL
  - Barhole – 0-100% LEL ; 0-100% VOL
  - Purge – 0-100% VOL
  - Sniffer - ppm CH<sub>4</sub>
  - Leak Test – ppm CH<sub>4</sub>
- For best results, the monitor should be operated in Purge mode as methane readings must be recorded in %VOL. However, if you would like to identify very small methane concentrations, the monitor can be placed in sniffer or leak test mode and ppm CH<sub>4</sub> can be easily converted to %VOL using the following equation:

$$\text{\%VOL methane} = \text{ppm}/10,000$$

- To switch between operation modes, press and hold both the INVERT and PUMP buttons at the same time.
- The max/live or min/max methane readings can be seen by pressing and holding the INVERT button (only available in confined space or leak test mode). To return to live readings press and hold the INVERT button again.
- The automatic pump can be turned on and off by pressing the PUMP button.
- To turn the monitor off, press and hold the INVERT and PUMP button simultaneously while the monitor counts down from 3.

#### Calibration

- To conduct a Fresh Air calibration, turn the monitor on – the monitor will automatically begin the fresh air calibration and warm up sequence.
- If the instrument reads error please refer to the Instruction manual or call a service technician.
- The unit is to be calibrated when Hetek Solutions Inc. is on site for gas detection calibration at the Lindsay Ops Landfill.

#### **Compost Thermometer**

Please refer to Recalibrating your Reotemp Dial Compost Thermometer information sheet for more information.

- To calibrate the thermometer prepare a Reference Bath. You will need a bath of water of a known temperature. You can use ice water for any range that includes 0°C. The ice bath should be mostly ice, with just enough water to fill the spaces.
- You can use any other temperature bath (room temperature is most convenient, but your working temperature will be most effective), if you have another reference thermometer that you know is accurate.
- The reference bath should be at least 4 inches deep (6 or more inches is better.) If the reference bath is water at room temperature, use a big container, like a bucket.

- The bath should be agitated (stirred) just before or during calibration (boiling water will do its own agitation).
- If you are using a reference thermometer, place the Unit under test (UUT) right next to the reference unit (REF). You can even strap them together with a small rubber band. The UUT should be immersed at least 4 inches into the bath, as the sensitive portion of the thermometer is in the last 2-3 inches of the stem.
- Leave the UUT in the bath for at least a minute, to make sure temperatures have stabilized. Then rotate the small (1/4") hex screw head on the back of the dial case of the UUT until the pointer is indicating the proper temperature. You can use a flat screwdriver, or a small coin, or pliers to rotate the screw head. Once the UUT and REF thermometers agree, you are done!
- If your thermometer will not recalibrate, it may need factory repair. (If the stem is bent, it cannot be repaired, and must be replaced). Contact our factory at 858-784-0710, or fax us at 858-784-0720, or email ([sales@reotemp.com](mailto:sales@reotemp.com)) to discuss repair/replacement options.

## Appendix C – Contact Information

### City of Kawartha Lakes Contact List

| Name                  | Position                                  | Number (705) 324-9411 ext: | Cell         |
|-----------------------|-------------------------------------------|----------------------------|--------------|
| <b>Heather Dzurko</b> | Supervisor of Waste Management Operations | 1133                       | 705-328-4263 |
| <b>Kerri Snoddy</b>   | Regulatory Compliance Officer             | 2360                       | 705-879-2666 |
| <b>Nikki Payne</b>    | Waste Technician                          | 1144                       | 705-928-3056 |
| <b>David Kerr</b>     | Manager Environmental Services            | 1118                       | 705-340-3448 |

### Repair and Maintenance Contact List

| Company Name         | Contact Name/Information               | Number                             | Email                                                                                    | Equipment                                                  |
|----------------------|----------------------------------------|------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Coe Fisher Cameron   | Herman Wimmelbach or Geoff Lees        | 705-324-4152                       | <a href="mailto:geoff@coefishercameron.com">geoff@coefishercameron.com</a>               | Surveys                                                    |
| Sitech               | Spencer Wykes                          | 905-669-4773(w)<br>416-436-3241(c) | <a href="mailto:spencer.wykes@sitechmidcanada.com">spencer.wykes@sitechmidcanada.com</a> | Trimble GPS unit                                           |
| Hart & Sons Drilling | Clark Watson                           | 887-3331                           |                                                                                          | Monitoring well repairs                                    |
| Kevin Keenan         | Keenan Electric                        | 878-2111                           |                                                                                          | Electrician for Emily (set up spray irrigation times etc.) |
| Tom Taylor           | Taylor Electric                        | 705-878-6050                       |                                                                                          | Emily electrical                                           |
| Steve Walsh          | Walsh's welding                        | 705-328-0738                       |                                                                                          | Welding repairs of Emily irrigation system                 |
| Christie Mechanical  | Christie Mechanical (7415 Highway 9 Rr | 519-943-0506                       |                                                                                          | Emily Rotork Valves: for replcement only                   |



|                                     |                                             |              |                                                                |                                                               |
|-------------------------------------|---------------------------------------------|--------------|----------------------------------------------------------------|---------------------------------------------------------------|
|                                     | 1, Palgrave<br>LON 1P0, ON                  |              |                                                                |                                                               |
| Syntec<br>Maintenance               | Steve Stoll                                 | 905-951-8000 | <a href="mailto:steve@syntecpe.com">steve@syntecpe.com</a>     | Emily Rotork<br>Valves: for<br>information/sup<br>port        |
| Hetek<br>Environmental<br>Solutions | Karl Stoute,<br>Account<br>Manager -<br>GTA | 519-659-1144 | <a href="mailto:karl.stoute@hete.com">karl.stoute@hete.com</a> | GMI GT-44<br>Methane<br>Monitor<br>Calibration and<br>Support |

### Equipment Supplies Contact List

| Company Name                           | Contact Name/<br>Information                                         | Number             | Email                                                                                    | Equipment                                                                  |
|----------------------------------------|----------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Hoskin Scientific                      | Natalia Lecki<br>4210 Morris Dr. Burlington                          | 905-333-5510 x 232 | <a href="mailto:nlecki@hoskin.ca">nlecki@hoskin.ca</a>                                   | Calibration Solutions for YSI and other environmental monitoring equipment |
| Desco Plumbing and Heating Supply Inc. | 39 Colborne St. East<br>Lindsay                                      | 705-324-9421       |                                                                                          | Plumbing supplies                                                          |
| Solinst Canada Ltd.                    | 35 Todd Rd<br>Georgetown, ON                                         | 1-800-516-9081     | <a href="mailto:john.buckley@solinst.com">john.buckley@solinst.com</a>                   | environmental monitoring equipment                                         |
| Pine Environmental Services            | Aimee Fossett or Graham Johnstone,<br>6380 Tomken Rd.<br>Mississauga | 905-795-9700       | <a href="mailto:gjohnstone@pine-environmental.com">gjohnstone@pine-environmental.com</a> | renting water level meter, other equipment                                 |
| Maxim Environmental & Safety           | Paul Coulombe,<br>170 Ambassador ON                                  | 1-888-285-2324     | <a href="mailto:paul@maximenvironmental.com">paul@maximenvironmental.com</a>             | environmental monitoring equipment                                         |
| Osprey Scientific                      | Claire Aucott,<br>Mississauga                                        | 905-820-3122       | <a href="mailto:caucott@ospreyscientific.com">caucott@ospreyscientific.com</a>           | environmental monitoring equipment                                         |

## **Appendix D – Health and Safety Information**

Every field sample technician should be aware of the hazards of working in the outdoor environment. Please consult the following information included in the protocol and ask any questions if you feel additional information should be included.

### Confined Space Entry

- Consult the City Policy number M-HR-003.

### Bear Spray

- Consult the Bear Spray fact sheet included in this appendix. Detailed information about being bear safe can be found on the MNR website.
- <http://www.mnr.gov.on.ca/en/Business/Bearwise/index.html>

### Heat and Cold

- Consult the Working in Hot and Cold Temperatures SOP WM025.

### Plants to avoid

- Consult the plants to avoid information sheet included in G:\Environmental\Env Ser  
- SWaste - Gen\W22 LANDFILL MONITORING PROGRAMS.



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## **APPENDIX I**

### **Laboratory Certificates of Analysis**

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**C.O.C.: ---**

**REPORT No. B23-03059 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

| Parameter                               | Units    | R.L.   | Client I.D.               |                    | WP1-10      | WP2-10              | WP3-10      | WP4-10      |
|-----------------------------------------|----------|--------|---------------------------|--------------------|-------------|---------------------|-------------|-------------|
|                                         |          |        | Sample I.D.               |                    | B23-03059-1 | B23-03059-2         | B23-03059-3 | B23-03059-4 |
|                                         |          |        | Date Collected            |                    | 19-Apr-23   | 19-Apr-23           | 19-Apr-23   | 19-Apr-23   |
|                                         |          |        | Reference Method          | Date/Site Analyzed |             |                     |             |             |
| Alkalinity(CaCO <sub>3</sub> ) to pH4.5 | mg/L     | 5      | SM 2320B                  | 25-Apr-23/O        | 204         | 514                 | 356         | 911         |
| Conductivity @25°C                      | µmho/cm  | 1      | SM 2510B                  | 25-Apr-23/O        | 474         | 1070                | 761         | 2120        |
| pH @25°C                                | pH Units |        | SM 4500H                  | 25-Apr-23/O        | 7.27        | 7.55                | 7.74        | 7.68        |
| Colour                                  | TCU      | 2      | SM 2120C                  | 25-Apr-23/O        | 55          | 32                  | 45          | 102         |
| Turbidity                               | NTU      | 0.1    | SM 2130                   | 25-Apr-23/O        | 989         | 3670                | 198         | 434         |
| TDS(ion sum calc.)                      | mg/L     | 1      | Calc.                     | 25-Apr-23/O        | 229         | 594                 | 426         | 1108        |
| Total Suspended Solids                  | mg/L     | 3      | SM2540D                   | 26-Apr-23/K        | 1480        | 4280                | 465         | 715         |
| Dissolved Organic Carbon                | mg/L     | 0.2    | EPA 415.2                 | 25-Apr-23/O        | 9.1         | 9.6                 | 18.5        | 22.3        |
| BOD(5 day)                              | mg/L     | 3      | SM 5210B                  | 28-Apr-23/K        | < 3         | 20                  | 5           | 7           |
| COD                                     | mg/L     | 5      | SM5220C                   | 25-Apr-23/K        | 683         | 1970                | 223         | 487         |
| Phenolics                               | mg/L     | 0.001  | MOEE 3179                 | 28-Apr-23/K        | < 0.001     | < 0.001             | < 0.001     | 0.004       |
| Cyanide (Free)                          | mg/L     | 0.005  | SM 4500CN                 | 24-Apr-23/K        | < 0.005     | < 0.05 <sup>2</sup> | < 0.005     | < 0.005     |
| Chloride                                | mg/L     | 0.5    | SM4110C                   | 24-Apr-23/O        | 17.5        | 30.9                | 26.0        | 131         |
| Fluoride                                | mg/L     | 0.1    | SM4110C                   | 24-Apr-23/O        | < 0.1       | < 0.1               | < 0.1       | < 0.1       |
| Ammonia (N)-Total                       | mg/L     | 0.01   | SM4500-NH <sub>3</sub> -H | 04-May-23/K        | 2.09        | 8.76                | 2.64        | 48.5        |
| Ammonia (N)-unionized                   | mg/L     | 0.01   | CALC                      | 04-May-23/K        | < 0.01      | 0.04                | 0.01        | 0.11        |
| Sulphate                                | mg/L     | 1      | SM4110C                   | 24-Apr-23/O        | 3           | 1                   | < 1         | < 1         |
| Nitrite (N)                             | mg/L     | 0.05   | SM4110C                   | 24-Apr-23/O        | < 0.05      | < 0.05              | < 0.05      | < 0.05      |
| Nitrate (N)                             | mg/L     | 0.05   | SM4110C                   | 24-Apr-23/O        | 0.14        | 0.09                | 0.13        | < 0.05      |
| Total Kjeldahl Nitrogen                 | mg/L     | 0.1    | E3516.2                   | 10-May-23/K        | 10.8        | 41.9                | 5.6         | 47.2        |
| Hardness (as CaCO <sub>3</sub> )        | mg/L     | 1      | SM 3120                   | 26-Apr-23/O        | 200         | 465                 | 376         | 522         |
| Aluminum                                | mg/L     | 0.01   | SM 3120                   | 26-Apr-23/O        | 0.05        | 0.06                | 0.08        | 0.09        |
| Antimony                                | mg/L     | 0.0001 | EPA 200.8                 | 27-Apr-23/O        | < 0.0001    | 0.0001              | < 0.0001    | 0.0001      |
| Arsenic                                 | mg/L     | 0.0001 | EPA 200.8                 | 27-Apr-23/O        | 0.0002      | 0.0013              | 0.0004      | 0.0003      |
| Barium                                  | mg/L     | 0.001  | SM 3120                   | 26-Apr-23/O        | 0.026       | 0.081               | 0.047       | 0.561       |
| Beryllium                               | mg/L     | 0.002  | SM 3120                   | 26-Apr-23/O        | < 0.002     | < 0.002             | < 0.002     | < 0.002     |
| Boron                                   | mg/L     | 0.005  | SM 3120                   | 26-Apr-23/O        | < 0.005     | 0.089               | 0.051       | 0.655       |

R.L. = Reporting Limit

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03059 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                  |       |          | Client I.D.      |                    | WP1-10      | WP2-10      | WP3-10      | WP4-10      |
|------------------|-------|----------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                  |       |          | Sample I.D.      |                    | B23-03059-1 | B23-03059-2 | B23-03059-3 | B23-03059-4 |
|                  |       |          | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter        | Units | R.L.     | Reference Method | Date/Site Analyzed |             |             |             |             |
| Cadmium          | mg/L  | 0.000010 | EPA 200.8        | 27-Apr-23/O        | < 0.000010  | < 0.000010  | < 0.000010  | < 0.000012  |
| Calcium          | mg/L  | 0.02     | SM 3120          | 26-Apr-23/O        | 72.6        | 164         | 133         | 206         |
| Chromium         | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | < 0.001     | < 0.001     | < 0.001     | 0.002       |
| Chromium (VI)    | mg/L  | 0.001    | MOE E3056        | 28-Apr-23/O        | < 0.001     | < 0.001     | < 0.001     | < 0.001     |
| Cobalt           | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | < 0.005     | < 0.005     | < 0.005     | 0.006       |
| Copper           | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | 0.0006      | 0.0003      | 0.0003      | 0.0003      |
| Iron             | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | 0.527       | 18.3        | 1.40        | 0.220       |
| Lead             | mg/L  | 0.00002  | EPA 200.8        | 27-Apr-23/O        | 0.00005     | 0.00006     | 0.00011     | < 0.00004   |
| Magnesium        | mg/L  | 0.02     | SM 3120          | 26-Apr-23/O        | 4.41        | 13.1        | 10.8        | 34.6        |
| Manganese        | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | 0.437       | 0.601       | 0.235       | 0.242       |
| Mercury          | mg/L  | 0.00002  | SM 3112 B        | 28-Apr-23/O        | < 0.00002   | < 0.00002   | < 0.00002   | < 0.00002   |
| Molybdenum       | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | < 0.0001    | 0.0003      | < 0.0001    | < 0.0001    |
| Nickel           | mg/L  | 0.01     | SM 3120          | 26-Apr-23/O        | < 0.01      | < 0.01      | < 0.01      | < 0.01      |
| Potassium        | mg/L  | 0.1      | SM 3120          | 26-Apr-23/O        | 1.5         | 13.6        | 11.5        | 83.8        |
| Phosphorus-Total | mg/L  | 0.01     | E3516.2          | 10-May-23/K        | 1.22        | 3.60        | 0.87        | 0.09        |
| Phosphorus       | mg/L  | 0.1      | SM 3120          | 26-Apr-23/O        | 0.1         | 0.2         | 0.2         | < 0.1       |
| Selenium         | mg/L  | 0.001    | EPA 200.8        | 27-Apr-23/O        | < 0.001     | < 0.001     | < 0.001     | < 0.001     |
| Silver           | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | < 0.0001    | < 0.0001    | < 0.0001    | < 0.0001    |
| Sodium           | mg/L  | 0.2      | SM 3120          | 26-Apr-23/O        | 6.9         | 43.3        | 29.6        | 106         |
| Strontium        | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | 0.157       | 0.438       | 0.345       | 0.530       |
| Tin              | mg/L  | 0.05     | SM 3120          | 26-Apr-23/O        | < 0.05      | < 0.05      | < 0.05      | < 0.05      |
| Thallium         | mg/L  | 0.00005  | EPA 200.8        | 27-Apr-23/O        | < 0.00005   | < 0.00005   | < 0.00005   | < 0.00005   |
| Titanium         | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | < 0.005     | < 0.005     | < 0.005     | < 0.005     |
| Uranium          | mg/L  | 0.00005  | EPA 200.8        | 27-Apr-23/O        | < 0.00005   | < 0.00005   | < 0.00005   | < 0.00005   |
| Vanadium         | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | 0.0007      | 0.0003      | < 0.0001    | 0.0023      |
| Zinc             | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | 0.354       | 0.479       | 1.02        | 0.177       |
| Anion Sum        | meq/L |          | Calc.            | 25-Apr-23/O        | 4.64        | 11.2        | 7.86        | 21.9        |

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Steve Garrett

Director of Laboratory Services

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**REPORT No. B23-03059 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |         |      | Client I.D.      |                    | WP1-10      | WP2-10      | WP3-10      | WP4-10      |
|-------------------------|---------|------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                         |         |      | Sample I.D.      |                    | B23-03059-1 | B23-03059-2 | B23-03059-3 | B23-03059-4 |
|                         |         |      | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter               | Units   | R.L. | Reference Method | Date/Site Analyzed |             |             |             |             |
| Cation Sum              | meq/L   |      | Calc.            | 25-Apr-23/O        | 4.37        | 12.5        | 9.18        | 19.9        |
| % Difference            | %       |      | Calc.            | 25-Apr-23/O        | 2.97        | 5.71        | 7.75        | 4.78        |
| Ion Ratio               | AS/CS   |      | Calc.            | 25-Apr-23/O        | 1.06        | 0.892       | 0.856       | 1.10        |
| Conductivity (calc.)    | µmho/cm |      | Calc.            | 25-Apr-23/O        | 427         | 993         | 777         | 1795        |
| Sodium Adsorption Ratio | -       |      | Calc.            | 25-Apr-23/O        | 0.213       | 0.874       | 0.665       | 1.80        |
| TDS(calc.)/EC(actual)   | -       |      | Calc.            | 25-Apr-23/O        | 0.484       | 0.556       | 0.560       | 0.523       |
| Langelier Index(25°C)   | S.I.    |      | Calc.            | 25-Apr-23/O        | 0.00781     | 1.00        | 0.952       | 1.44        |

1 Chromium (VI) result is based on total Chromium

2 Elevated detection limit due to dilution



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Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                         |          |        | Client I.D.               | WP5-10             |          |  |  |
|-----------------------------------------|----------|--------|---------------------------|--------------------|----------|--|--|
|                                         |          |        | Sample I.D.               | B23-03059-5        |          |  |  |
|                                         |          |        | Date Collected            | 19-Apr-23          |          |  |  |
| Parameter                               | Units    | R.L.   | Reference Method          | Date/Site Analyzed |          |  |  |
| Alkalinity(CaCO <sub>3</sub> ) to pH4.5 | mg/L     | 5      | SM 2320B                  | 25-Apr-23/O        | 272      |  |  |
| Conductivity @25°C                      | µmho/cm  | 1      | SM 2510B                  | 25-Apr-23/O        | 570      |  |  |
| pH @25°C                                | pH Units |        | SM 4500H                  | 25-Apr-23/O        | 7.61     |  |  |
| Colour                                  | TCU      | 2      | SM 2120C                  | 25-Apr-23/O        | 24       |  |  |
| Turbidity                               | NTU      | 0.1    | SM 2130                   | 25-Apr-23/O        | 414      |  |  |
| TDS(ion sum calc.)                      | mg/L     | 1      | Calc.                     | 25-Apr-23/O        | 311      |  |  |
| Total Suspended Solids                  | mg/L     | 3      | SM2540D                   | 26-Apr-23/K        | 810      |  |  |
| Dissolved Organic Carbon                | mg/L     | 0.2    | EPA 415.2                 | 25-Apr-23/O        | 12.8     |  |  |
| BOD(5 day)                              | mg/L     | 3      | SM 5210B                  | 28-Apr-23/K        | 5        |  |  |
| COD                                     | mg/L     | 5      | SM5220C                   | 25-Apr-23/K        | 97       |  |  |
| Phenolics                               | mg/L     | 0.001  | MOEE 3179                 | 28-Apr-23/K        | 0.004    |  |  |
| Cyanide (Free)                          | mg/L     | 0.005  | SM 4500CN                 | 24-Apr-23/K        | < 0.005  |  |  |
| Chloride                                | mg/L     | 0.5    | SM4110C                   | 24-Apr-23/O        | 9.8      |  |  |
| Fluoride                                | mg/L     | 0.1    | SM4110C                   | 24-Apr-23/O        | < 0.1    |  |  |
| Ammonia (N)-Total                       | mg/L     | 0.01   | SM4500-NH <sub>3</sub> -H | 04-May-23/K        | 1.20     |  |  |
| Ammonia (N)-unionized                   | mg/L     | 0.01   | CALC                      | 04-May-23/K        | < 0.01   |  |  |
| Sulphate                                | mg/L     | 1      | SM4110C                   | 24-Apr-23/O        | 6        |  |  |
| Nitrite (N)                             | mg/L     | 0.05   | SM4110C                   | 24-Apr-23/O        | < 0.05   |  |  |
| Nitrate (N)                             | mg/L     | 0.05   | SM4110C                   | 24-Apr-23/O        | 0.23     |  |  |
| Total Kjeldahl Nitrogen                 | mg/L     | 0.1    | E3516.2                   | 10-May-23/K        | 2.4      |  |  |
| Hardness (as CaCO <sub>3</sub> )        | mg/L     | 1      | SM 3120                   | 26-Apr-23/O        | 171      |  |  |
| Aluminum                                | mg/L     | 0.01   | SM 3120                   | 26-Apr-23/O        | 0.02     |  |  |
| Antimony                                | mg/L     | 0.0001 | EPA 200.8                 | 27-Apr-23/O        | < 0.0001 |  |  |
| Arsenic                                 | mg/L     | 0.0001 | EPA 200.8                 | 27-Apr-23/O        | 0.0003   |  |  |
| Barium                                  | mg/L     | 0.001  | SM 3120                   | 26-Apr-23/O        | 0.035    |  |  |
| Beryllium                               | mg/L     | 0.002  | SM 3120                   | 26-Apr-23/O        | < 0.002  |  |  |
| Boron                                   | mg/L     | 0.005  | SM 3120                   | 26-Apr-23/O        | 0.087    |  |  |



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Steve Garrett

Director of Laboratory Services

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**REPORT No. B23-03059 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                  |       |          | Client I.D.      | WP5-10             |            |  |  |
|------------------|-------|----------|------------------|--------------------|------------|--|--|
|                  |       |          | Sample I.D.      | B23-03059-5        |            |  |  |
|                  |       |          | Date Collected   | 19-Apr-23          |            |  |  |
| Parameter        | Units | R.L.     | Reference Method | Date/Site Analyzed |            |  |  |
| Cadmium          | mg/L  | 0.000010 | EPA 200.8        | 27-Apr-23/O        | < 0.000010 |  |  |
| Calcium          | mg/L  | 0.02     | SM 3120          | 26-Apr-23/O        | 56.8       |  |  |
| Chromium         | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | < 0.001    |  |  |
| Chromium (VI)    | mg/L  | 0.001    | MOE E3056        | 28-Apr-23/O        | < 0.001    |  |  |
| Cobalt           | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | < 0.005    |  |  |
| Copper           | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | 0.0004     |  |  |
| Iron             | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | 14.9       |  |  |
| Lead             | mg/L  | 0.00002  | EPA 200.8        | 27-Apr-23/O        | < 0.00002  |  |  |
| Magnesium        | mg/L  | 0.02     | SM 3120          | 26-Apr-23/O        | 7.11       |  |  |
| Manganese        | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | 0.963      |  |  |
| Mercury          | mg/L  | 0.00002  | SM 3112 B        | 28-Apr-23/O        | < 0.00002  |  |  |
| Molybdenum       | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | 0.0007     |  |  |
| Nickel           | mg/L  | 0.01     | SM 3120          | 26-Apr-23/O        | < 0.01     |  |  |
| Potassium        | mg/L  | 0.1      | SM 3120          | 26-Apr-23/O        | 15.4       |  |  |
| Phosphorus-Total | mg/L  | 0.01     | E3516.2          | 10-May-23/K        | 0.12       |  |  |
| Phosphorus       | mg/L  | 0.1      | SM 3120          | 26-Apr-23/O        | < 0.1      |  |  |
| Selenium         | mg/L  | 0.001    | EPA 200.8        | 27-Apr-23/O        | < 0.001    |  |  |
| Silver           | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | < 0.0001   |  |  |
| Sodium           | mg/L  | 0.2      | SM 3120          | 26-Apr-23/O        | 37.4       |  |  |
| Strontium        | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | 0.174      |  |  |
| Tin              | mg/L  | 0.05     | SM 3120          | 26-Apr-23/O        | < 0.05     |  |  |
| Thallium         | mg/L  | 0.00005  | EPA 200.8        | 27-Apr-23/O        | < 0.00005  |  |  |
| Titanium         | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | < 0.005    |  |  |
| Uranium          | mg/L  | 0.00005  | EPA 200.8        | 27-Apr-23/O        | 0.00016    |  |  |
| Vanadium         | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | < 0.0001   |  |  |
| Zinc             | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | 1.23       |  |  |
| Anion Sum        | meq/L |          | Calc.            | 25-Apr-23/O        | 5.85       |  |  |



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Director of Laboratory Services

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PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |              |             | <b>Client I.D.</b>      | WP5-10                    |       |  |  |
|-------------------------|--------------|-------------|-------------------------|---------------------------|-------|--|--|
|                         |              |             | <b>Sample I.D.</b>      | B23-03059-5               |       |  |  |
|                         |              |             | <b>Date Collected</b>   | 19-Apr-23                 |       |  |  |
| <b>Parameter</b>        | <b>Units</b> | <b>R.L.</b> | <b>Reference Method</b> | <b>Date/Site Analyzed</b> |       |  |  |
| Cation Sum              | meq/L        |             | Calc.                   | 25-Apr-23/O               | 6.28  |  |  |
| % Difference            | %            |             | Calc.                   | 25-Apr-23/O               | 3.58  |  |  |
| Ion Ratio               | AS/CS        |             | Calc.                   | 25-Apr-23/O               | 0.931 |  |  |
| Conductivity (calc.)    | µmho/cm      |             | Calc.                   | 25-Apr-23/O               | 514   |  |  |
| Sodium Adsorption Ratio | -            |             | Calc.                   | 25-Apr-23/O               | 1.24  |  |  |
| TDS(calc.)/EC(actual)   | -            |             | Calc.                   | 25-Apr-23/O               | 0.546 |  |  |
| Langelier Index(25°C)   | S.I.         |             | Calc.                   | 25-Apr-23/O               | 0.357 |  |  |

1 Chromium (VI) result is based on total Chromium

2 Elevated detection limit due to dilution



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**REPORT No. B23-03059 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                          |       |      | Client I.D.      | WP1-10             | WP2-10      | WP3-10      | WP4-10      |
|------------------------------------------|-------|------|------------------|--------------------|-------------|-------------|-------------|
|                                          |       |      | Sample I.D.      | B23-03059-1        | B23-03059-2 | B23-03059-3 | B23-03059-4 |
|                                          |       |      | Date Collected   | 19-Apr-23          | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter                                | Units | R.L. | Reference Method | Date/Site Analyzed |             |             |             |
| Dichloroethane, 1,1-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethylene, 1,1-                   | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethane, 1,2-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichlorobenzene, 1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichloropropane, 1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichlorobenzene, 1,3-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichlorobenzene, 1,4-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Tetrachloroethane, 1,1,1,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Tetrachloroethane, 1,1,2,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Trichloroethane, 1,1,1-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Trichloroethane, 1,1,2-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Trichlorobenzene, 1,2,4-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Acetone                                  | µg/L  | 30   | EPA 8260         | 26-Apr-23/R        | < 30        | < 30        | < 30        |
| Bromodichloromethane                     | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         | < 2         | < 2         |
| Bromomethane                             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Bromoform                                | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         | < 5         | < 5         |
| Benzene                                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethene, cis-1,2-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichloropropene, cis-1,3-                | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Carbon Tetrachloride                     | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       | < 0.2       | < 0.2       |
| Monochlorobenzene (Chlorobenzene)        | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Chloroform                               | µg/L  | 1    | EPA 8260         | 26-Apr-23/R        | < 1         | < 1         | < 1         |
| Dibromochloromethane                     | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         | < 2         | < 2         |
| Ethylbenzene                             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dibromoethane, 1,2- (Ethylene Dibromide) | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       | < 0.2       | < 0.2       |
| Methyl Ethyl Ketone                      | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20        | < 20        | < 20        |



R.L. = Reporting Limit

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Site Analyzed=K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill, B-Barrie

Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03059 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                      |       |      | Client I.D.      |                    | WP1-10      | WP2-10      | WP3-10      | WP4-10      |
|--------------------------------------|-------|------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                                      |       |      | Sample I.D.      |                    | B23-03059-1 | B23-03059-2 | B23-03059-3 | B23-03059-4 |
|                                      |       |      | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter                            | Units | R.L. | Reference Method | Date/Site Analyzed |             |             |             |             |
| Methyl-t-butyl Ether                 | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         | < 2         | < 2         | < 2         |
| Methyl Isobutyl Ketone               | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20        | < 20        | < 20        | < 20        |
| Dichloromethane (Methylene Chloride) | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         | < 5         | < 5         | < 5         |
| Xylene, m,p-                         | µg/L  | 1.0  | EPA 8260         | 26-Apr-23/R        | < 1.0       | < 1.0       | < 1.0       | < 1.0       |
| Xylene, o-                           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Xylene, m,p,o-                       | µg/L  | 1.1  | EPA 8260         | 26-Apr-23/R        | < 1.1       | < 1.1       | < 1.1       | < 1.1       |
| Styrene                              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethene, trans-1,2-           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloropropene, trans-1,3-          | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Trichloroethylene                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Trichlorofluoromethane               | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         | < 5         | < 5         | < 5         |
| Toluene                              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Tetrachloroethylene                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Vinyl Chloride                       | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       | < 0.2       | < 0.2       | < 0.2       |



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**REPORT No. B23-03059 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                          |       |      | Client I.D.      | WP5-10             |       |  |  |
|------------------------------------------|-------|------|------------------|--------------------|-------|--|--|
|                                          |       |      | Sample I.D.      | B23-03059-5        |       |  |  |
|                                          |       |      | Date Collected   | 19-Apr-23          |       |  |  |
| Parameter                                | Units | R.L. | Reference Method | Date/Site Analyzed |       |  |  |
| Dichloroethane, 1,1-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloroethylene, 1,1-                   | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloroethane, 1,2-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichlorobenzene, 1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloropropane, 1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichlorobenzene, 1,3-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichlorobenzene, 1,4-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Tetrachloroethane, 1,1,1,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Tetrachloroethane, 1,1,2,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Trichloroethane, 1,1,1-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Trichloroethane, 1,1,2-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Trichlorobenzene, 1,2,4-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Acetone                                  | µg/L  | 30   | EPA 8260         | 26-Apr-23/R        | < 30  |  |  |
| Bromodichloromethane                     | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2   |  |  |
| Bromomethane                             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Bromoform                                | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5   |  |  |
| Benzene                                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloroethene, cis-1,2-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloropropene, cis-1,3-                | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Carbon Tetrachloride                     | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2 |  |  |
| Monochlorobenzene (Chlorobenzene)        | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Chloroform                               | µg/L  | 1    | EPA 8260         | 26-Apr-23/R        | < 1   |  |  |
| Dibromochloromethane                     | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2   |  |  |
| Ethylbenzene                             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dibromoethane, 1,2- (Ethylene Dibromide) | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2 |  |  |
| Methyl Ethyl Ketone                      | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20  |  |  |



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Steve Garrett

Director of Laboratory Services

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**REPORT No. B23-03059 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                      |              |             | <b>Client I.D.</b>      | WP5-10                    |       |  |  |
|--------------------------------------|--------------|-------------|-------------------------|---------------------------|-------|--|--|
|                                      |              |             | <b>Sample I.D.</b>      | B23-03059-5               |       |  |  |
|                                      |              |             | <b>Date Collected</b>   | 19-Apr-23                 |       |  |  |
| <b>Parameter</b>                     | <b>Units</b> | <b>R.L.</b> | <b>Reference Method</b> | <b>Date/Site Analyzed</b> |       |  |  |
| Methyl-t-butyl Ether                 | µg/L         | 2           | EPA 8260                | 26-Apr-23/R               | < 2   |  |  |
| Methyl Isobutyl Ketone               | µg/L         | 20          | EPA 8260                | 26-Apr-23/R               | < 20  |  |  |
| Dichloromethane (Methylene Chloride) | µg/L         | 5           | EPA 8260                | 26-Apr-23/R               | < 5   |  |  |
| Xylene, m,p-                         | µg/L         | 1.0         | EPA 8260                | 26-Apr-23/R               | < 1.0 |  |  |
| Xylene, o-                           | µg/L         | 0.5         | EPA 8260                | 26-Apr-23/R               | < 0.5 |  |  |
| Xylene, m,p,o-                       | µg/L         | 1.1         | EPA 8260                | 26-Apr-23/R               | < 1.1 |  |  |
| Styrene                              | µg/L         | 0.5         | EPA 8260                | 26-Apr-23/R               | < 0.5 |  |  |
| Dichloroethene, trans-1,2-           | µg/L         | 0.5         | EPA 8260                | 26-Apr-23/R               | < 0.5 |  |  |
| Dichloropropene, trans-1,3-          | µg/L         | 0.5         | EPA 8260                | 26-Apr-23/R               | < 0.5 |  |  |
| Trichloroethylene                    | µg/L         | 0.5         | EPA 8260                | 26-Apr-23/R               | < 0.5 |  |  |
| Trichlorofluoromethane               | µg/L         | 5           | EPA 8260                | 26-Apr-23/R               | < 5   |  |  |
| Toluene                              | µg/L         | 0.5         | EPA 8260                | 26-Apr-23/R               | < 0.5 |  |  |
| Tetrachloroethylene                  | µg/L         | 0.5         | EPA 8260                | 26-Apr-23/R               | < 0.5 |  |  |
| Vinyl Chloride                       | µg/L         | 0.2         | EPA 8260                | 26-Apr-23/R               | < 0.2 |  |  |



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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03061 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

| Parameter                               | Units    | R.L.     | Client I.D.               |                    | MW2         | MW3         | MW3A        | MW5         |
|-----------------------------------------|----------|----------|---------------------------|--------------------|-------------|-------------|-------------|-------------|
|                                         |          |          | Sample I.D.               |                    | B23-03061-1 | B23-03061-2 | B23-03061-3 | B23-03061-4 |
|                                         |          |          | Date Collected            |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
|                                         |          |          | Reference Method          | Date/Site Analyzed |             |             |             |             |
| Alkalinity(CaCO <sub>3</sub> ) to pH4.5 | mg/L     | 5        | SM 2320B                  | 26-Apr-23/O        | 719         | 1140        | 242         | 886         |
| Conductivity @25°C                      | µmho/cm  | 1        | SM 2510B                  | 26-Apr-23/O        | 1570        | 2650        | 568         | 1790        |
| pH @25°C                                | pH Units |          | SM 4500H                  | 26-Apr-23/O        | 7.25        | 7.47        | 7.75        | 7.36        |
| TDS(ion sum calc.)                      | mg/L     | 1        | Calc.                     | 27-Apr-23/O        | 909         | 1513        | 298         | 1081        |
| Dissolved Organic Carbon                | mg/L     | 0.2      | EPA 415.2                 | 27-Apr-23/O        | 9.9         | 3.8         | 5.2         | 18.9        |
| COD                                     | mg/L     | 5        | SM5220C                   | 26-Apr-23/K        | 70          | 160         | 19          | 334         |
| Phenolics                               | mg/L     | 0.001    | MOEE 3179                 | 28-Apr-23/K        | < 0.001     | < 0.001     | < 0.001     | 0.072       |
| Chloride                                | mg/L     | 0.5      | SM4110C                   | 26-Apr-23/O        | 50.9        | 155         | 10.5        | 41.5        |
| Fluoride                                | mg/L     | 0.1      | SM4110C                   | 26-Apr-23/O        | < 0.1       | < 0.1       | < 0.1       | < 1         |
| Ammonia (N)-Total                       | mg/L     | 0.01     | SM4500-NH <sub>3</sub> -H | 04-May-23/K        | 43.5        | 67.7        | 7.19        | 20.2        |
| Sulphate                                | mg/L     | 1        | SM4110C                   | 26-Apr-23/O        | 2           | < 1         | 24          | 2           |
| Nitrite (N)                             | mg/L     | 0.05     | SM4110C                   | 26-Apr-23/O        | < 0.05      | < 0.05      | 0.06        | < 0.05      |
| Nitrate (N)                             | mg/L     | 0.05     | SM4110C                   | 26-Apr-23/O        | < 0.05      | < 0.05      | 0.35        | < 0.05      |
| Total Kjeldahl Nitrogen                 | mg/L     | 0.1      | E3516.2                   | 15-May-23/K        | 48.0        | 74.8        | 8.5         | 20.6        |
| Hardness (as CaCO <sub>3</sub> )        | mg/L     | 1        | SM 3120                   | 26-Apr-23/O        | 581         | 891         | 241         | 845         |
| Aluminum                                | mg/L     | 0.01     | SM 3120                   | 26-Apr-23/O        | 0.07        | 0.11        | 0.02        | 0.09        |
| Antimony                                | mg/L     | 0.0001   | EPA 200.8                 | 03-May-23/O        | 0.0002      | 0.0002      | < 0.0001    | 0.0003      |
| Arsenic                                 | mg/L     | 0.0001   | EPA 200.8                 | 03-May-23/O        | 0.0048      | 0.0006      | 0.0002      | 0.0070      |
| Barium                                  | mg/L     | 0.001    | SM 3120                   | 26-Apr-23/O        | 1.14        | 0.574       | 0.029       | 1.33        |
| Beryllium                               | mg/L     | 0.002    | SM 3120                   | 26-Apr-23/O        | < 0.002     | < 0.002     | < 0.002     | < 0.002     |
| Boron                                   | mg/L     | 0.005    | SM 3120                   | 26-Apr-23/O        | 0.448       | 0.278       | 0.066       | 0.490       |
| Cadmium                                 | mg/L     | 0.000010 | EPA 200.8                 | 03-May-23/O        | < 0.000012  | < 0.000029  | < 0.000010  | < 0.000012  |
| Calcium                                 | mg/L     | 0.02     | SM 3120                   | 26-Apr-23/O        | 199         | 318         | 90.8        | 293         |
| Chromium                                | mg/L     | 0.001    | SM 3120                   | 26-Apr-23/O        | < 0.001     | 0.002       | < 0.001     | 0.003       |
| Chromium (VI)                           | mg/L     | 0.001    | MOE E3056                 | 05-May-23/O        | < 0.001     | < 0.001     | < 0.001     | < 0.001     |
| Cobalt                                  | mg/L     | 0.005    | SM 3120                   | 26-Apr-23/O        | 0.023       | 0.006       | 0.007       | 0.008       |
| Copper                                  | mg/L     | 0.0001   | EPA 200.8                 | 03-May-23/O        | 0.0002      | 0.0002      | 0.0016      | 0.0003      |

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Steve Garrett

Director of Laboratory Services

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Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

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DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |         |         | Client I.D.      |                    | MW2         | MW3         | MW3A        | MW5         |
|-------------------------|---------|---------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                         |         |         | Sample I.D.      |                    | B23-03061-1 | B23-03061-2 | B23-03061-3 | B23-03061-4 |
|                         |         |         | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter               | Units   | R.L.    | Reference Method | Date/Site Analyzed |             |             |             |             |
| Iron                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | 57.8        | 26.2        | 1.61        | 49.5        |
| Lead                    | mg/L    | 0.00002 | EPA 200.8        | 03-May-23/O        | < 0.00004   | < 0.00009   | < 0.00002   | < 0.00004   |
| Magnesium               | mg/L    | 0.02    | SM 3120          | 26-Apr-23/O        | 20.2        | 23.6        | 3.44        | 27.5        |
| Manganese               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 1.04        | 0.351       | 0.139       | 3.13        |
| Mercury                 | mg/L    | 0.00002 | SM 3112 B        | 26-Apr-23/O        | < 0.00002   | < 0.00002   | < 0.00002   | < 0.00002   |
| Molybdenum              | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0005      | < 0.0002    | 0.0002      | 0.0002      |
| Nickel                  | mg/L    | 0.01    | SM 3120          | 26-Apr-23/O        | < 0.01      | < 0.01      | < 0.01      | < 0.01      |
| Potassium               | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | 61.4        | 103         | 7.9         | 59.1        |
| Phosphorus-Total        | mg/L    | 0.01    | E3516.2          | 15-May-23/K        | 0.05        | 0.18        | 0.10        | 0.24        |
| Phosphorus              | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | < 0.1       | < 0.1       | < 0.1       | < 0.1       |
| Selenium                | mg/L    | 0.001   | EPA 200.8        | 03-May-23/O        | < 0.001     | 0.002       | < 0.001     | < 0.001     |
| Silver                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | < 0.0001    | < 0.0001    | < 0.0001    | < 0.0001    |
| Sodium                  | mg/L    | 0.2     | SM 3120          | 26-Apr-23/O        | 29.6        | 118         | 5.1         | 47.5        |
| Strontium               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 0.587       | 1.00        | 0.223       | 0.774       |
| Tin                     | mg/L    | 0.05    | SM 3120          | 26-Apr-23/O        | < 0.05      | < 0.05      | < 0.05      | < 0.05      |
| Titanium                | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005     | < 0.005     | < 0.005     | < 0.005     |
| Thallium                | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | < 0.00005   | < 0.00005   | < 0.00005   | < 0.00005   |
| Uranium                 | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | 0.00043     | 0.00007     | 0.00021     | 0.00023     |
| Vanadium                | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0040      | 0.0066      | 0.0005      | 0.0043      |
| Zinc                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005     | < 0.005     | < 0.005     | < 0.005     |
| Anion Sum               | meq/L   |         | Calc.            | 27-Apr-23/O        | 15.8        | 27.1        | 5.65        | 18.9        |
| Cation Sum              | meq/L   |         | Calc.            | 27-Apr-23/O        | 20.6        | 31.7        | 5.83        | 24.7        |
| % Difference            | %       |         | Calc.            | 27-Apr-23/O        | 13.2        | 7.89        | 1.56        | 13.2        |
| Ion Ratio               | AS/CS   |         | Calc.            | 27-Apr-23/O        | 0.767       | 0.854       | 0.969       | 0.768       |
| Conductivity (calc.)    | µmho/cm |         | Calc.            | 27-Apr-23/O        | 1477        | 2466        | 546         | 1703        |
| Sodium Adsorption Ratio | -       |         | Calc.            | 27-Apr-23/O        | 0.534       | 1.73        | 0.144       | 0.711       |
| TDS(calc.)/EC(actual)   | -       |         | Calc.            | 27-Apr-23/O        | 0.580       | 0.571       | 0.524       | 0.605       |

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Steve Garrett

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**C.O.C.: ---**

**REPORT No. B23-03061 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                       |       |      | Client I.D.      |                    | MW2         | MW3         | MW3A        | MW5         |
|-----------------------|-------|------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                       |       |      | Sample I.D.      |                    | B23-03061-1 | B23-03061-2 | B23-03061-3 | B23-03061-4 |
|                       |       |      | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter             | Units | R.L. | Reference Method | Date/Site Analyzed |             |             |             |             |
| Langelier Index(25°C) | S.I.  |      | Calc.            | 27-Apr-23/O        | 0.903       | 1.52        | 0.648       | 1.26        |

1. Chromium (VI) result is based on total Chromium
2. Outside of 15% Acceptance Criteria
3. Digested
4. Elevated detection limit due to dilution
5. filtered and acidified at lab



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SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                            |          |          | Client I.D.      |                    | MW5A        | MW6-07      | MW6A-07     | MW7-13      |
|----------------------------|----------|----------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                            |          |          | Sample I.D.      |                    | B23-03061-5 | B23-03061-6 | B23-03061-7 | B23-03061-8 |
|                            |          |          | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter                  | Units    | R.L.     | Reference Method | Date/Site Analyzed |             |             |             |             |
| Alkalinity(CaCO3) to pH4.5 | mg/L     | 5        | SM 2320B         | 26-Apr-23/O        | 1070        | 1330        | 1260        | 2510        |
| Conductivity @25°C         | µmho/cm  | 1        | SM 2510B         | 26-Apr-23/O        | 2820        | 3530        | 2650        | 6810        |
| pH @25°C                   | pH Units |          | SM 4500H         | 26-Apr-23/O        | 7.27        | 7.53        | 7.51        | 7.60        |
| TDS(ion sum calc.)         | mg/L     | 1        | Calc.            | 27-Apr-23/O        | 1685        | 1870        | 1425        | 3694        |
| Dissolved Organic Carbon   | mg/L     | 0.2      | EPA 415.2        | 27-Apr-23/O        | 11.1        | 62.8        | 9.9         | 25.3        |
| COD                        | mg/L     | 5        | SM5220C          | 26-Apr-23/K        | 393         | 326         | 195         | 641         |
| Phenolics                  | mg/L     | 0.001    | MOEE 3179        | 28-Apr-23/K        | 0.006       | < 0.001     | < 0.001     | < 0.01      |
| Chloride                   | mg/L     | 0.5      | SM4110C          | 26-Apr-23/O        | 276         | 180         | 109         | 629         |
| Fluoride                   | mg/L     | 0.1      | SM4110C          | 26-Apr-23/O        | < 0.1       | < 0.1       | < 0.1       | < 1         |
| Ammonia (N)-Total          | mg/L     | 0.01     | SM4500-NH3-H     | 04-May-23/K        | 45.6        | 126         | 78.7        | 427         |
| Sulphate                   | mg/L     | 1        | SM4110C          | 26-Apr-23/O        | 6           | < 1         | 3           | < 10        |
| Nitrite (N)                | mg/L     | 0.05     | SM4110C          | 26-Apr-23/O        | < 0.05      | < 0.05      | < 0.05      | < 0.5       |
| Nitrate (N)                | mg/L     | 0.05     | SM4110C          | 26-Apr-23/O        | < 0.05      | 0.14        | < 0.05      | < 0.5       |
| Total Kjeldahl Nitrogen    | mg/L     | 0.1      | E3516.2          | 15-May-23/K        | 53.5        | 146         | 84.8        | 534         |
| Hardness (as CaCO3)        | mg/L     | 1        | SM 3120          | 26-Apr-23/O        | 835         | 1130        | 792         | 686         |
| Aluminum                   | mg/L     | 0.01     | SM 3120          | 26-Apr-23/O        | 0.10        | 0.11        | 0.09        | 0.08        |
| Antimony                   | mg/L     | 0.0001   | EPA 200.8        | 03-May-23/O        | 0.0006      | 0.0003      | 0.0002      | 0.0008      |
| Arsenic                    | mg/L     | 0.0001   | EPA 200.8        | 03-May-23/O        | 0.0046      | 0.0009      | 0.0006      | 0.0029      |
| Barium                     | mg/L     | 0.001    | SM 3120          | 26-Apr-23/O        | 1.58        | 0.166       | 0.147       | 0.273       |
| Beryllium                  | mg/L     | 0.002    | SM 3120          | 26-Apr-23/O        | < 0.002     | < 0.002     | < 0.002     | < 0.002     |
| Boron                      | mg/L     | 0.005    | SM 3120          | 26-Apr-23/O        | 2.97        | 1.83        | 0.770       | 3.77        |
| Cadmium                    | mg/L     | 0.000010 | EPA 200.8        | 03-May-23/O        | < 0.000029  | < 0.000029  | < 0.000029  | < 0.000059  |
| Calcium                    | mg/L     | 0.02     | SM 3120          | 26-Apr-23/O        | 255         | 360         | 274         | 165         |
| Chromium                   | mg/L     | 0.001    | SM 3120          | 26-Apr-23/O        | 0.007       | 0.002       | < 0.001     | 0.006       |
| Chromium (VI)              | mg/L     | 0.001    | MOE E3056        | 05-May-23/O        | < 0.001     | < 0.001     | < 0.001     | < 0.001     |
| Cobalt                     | mg/L     | 0.005    | SM 3120          | 26-Apr-23/O        | 0.031       | 0.012       | 0.008       | 0.019       |
| Copper                     | mg/L     | 0.0001   | EPA 200.8        | 03-May-23/O        | 0.0003      | 0.0003      | 0.0004      | < 0.0003    |

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Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |         |         | Client I.D.      |                    | MW5A        | MW6-07      | MW6A-07     | MW7-13      |
|-------------------------|---------|---------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                         |         |         | Sample I.D.      |                    | B23-03061-5 | B23-03061-6 | B23-03061-7 | B23-03061-8 |
|                         |         |         | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter               | Units   | R.L.    | Reference Method | Date/Site Analyzed |             |             |             |             |
| Iron                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | 74.6        | 9.60        | 26.6        | 0.577       |
| Lead                    | mg/L    | 0.00002 | EPA 200.8        | 03-May-23/O        | < 0.00009   | < 0.00009   | < 0.00009   | 0.00019     |
| Magnesium               | mg/L    | 0.02    | SM 3120          | 26-Apr-23/O        | 48.0        | 56.3        | 26.3        | 78.0        |
| Manganese               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 1.10        | 1.44        | 1.32        | 0.118       |
| Mercury                 | mg/L    | 0.00002 | SM 3112 B        | 26-Apr-23/O        | < 0.00002   | < 0.00002   | < 0.00002   | < 0.00002   |
| Molybdenum              | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0013      | < 0.0002    | < 0.0002    | 0.0006      |
| Nickel                  | mg/L    | 0.01    | SM 3120          | 26-Apr-23/O        | 0.03        | < 0.01      | < 0.01      | 0.04        |
| Potassium               | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | 78.2        | 100         | 44.0        | 269         |
| Phosphorus-Total        | mg/L    | 0.01    | E3516.2          | 15-May-23/K        | 0.59        | 5.50        | 1.64        | 1.12        |
| Phosphorus              | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | < 0.1       | 0.8         | 0.2         | < 0.1       |
| Selenium                | mg/L    | 0.001   | EPA 200.8        | 03-May-23/O        | 0.003       | 0.003       | 0.002       | 0.005       |
| Silver                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | < 0.0001    | < 0.0001    | < 0.0001    | < 0.0002    |
| Sodium                  | mg/L    | 0.2     | SM 3120          | 26-Apr-23/O        | 244         | 205         | 86.1        | 497         |
| Strontium               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 0.948       | 1.46        | 0.895       | 0.914       |
| Tin                     | mg/L    | 0.05    | SM 3120          | 26-Apr-23/O        | < 0.05      | < 0.05      | < 0.05      | 0.06        |
| Titanium                | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005     | < 0.005     | < 0.005     | < 0.005     |
| Thallium                | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | < 0.00005   | < 0.00005   | < 0.00005   | < 0.00005   |
| Uranium                 | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | 0.00042     | < 0.00005   | 0.00022     | < 0.00005   |
| Vanadium                | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0115      | 0.0006      | 0.0005      | 0.0050      |
| Zinc                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005     | < 0.005     | < 0.005     | < 0.005     |
| Anion Sum               | meq/L   |         | Calc.            | 27-Apr-23/O        | 29.3        | 31.6        | 28.2        | 67.9        |
| Cation Sum              | meq/L   |         | Calc.            | 27-Apr-23/O        | 36.5        | 43.5        | 27.7        | 73.1        |
| % Difference            | %       |         | Calc.            | 27-Apr-23/O        | 11.0        | 15.8        | 0.967       | 3.72        |
| Ion Ratio               | AS/CS   |         | Calc.            | 27-Apr-23/O        | 0.803       | 0.727       | 1.02        | 0.928       |
| Conductivity (calc.)    | µmho/cm |         | Calc.            | 27-Apr-23/O        | 2618        | 3145        | 2284        | 6089        |
| Sodium Adsorption Ratio | -       |         | Calc.            | 27-Apr-23/O        | 3.68        | 2.65        | 1.33        | 7.98        |
| TDS(calc.)/EC(actual)   | -       |         | Calc.            | 27-Apr-23/O        | 0.598       | 0.530       | 0.538       | 0.542       |

R.L. = Reporting Limit

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Steve Garrett

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**REPORT No. B23-03061 (i)**

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PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                       |       |      | Client I.D.      |                    | MW5A        | MW6-07      | MW6A-07     | MW7-13      |
|-----------------------|-------|------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                       |       |      | Sample I.D.      |                    | B23-03061-5 | B23-03061-6 | B23-03061-7 | B23-03061-8 |
|                       |       |      | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter             | Units | R.L. | Reference Method | Date/Site Analyzed |             |             |             |             |
| Langelier Index(25°C) | S.I.  |      | Calc.            | 27-Apr-23/O        | 1.19        | 1.70        | 1.53        | 1.68        |

1. Chromium (VI) result is based on total Chromium
2. Outside of 15% Acceptance Criteria
3. Digested
4. Elevated detection limit due to dilution
5. filtered and acidified at lab



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DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                         |          |          | Client I.D.               |                    | MW10        | MW11A        | MW12         | MW14         |
|-----------------------------------------|----------|----------|---------------------------|--------------------|-------------|--------------|--------------|--------------|
|                                         |          |          | Sample I.D.               |                    | B23-03061-9 | B23-03061-10 | B23-03061-11 | B23-03061-12 |
|                                         |          |          | Date Collected            |                    | 19-Apr-23   | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter                               | Units    | R.L.     | Reference Method          | Date/Site Analyzed |             |              |              |              |
| Alkalinity(CaCO <sub>3</sub> ) to pH4.5 | mg/L     | 5        | SM 2320B                  | 26-Apr-23/O        | 1470        | 259          | 230          | 206          |
| Conductivity @25°C                      | µmho/cm  | 1        | SM 2510B                  | 26-Apr-23/O        | 3720        | 905          | 472          | 489          |
| pH @25°C                                | pH Units |          | SM 4500H                  | 26-Apr-23/O        | 7.50        | 7.64         | 7.82         | 7.73         |
| TDS(ion sum calc.)                      | mg/L     | 1        | Calc.                     | 27-Apr-23/O        | 2044        | 484          | 256          | 258          |
| Dissolved Organic Carbon                | mg/L     | 0.2      | EPA 415.2                 | 27-Apr-23/O        | 10.8        | 6.1          | 2.5          | 4.1          |
| COD                                     | mg/L     | 5        | SM5220C                   | 26-Apr-23/K        | 223         | 30           | 6            | 58           |
| Phenolics                               | mg/L     | 0.001    | MOEE 3179                 | 28-Apr-23/K        | < 0.001     | < 0.001      | < 0.001      | < 0.001      |
| Chloride                                | mg/L     | 0.5      | SM4110C                   | 26-Apr-23/O        | 226         | 119          | 4.0          | 21.8         |
| Fluoride                                | mg/L     | 0.1      | SM4110C                   | 26-Apr-23/O        | < 0.5       | < 0.1        | < 0.1        | < 0.1        |
| Ammonia (N)-Total                       | mg/L     | 0.01     | SM4500-NH <sub>3</sub> -H | 04-May-23/K        | 152         | 0.85         | 0.49         | 0.04         |
| Sulphate                                | mg/L     | 1        | SM4110C                   | 26-Apr-23/O        | < 5         | 4            | 11           | 8            |
| Nitrite (N)                             | mg/L     | 0.05     | SM4110C                   | 26-Apr-23/O        | < 0.3       | < 0.05       | < 0.05       | < 0.05       |
| Nitrate (N)                             | mg/L     | 0.05     | SM4110C                   | 26-Apr-23/O        | < 0.3       | < 0.05       | 0.38         | < 0.05       |
| Total Kjeldahl Nitrogen                 | mg/L     | 0.1      | E3516.2                   | 15-May-23/K        | 171         | 1.2          | 0.5          | 0.6          |
| Hardness (as CaCO <sub>3</sub> )        | mg/L     | 1        | SM 3120                   | 26-Apr-23/O        | 927         | 371          | 255          | 248          |
| Aluminum                                | mg/L     | 0.01     | SM 3120                   | 26-Apr-23/O        | 0.15        | 0.05         | 0.02         | 0.02         |
| Antimony                                | mg/L     | 0.0001   | EPA 200.8                 | 03-May-23/O        | 0.0003      | < 0.0001     | 0.0001       | 0.0001       |
| Arsenic                                 | mg/L     | 0.0001   | EPA 200.8                 | 03-May-23/O        | 0.0007      | 0.0001       | < 0.0001     | 0.0001       |
| Barium                                  | mg/L     | 0.001    | SM 3120                   | 26-Apr-23/O        | 0.910       | 0.046        | 0.068        | 0.017        |
| Beryllium                               | mg/L     | 0.002    | SM 3120                   | 26-Apr-23/O        | < 0.002     | < 0.002      | < 0.002      | < 0.002      |
| Boron                                   | mg/L     | 0.005    | SM 3120                   | 26-Apr-23/O        | 1.43        | 0.022        | 0.013        | < 0.005      |
| Cadmium                                 | mg/L     | 0.000010 | EPA 200.8                 | 03-May-23/O        | < 0.000029  | < 0.000010   | < 0.000010   | < 0.000010   |
| Calcium                                 | mg/L     | 0.02     | SM 3120                   | 26-Apr-23/O        | 300         | 141          | 92.9         | 95.7         |
| Chromium                                | mg/L     | 0.001    | SM 3120                   | 26-Apr-23/O        | 0.003       | < 0.001      | < 0.001      | < 0.001      |
| Chromium (VI)                           | mg/L     | 0.001    | MOE E3056                 | 05-May-23/O        | < 0.001     | < 0.001      | < 0.001      | < 0.001      |
| Cobalt                                  | mg/L     | 0.005    | SM 3120                   | 26-Apr-23/O        | 0.011       | < 0.005      | < 0.005      | < 0.005      |

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P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |         |         | Client I.D.      |                    | MW10        | MW11A        | MW12         | MW14         |
|-------------------------|---------|---------|------------------|--------------------|-------------|--------------|--------------|--------------|
|                         |         |         | Sample I.D.      |                    | B23-03061-9 | B23-03061-10 | B23-03061-11 | B23-03061-12 |
|                         |         |         | Date Collected   |                    | 19-Apr-23   | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter               | Units   | R.L.    | Reference Method | Date/Site Analyzed |             |              |              |              |
| Copper                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0002      | 0.0003       | 0.0012       | 0.0007       |
| Iron                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | 9.13        | 3.07         | < 0.005      | < 0.005      |
| Lead                    | mg/L    | 0.00002 | EPA 200.8        | 03-May-23/O        | < 0.00009   | < 0.00002    | < 0.00002    | < 0.00002    |
| Magnesium               | mg/L    | 0.02    | SM 3120          | 26-Apr-23/O        | 43.3        | 4.35         | 5.61         | 2.13         |
| Manganese               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 0.886       | 0.207        | < 0.001      | < 0.001      |
| Mercury                 | mg/L    | 0.00002 | SM 3112 B        | 26-Apr-23/O        | < 0.00002   | < 0.00002    | < 0.00002    | < 0.00002    |
| Molybdenum              | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | < 0.0002    | < 0.0001     | 0.0002       | < 0.0001     |
| Nickel                  | mg/L    | 0.01    | SM 3120          | 26-Apr-23/O        | < 0.01      | < 0.01       | < 0.01       | < 0.01       |
| Potassium               | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | 181         | 2.1          | 1.4          | 0.3          |
| Phosphorus-Total        | mg/L    | 0.01    | E3516.2          | 15-May-23/K        | 0.30        | 0.12         | 0.01         | 1.09         |
| Phosphorus              | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | 0.3         | < 0.1        | < 0.1        | < 0.1        |
| Selenium                | mg/L    | 0.001   | EPA 200.8        | 03-May-23/O        | 0.003       | 0.003        | < 0.001      | < 0.001      |
| Silver                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | < 0.0001    | < 0.0001     | < 0.0001     | < 0.0001     |
| Sodium                  | mg/L    | 0.2     | SM 3120          | 26-Apr-23/O        | 209         | 52.2         | 2.7          | 5.4          |
| Strontium               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 0.972       | 0.395        | 0.165        | 0.181        |
| Tin                     | mg/L    | 0.05    | SM 3120          | 26-Apr-23/O        | < 0.05      | < 0.05       | < 0.05       | < 0.05       |
| Titanium                | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | 0.006       | < 0.005      | < 0.005      | < 0.005      |
| Thallium                | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | < 0.00005   | < 0.00005    | < 0.00005    | < 0.00005    |
| Uranium                 | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | < 0.00005   | 0.00005      | 0.00040      | 0.00019      |
| Vanadium                | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0061      | 0.0018       | 0.0001       | 0.0002       |
| Zinc                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005     | < 0.005      | < 0.005      | < 0.005      |
| Anion Sum               | meq/L   |         | Calc.            | 27-Apr-23/O        | 35.7        | 8.61         | 4.97         | 4.91         |
| Cation Sum              | meq/L   |         | Calc.            | 27-Apr-23/O        | 43.4        | 10.0         | 5.29         | 5.19         |
| % Difference            | %       |         | Calc.            | 27-Apr-23/O        | 9.78        | 7.47         | 3.17         | 2.81         |
| Ion Ratio               | AS/CS   |         | Calc.            | 27-Apr-23/O        | 0.822       | 0.861        | 0.938        | 0.945        |
| Conductivity (calc.)    | µmho/cm |         | Calc.            | 27-Apr-23/O        | 3393        | 915          | 479          | 488          |
| Sodium Adsorption Ratio | -       |         | Calc.            | 27-Apr-23/O        | 2.99        | 1.18         | 0.0737       | 0.150        |



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**C.O.C.: ---**

**REPORT No. B23-03061 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                       |       |      | Client I.D.      |                    | MW10        | MW11A        | MW12         | MW14         |
|-----------------------|-------|------|------------------|--------------------|-------------|--------------|--------------|--------------|
|                       |       |      | Sample I.D.      |                    | B23-03061-9 | B23-03061-10 | B23-03061-11 | B23-03061-12 |
|                       |       |      | Date Collected   |                    | 19-Apr-23   | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter             | Units | R.L. | Reference Method | Date/Site Analyzed |             |              |              |              |
| TDS(calc.)/EC(actual) | -     |      | Calc.            | 27-Apr-23/O        | 0.549       | 0.534        | 0.543        | 0.527        |
| Langelier Index(25°C) | S.I.  |      | Calc.            | 27-Apr-23/O        | 1.62        | 0.740        | 0.718        | 0.592        |

- 1 Chromium (VI) result is based on total Chromium
- 2 Outside of 15% Acceptance Criteria
- 3 Digested
- 4 Elevated detection limit due to dilution
- 5 filtered and acidified at lab



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P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                         |          |          | Client I.D.               |                    | MW15         | MW15A        | MW15B        | MW16         |
|-----------------------------------------|----------|----------|---------------------------|--------------------|--------------|--------------|--------------|--------------|
|                                         |          |          | Sample I.D.               |                    | B23-03061-13 | B23-03061-14 | B23-03061-15 | B23-03061-16 |
|                                         |          |          | Date Collected            |                    | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter                               | Units    | R.L.     | Reference Method          | Date/Site Analyzed |              |              |              |              |
| Alkalinity(CaCO <sub>3</sub> ) to pH4.5 | mg/L     | 5        | SM 2320B                  | 26-Apr-23/O        | 182          | 412          | 394          | 234          |
| Conductivity @25°C                      | µmho/cm  | 1        | SM 2510B                  | 26-Apr-23/O        | 347          | 972          | 944          | 472          |
| pH @25°C                                | pH Units |          | SM 4500H                  | 26-Apr-23/O        | 7.84         | 7.71         | 7.76         | 7.90         |
| TDS(ion sum calc.)                      | mg/L     | 1        | Calc.                     | 27-Apr-23/O        | 188          | 529          | 500          | 252          |
| Dissolved Organic Carbon                | mg/L     | 0.2      | EPA 415.2                 | 27-Apr-23/O        | 3.2          | 7.3          | 6.9          | 2.8          |
| COD                                     | mg/L     | 5        | SM5220C                   | 26-Apr-23/K        | 6            | 22           | 14           | 6            |
| Phenolics                               | mg/L     | 0.001    | MOEE 3179                 | 28-Apr-23/K        | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Chloride                                | mg/L     | 0.5      | SM4110C                   | 26-Apr-23/O        | 1.9          | 64.1         | 63.6         | 3.7          |
| Fluoride                                | mg/L     | 0.1      | SM4110C                   | 26-Apr-23/O        | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Ammonia (N)-Total                       | mg/L     | 0.01     | SM4500-NH <sub>3</sub> -H | 04-May-23/K        | 0.50         | 1.36         | 0.50         | 0.08         |
| Sulphate                                | mg/L     | 1        | SM4110C                   | 26-Apr-23/O        | < 1          | 2            | 2            | 6            |
| Nitrite (N)                             | mg/L     | 0.05     | SM4110C                   | 26-Apr-23/O        | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| Nitrate (N)                             | mg/L     | 0.05     | SM4110C                   | 26-Apr-23/O        | < 0.05       | < 0.05       | < 0.05       | 0.48         |
| Total Kjeldahl Nitrogen                 | mg/L     | 0.1      | E3516.2                   | 15-May-23/K        | 0.6          | 1.7          | 0.7          | 0.2          |
| Hardness (as CaCO <sub>3</sub> )        | mg/L     | 1        | SM 3120                   | 26-Apr-23/O        | 185          | 461          | 452          | 250          |
| Aluminum                                | mg/L     | 0.01     | SM 3120                   | 26-Apr-23/O        | 0.01         | 0.05         | 0.04         | 0.02         |
| Antimony                                | mg/L     | 0.0001   | EPA 200.8                 | 03-May-23/O        | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     |
| Arsenic                                 | mg/L     | 0.0001   | EPA 200.8                 | 03-May-23/O        | 0.0001       | < 0.0001     | < 0.0001     | < 0.0001     |
| Barium                                  | mg/L     | 0.001    | SM 3120                   | 26-Apr-23/O        | 0.007        | 0.336        | 0.158        | 0.064        |
| Beryllium                               | mg/L     | 0.002    | SM 3120                   | 26-Apr-23/O        | < 0.002      | < 0.002      | < 0.002      | < 0.002      |
| Boron                                   | mg/L     | 0.005    | SM 3120                   | 26-Apr-23/O        | 0.006        | 0.077        | 0.097        | 0.020        |
| Cadmium                                 | mg/L     | 0.000010 | EPA 200.8                 | 03-May-23/O        | < 0.000010   | < 0.000010   | < 0.000010   | < 0.000010   |
| Calcium                                 | mg/L     | 0.02     | SM 3120                   | 26-Apr-23/O        | 70.9         | 157          | 143          | 90.6         |
| Chromium                                | mg/L     | 0.001    | SM 3120                   | 26-Apr-23/O        | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Chromium (VI)                           | mg/L     | 0.001    | MOE E3056                 | 05-May-23/O        | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Cobalt                                  | mg/L     | 0.005    | SM 3120                   | 26-Apr-23/O        | < 0.005      | < 0.005      | < 0.005      | < 0.005      |

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Steve Garrett

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**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |         |         | Client I.D.      |                    | MW15         | MW15A        | MW15B        | MW16         |
|-------------------------|---------|---------|------------------|--------------------|--------------|--------------|--------------|--------------|
|                         |         |         | Sample I.D.      |                    | B23-03061-13 | B23-03061-14 | B23-03061-15 | B23-03061-16 |
|                         |         |         | Date Collected   |                    | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter               | Units   | R.L.    | Reference Method | Date/Site Analyzed |              |              |              |              |
| Copper                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0011       | 0.0004       | 0.0001       | 0.0012       |
| Iron                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005      | 5.97         | 1.76         | 0.006        |
| Lead                    | mg/L    | 0.00002 | EPA 200.8        | 03-May-23/O        | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    |
| Magnesium               | mg/L    | 0.02    | SM 3120          | 26-Apr-23/O        | 2.01         | 16.9         | 23.4         | 5.68         |
| Manganese               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | < 0.001      | 0.145        | 0.056        | < 0.001      |
| Mercury                 | mg/L    | 0.00002 | SM 3112 B        | 26-Apr-23/O        | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    |
| Molybdenum              | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0001       | < 0.0001     | < 0.0001     | 0.0002       |
| Nickel                  | mg/L    | 0.01    | SM 3120          | 26-Apr-23/O        | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Potassium               | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | 0.2          | 3.6          | 4.0          | 1.2          |
| Phosphorus-Total        | mg/L    | 0.01    | E3516.2          | 15-May-23/K        | 0.22         | 0.06         | 0.01         | 0.11         |
| Phosphorus              | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Selenium                | mg/L    | 0.001   | EPA 200.8        | 03-May-23/O        | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Silver                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     |
| Sodium                  | mg/L    | 0.2     | SM 3120          | 26-Apr-23/O        | 3.5          | 30.0         | 26.0         | 4.7          |
| Strontium               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 0.141        | 1.02         | 1.24         | 0.164        |
| Tin                     | mg/L    | 0.05    | SM 3120          | 26-Apr-23/O        | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| Titanium                | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005      | < 0.005      | < 0.005      | < 0.005      |
| Thallium                | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    |
| Uranium                 | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | 0.00008      | < 0.00005    | < 0.00005    | 0.00039      |
| Vanadium                | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0003       | 0.0005       | 0.0002       | 0.0003       |
| Zinc                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005      | < 0.005      | < 0.005      | < 0.005      |
| Anion Sum               | meq/L   |         | Calc.            | 27-Apr-23/O        | 3.68         | 10.1         | 9.70         | 4.93         |
| Cation Sum              | meq/L   |         | Calc.            | 27-Apr-23/O        | 3.89         | 11.0         | 10.4         | 5.23         |
| % Difference            | %       |         | Calc.            | 27-Apr-23/O        | 2.81         | 4.41         | 3.47         | 2.89         |
| Ion Ratio               | AS/CS   |         | Calc.            | 27-Apr-23/O        | 0.945        | 0.915        | 0.933        | 0.944        |
| Conductivity (calc.)    | µmho/cm |         | Calc.            | 27-Apr-23/O        | 357          | 953          | 920          | 471          |
| Sodium Adsorption Ratio | -       |         | Calc.            | 27-Apr-23/O        | 0.112        | 0.608        | 0.532        | 0.129        |

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Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                       |       |      | Client I.D.      | MW15               | MW15A        | MW15B        | MW16         |
|-----------------------|-------|------|------------------|--------------------|--------------|--------------|--------------|
|                       |       |      | Sample I.D.      | B23-03061-13       | B23-03061-14 | B23-03061-15 | B23-03061-16 |
|                       |       |      | Date Collected   | 19-Apr-23          | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter             | Units | R.L. | Reference Method | Date/Site Analyzed |              |              |              |
| TDS(calc.)/EC(actual) | -     |      | Calc.            | 27-Apr-23/O        | 0.542        | 0.544        | 0.530        |
| Langelier Index(25°C) | S.I.  |      | Calc.            | 27-Apr-23/O        | 0.527        | 1.06         | 1.05         |

- 1 Chromium (VI) result is based on total Chromium
- 2 Outside of 15% Acceptance Criteria
- 3 Digested
- 4 Elevated detection limit due to dilution
- 5 filtered and acidified at lab



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P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                         |          |          | Client I.D.               |                    | MW17         | MW18         | MW18A        | MW18B        |
|-----------------------------------------|----------|----------|---------------------------|--------------------|--------------|--------------|--------------|--------------|
|                                         |          |          | Sample I.D.               |                    | B23-03061-17 | B23-03061-18 | B23-03061-19 | B23-03061-20 |
|                                         |          |          | Date Collected            |                    | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter                               | Units    | R.L.     | Reference Method          | Date/Site Analyzed |              |              |              |              |
| Alkalinity(CaCO <sub>3</sub> ) to pH4.5 | mg/L     | 5        | SM 2320B                  | 26-Apr-23/O        | 318          | 267          | 426          | 454          |
| Conductivity @25°C                      | µmho/cm  | 1        | SM 2510B                  | 26-Apr-23/O        | 709          | 595          | 1050         | 1050         |
| pH @25°C                                | pH Units |          | SM 4500H                  | 26-Apr-23/O        | 7.83         | 7.83         | 7.67         | 7.65         |
| TDS(ion sum calc.)                      | mg/L     | 1        | Calc.                     | 27-Apr-23/O        | 386          | 331          | 562          | 587          |
| Dissolved Organic Carbon                | mg/L     | 0.2      | EPA 415.2                 | 27-Apr-23/O        | 6.5          | 5.9          | 6.2          | 7.9          |
| COD                                     | mg/L     | 5        | SM5220C                   | 26-Apr-23/K        | 14           | 29           | 23           | 30           |
| Phenolics                               | mg/L     | 0.001    | MOEE 3179                 | 28-Apr-23/K        | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Chloride                                | mg/L     | 0.5      | SM4110C                   | 26-Apr-23/O        | 19.8         | 3.8          | 81.4         | 65.2         |
| Fluoride                                | mg/L     | 0.1      | SM4110C                   | 26-Apr-23/O        | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Ammonia (N)-Total                       | mg/L     | 0.01     | SM4500-NH <sub>3</sub> -H | 04-May-23/K        | 0.08         | 0.36         | 2.02         | 2.64         |
| Sulphate                                | mg/L     | 1        | SM4110C                   | 26-Apr-23/O        | 23           | 20           | < 1          | 2            |
| Nitrite (N)                             | mg/L     | 0.05     | SM4110C                   | 26-Apr-23/O        | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| Nitrate (N)                             | mg/L     | 0.05     | SM4110C                   | 26-Apr-23/O        | 0.29         | 2.40         | < 0.05       | < 0.05       |
| Total Kjeldahl Nitrogen                 | mg/L     | 0.1      | E3516.2                   | 15-May-23/K        | 0.3          | 1.0          | 2.3          | 2.9          |
| Hardness (as CaCO <sub>3</sub> )        | mg/L     | 1        | SM 3120                   | 26-Apr-23/O        | 370          | 270          | 475          | 488          |
| Aluminum                                | mg/L     | 0.01     | SM 3120                   | 26-Apr-23/O        | 0.03         | 0.03         | 0.04         | 0.05         |
| Antimony                                | mg/L     | 0.0001   | EPA 200.8                 | 03-May-23/O        | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     |
| Arsenic                                 | mg/L     | 0.0001   | EPA 200.8                 | 03-May-23/O        | < 0.0001     | 0.0002       | < 0.0001     | 0.0002       |
| Barium                                  | mg/L     | 0.001    | SM 3120                   | 26-Apr-23/O        | 0.137        | 0.083        | 0.267        | 0.277        |
| Beryllium                               | mg/L     | 0.002    | SM 3120                   | 26-Apr-23/O        | < 0.002      | < 0.002      | < 0.002      | < 0.002      |
| Boron                                   | mg/L     | 0.005    | SM 3120                   | 26-Apr-23/O        | 0.069        | 0.024        | 0.252        | 0.143        |
| Cadmium                                 | mg/L     | 0.000010 | EPA 200.8                 | 03-May-23/O        | < 0.000010   | < 0.000010   | < 0.000012   | < 0.000012   |
| Calcium                                 | mg/L     | 0.02     | SM 3120                   | 26-Apr-23/O        | 122          | 97.4         | 141          | 175          |
| Chromium                                | mg/L     | 0.001    | SM 3120                   | 26-Apr-23/O        | < 0.001      | 0.001        | < 0.001      | < 0.001      |
| Chromium (VI)                           | mg/L     | 0.001    | MOE E3056                 | 05-May-23/O        | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Cobalt                                  | mg/L     | 0.005    | SM 3120                   | 26-Apr-23/O        | < 0.005      | < 0.005      | < 0.005      | < 0.005      |

R.L. = Reporting Limit

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03061 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |         |         | Client I.D.      | MW17               | MW18         | MW18A        | MW18B        |
|-------------------------|---------|---------|------------------|--------------------|--------------|--------------|--------------|
|                         |         |         | Sample I.D.      | B23-03061-17       | B23-03061-18 | B23-03061-19 | B23-03061-20 |
|                         |         |         | Date Collected   | 19-Apr-23          | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter               | Units   | R.L.    | Reference Method | Date/Site Analyzed |              |              |              |
| Copper                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0034       | 0.0076       | 0.0002       |
| Iron                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005      | 0.017        | 4.18         |
| Lead                    | mg/L    | 0.00002 | EPA 200.8        | 03-May-23/O        | < 0.00002    | < 0.00002    | < 0.00004    |
| Magnesium               | mg/L    | 0.02    | SM 3120          | 26-Apr-23/O        | 15.5         | 6.36         | 29.9         |
| Manganese               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 0.020        | 0.006        | 0.162        |
| Mercury                 | mg/L    | 0.00002 | SM 3112 B        | 26-Apr-23/O        | < 0.00002    | < 0.00002    | < 0.00002    |
| Molybdenum              | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0008       | 0.0010       | 0.0001       |
| Nickel                  | mg/L    | 0.01    | SM 3120          | 26-Apr-23/O        | < 0.01       | < 0.01       | < 0.01       |
| Potassium               | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | 3.9          | 36.9         | 7.7          |
| Phosphorus-Total        | mg/L    | 0.01    | E3516.2          | 15-May-23/K        | 0.03         | 0.13         | 0.02         |
| Phosphorus              | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | < 0.1        | < 0.1        | < 0.1        |
| Selenium                | mg/L    | 0.001   | EPA 200.8        | 03-May-23/O        | < 0.001      | < 0.001      | < 0.001      |
| Silver                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | < 0.0001     | < 0.0001     | < 0.0001     |
| Sodium                  | mg/L    | 0.2     | SM 3120          | 26-Apr-23/O        | 10.0         | 5.7          | 39.7         |
| Strontium               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 0.288        | 0.122        | 1.65         |
| Tin                     | mg/L    | 0.05    | SM 3120          | 26-Apr-23/O        | < 0.05       | < 0.05       | < 0.05       |
| Titanium                | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005      | < 0.005      | < 0.005      |
| Thallium                | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | < 0.00005    | < 0.00005    | < 0.00005    |
| Uranium                 | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | 0.00213      | 0.00052      | 0.00005      |
| Vanadium                | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0002       | 0.0006       | 0.0005       |
| Zinc                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005      | < 0.005      | < 0.005      |
| Anion Sum               | meq/L   |         | Calc.            | 27-Apr-23/O        | 7.42         | 6.03         | 10.8         |
| Cation Sum              | meq/L   |         | Calc.            | 27-Apr-23/O        | 7.92         | 6.60         | 11.8         |
| % Difference            | %       |         | Calc.            | 27-Apr-23/O        | 3.27         | 4.51         | 4.27         |
| Ion Ratio               | AS/CS   |         | Calc.            | 27-Apr-23/O        | 0.937        | 0.914        | 0.918        |
| Conductivity (calc.)    | µmho/cm |         | Calc.            | 27-Apr-23/O        | 704          | 592          | 1026         |
| Sodium Adsorption Ratio | -       |         | Calc.            | 27-Apr-23/O        | 0.227        | 0.151        | 0.793        |



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Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                       |       |      | Client I.D.      | MW17               | MW18         | MW18A        | MW18B        |
|-----------------------|-------|------|------------------|--------------------|--------------|--------------|--------------|
|                       |       |      | Sample I.D.      | B23-03061-17       | B23-03061-18 | B23-03061-19 | B23-03061-20 |
|                       |       |      | Date Collected   | 19-Apr-23          | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter             | Units | R.L. | Reference Method | Date/Site Analyzed |              |              |              |
| TDS(calc.)/EC(actual) | -     |      | Calc.            | 27-Apr-23/O        | 0.544        | 0.556        | 0.537        |
| Langelier Index(25°C) | S.I.  |      | Calc.            | 27-Apr-23/O        | 0.968        | 0.803        | 0.976        |
|                       |       |      |                  |                    |              |              | 1.08         |

- 1 Chromium (VI) result is based on total Chromium
- 2 Outside of 15% Acceptance Criteria
- 3 Digested
- 4 Elevated detection limit due to dilution
- 5 filtered and acidified at lab



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DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                         |          |          | Client I.D.               |                    | MW19                 | MW22                 | MW22A                | MW22B               |
|-----------------------------------------|----------|----------|---------------------------|--------------------|----------------------|----------------------|----------------------|---------------------|
|                                         |          |          | Sample I.D.               |                    | B23-03061-21         | B23-03061-22         | B23-03061-23         | B23-03061-24        |
|                                         |          |          | Date Collected            |                    | 19-Apr-23            | 19-Apr-23            | 19-Apr-23            | 19-Apr-23           |
| Parameter                               | Units    | R.L.     | Reference Method          | Date/Site Analyzed |                      |                      |                      |                     |
| Alkalinity(CaCO <sub>3</sub> ) to pH4.5 | mg/L     | 5        | SM 2320B                  | 26-Apr-23/O        | 449                  | 256                  | 373                  | 2440                |
| Conductivity @25°C                      | µmho/cm  | 1        | SM 2510B                  | 26-Apr-23/O        | 949                  | 668                  | 2310                 | 5570                |
| pH @25°C                                | pH Units |          | SM 4500H                  | 26-Apr-23/O        | 7.73                 | 7.82                 | 7.61                 | 7.42                |
| TDS(ion sum calc.)                      | mg/L     | 1        | Calc.                     | 27-Apr-23/O        | 529                  | 346                  | 1224                 | 3266                |
| Dissolved Organic Carbon                | mg/L     | 0.2      | EPA 415.2                 | 27-Apr-23/O        | 6.5                  | 7.9                  | 3.7                  | 24.1                |
| COD                                     | mg/L     | 5        | SM5220C                   | 26-Apr-23/K        | 11                   | 18                   | 33                   | 537                 |
| Phenolics                               | mg/L     | 0.001    | MOEE 3179                 | 28-Apr-23/K        | < 0.001              | < 0.001              | < 0.001              | 0.017               |
| Chloride                                | mg/L     | 0.5      | SM4110C                   | 26-Apr-23/O        | 29.5                 | 54.1                 | 504                  | 404                 |
| Fluoride                                | mg/L     | 0.1      | SM4110C                   | 26-Apr-23/O        | < 0.1                | < 0.1                | < 0.1                | < 1                 |
| Ammonia (N)-Total                       | mg/L     | 0.01     | SM4500-NH <sub>3</sub> -H | 04-May-23/K        | 0.43                 | 0.78                 | 1.62                 | 237                 |
| Sulphate                                | mg/L     | 1        | SM4110C                   | 26-Apr-23/O        | 24                   | < 1                  | 9                    | 14                  |
| Nitrite (N)                             | mg/L     | 0.05     | SM4110C                   | 26-Apr-23/O        | < 0.05               | < 0.05               | < 0.05               | < 0.5               |
| Nitrate (N)                             | mg/L     | 0.05     | SM4110C                   | 26-Apr-23/O        | < 0.05               | < 0.05               | < 0.05               | < 0.5               |
| Total Kjeldahl Nitrogen                 | mg/L     | 0.1      | E3516.2                   | 15-May-23/K        | 0.7                  | 1.0                  | 2.1                  | 268                 |
| Hardness (as CaCO <sub>3</sub> )        | mg/L     | 1        | SM 3120                   | 26-Apr-23/O        | 471                  | 302                  | 771                  | 1370                |
| Aluminum                                | mg/L     | 0.01     | SM 3120                   | 26-Apr-23/O        | 0.04                 | 0.02                 | 0.08                 | 0.12                |
| Antimony                                | mg/L     | 0.0001   | EPA 200.8                 | 03-May-23/O        | < 0.0001             | < 0.0001             | < 0.0001             | 0.0015              |
| Arsenic                                 | mg/L     | 0.0001   | EPA 200.8                 | 03-May-23/O        | 0.0003               | 0.0002               | < 0.0003             | 0.0025 <sup>3</sup> |
| Barium                                  | mg/L     | 0.001    | SM 3120                   | 26-Apr-23/O        | 0.203                | 0.098                | 0.327                | 0.133               |
| Beryllium                               | mg/L     | 0.002    | SM 3120                   | 26-Apr-23/O        | < 0.002              | < 0.002              | < 0.002              | < 0.002             |
| Boron                                   | mg/L     | 0.005    | SM 3120                   | 26-Apr-23/O        | 0.105                | 0.100                | 0.036                | 2.90                |
| Cadmium                                 | mg/L     | 0.000010 | EPA 200.8                 | 03-May-23/O        | < 0.000010           | < 0.000010           | < 0.000029           | < 0.000059          |
| Calcium                                 | mg/L     | 0.02     | SM 3120                   | 26-Apr-23/O        | 160 <sup>5</sup>     | 89.5                 | 285                  | 428 <sup>5</sup>    |
| Chromium                                | mg/L     | 0.001    | SM 3120                   | 26-Apr-23/O        | < 0.001              | < 0.001              | < 0.001              | 0.015               |
| Chromium (VI)                           | mg/L     | 0.001    | MOE E3056                 | 05-May-23/O        | < 0.001 <sup>1</sup> | < 0.001 <sup>1</sup> | < 0.001 <sup>1</sup> | < 0.001             |
| Cobalt                                  | mg/L     | 0.005    | SM 3120                   | 26-Apr-23/O        | 0.007                | < 0.005              | 0.007                | 0.025               |

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Steve Garrett

Director of Laboratory Services

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PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |         |         | Client I.D.      | MW19               | MW22         | MW22A        | MW22B        |
|-------------------------|---------|---------|------------------|--------------------|--------------|--------------|--------------|
|                         |         |         | Sample I.D.      | B23-03061-21       | B23-03061-22 | B23-03061-23 | B23-03061-24 |
|                         |         |         | Date Collected   | 19-Apr-23          | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter               | Units   | R.L.    | Reference Method | Date/Site Analyzed |              |              |              |
| Copper                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0023       | 0.0002       | 0.0005       |
| Iron                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005      | 1.75         | 0.825        |
| Lead                    | mg/L    | 0.00002 | EPA 200.8        | 03-May-23/O        | < 0.00002    | < 0.00002    | < 0.00009    |
| Magnesium               | mg/L    | 0.02    | SM 3120          | 26-Apr-23/O        | 17.4         | 19.1         | 14.4         |
| Manganese               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 0.106        | 0.034        | 0.437        |
| Mercury                 | mg/L    | 0.00002 | SM 3112 B        | 26-Apr-23/O        | < 0.00002    | < 0.00002    | < 0.00002    |
| Molybdenum              | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0004       | < 0.0001     | 0.0003       |
| Nickel                  | mg/L    | 0.01    | SM 3120          | 26-Apr-23/O        | < 0.01       | < 0.01       | < 0.01       |
| Potassium               | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | 4.0          | 4.4          | 2.3          |
| Phosphorus-Total        | mg/L    | 0.01    | E3516.2          | 15-May-23/K        | 0.11         | 0.01         | 0.05         |
| Phosphorus              | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | < 0.1        | < 0.1        | < 0.1        |
| Selenium                | mg/L    | 0.001   | EPA 200.8        | 03-May-23/O        | < 0.001      | < 0.001      | 0.003        |
| Silver                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | < 0.0001     | < 0.0001     | < 0.0001     |
| Sodium                  | mg/L    | 0.2     | SM 3120          | 26-Apr-23/O        | 24.6         | 22.9         | 176          |
| Strontium               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 0.327        | 1.49         | 0.993        |
| Tin                     | mg/L    | 0.05    | SM 3120          | 26-Apr-23/O        | < 0.05       | < 0.05       | < 0.05       |
| Titanium                | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005      | < 0.005      | < 0.005      |
| Thallium                | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | < 0.00005    | < 0.00005    | < 0.00005    |
| Uranium                 | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | 0.00286      | < 0.00005    | 0.00011      |
| Vanadium                | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | < 0.0001     | 0.0006       | 0.0021       |
| Zinc                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005      | < 0.005      | < 0.005      |
| Anion Sum               | meq/L   |         | Calc.            | 27-Apr-23/O        | 10.3         | 6.64         | 21.9         |
| Cation Sum              | meq/L   |         | Calc.            | 27-Apr-23/O        | 10.6         | 7.29         | 23.6         |
| % Difference            | %       |         | Calc.            | 27-Apr-23/O        | 1.54         | 4.72         | 3.84         |
| Ion Ratio               | AS/CS   |         | Calc.            | 27-Apr-23/O        | 0.970        | 0.910        | 0.926        |
| Conductivity (calc.)    | µmho/cm |         | Calc.            | 27-Apr-23/O        | 932          | 663          | 2205         |
| Sodium Adsorption Ratio | -       |         | Calc.            | 27-Apr-23/O        | 0.493        | 0.572        | 2.75         |



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Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                       |       |      | Client I.D.      | MW19               | MW22         | MW22A        | MW22B        |
|-----------------------|-------|------|------------------|--------------------|--------------|--------------|--------------|
|                       |       |      | Sample I.D.      | B23-03061-21       | B23-03061-22 | B23-03061-23 | B23-03061-24 |
|                       |       |      | Date Collected   | 19-Apr-23          | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter             | Units | R.L. | Reference Method | Date/Site Analyzed |              |              |              |
| TDS(calc.)/EC(actual) | -     |      | Calc.            | 27-Apr-23/O        | 0.558        | 0.518        | 0.530        |
| Langelier Index(25°C) | S.I.  |      | Calc.            | 27-Apr-23/O        | 1.12         | 0.727        | 1.12         |

- 1 Chromium (VI) result is based on total Chromium
- 2 Outside of 15% Acceptance Criteria
- 3 Digested
- 4 Elevated detection limit due to dilution
- 5 filtered and acidified at lab



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DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                            |          |          | Client I.D.      |                    | MW23         | MW23A        | MW23B        | DUP-3        |
|----------------------------|----------|----------|------------------|--------------------|--------------|--------------|--------------|--------------|
|                            |          |          | Sample I.D.      |                    | B23-03061-25 | B23-03061-26 | B23-03061-27 | B23-03061-28 |
|                            |          |          | Date Collected   |                    | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter                  | Units    | R.L.     | Reference Method | Date/Site Analyzed |              |              |              |              |
| Alkalinity(CaCO3) to pH4.5 | mg/L     | 5        | SM 2320B         | 26-Apr-23/O        | 146          | 235          | 157          | 454          |
| Conductivity @25°C         | µmho/cm  | 1        | SM 2510B         | 26-Apr-23/O        | 291          | 483          | 294          | 958          |
| pH @25°C                   | pH Units |          | SM 4500H         | 26-Apr-23/O        | 7.72         | 7.77         | 7.87         | 7.83         |
| TDS(ion sum calc.)         | mg/L     | 1        | Calc.            | 27-Apr-23/O        | 151          | 258          | 158          | 542          |
| Dissolved Organic Carbon   | mg/L     | 0.2      | EPA 415.2        | 27-Apr-23/O        | 4.2          | 1.6          | 3.0          | 3.7          |
| COD                        | mg/L     | 5        | SM5220C          | 26-Apr-23/K        | 9            | < 5          | 6            | 14           |
| Phenolics                  | mg/L     | 0.001    | MOEE 3179        | 28-Apr-23/K        | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Chloride                   | mg/L     | 0.5      | SM4110C          | 26-Apr-23/O        | 0.5          | 7.9          | < 0.5        | 29.3         |
| Fluoride                   | mg/L     | 0.1      | SM4110C          | 26-Apr-23/O        | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Ammonia (N)-Total          | mg/L     | 0.01     | SM4500-NH3-H     | 04-May-23/K        | 0.12         | 0.07         | 0.11         | 0.40         |
| Sulphate                   | mg/L     | 1        | SM4110C          | 26-Apr-23/O        | < 1          | 5            | < 1          | 23           |
| Nitrite (N)                | mg/L     | 0.05     | SM4110C          | 26-Apr-23/O        | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| Nitrate (N)                | mg/L     | 0.05     | SM4110C          | 26-Apr-23/O        | 0.07         | 0.14         | 0.06         | < 0.05       |
| Total Kjeldahl Nitrogen    | mg/L     | 0.1      | E3516.2          | 15-May-23/K        | 0.3          | 0.2          | 0.3          | 0.9          |
| Hardness (as CaCO3)        | mg/L     | 1        | SM 3120          | 26-Apr-23/O        | 154          | 249          | 159          | 494          |
| Aluminum                   | mg/L     | 0.01     | SM 3120          | 26-Apr-23/O        | < 0.01       | 0.02         | 0.01         | 0.04         |
| Antimony                   | mg/L     | 0.0001   | EPA 200.8        | 03-May-23/O        | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     |
| Arsenic                    | mg/L     | 0.0001   | EPA 200.8        | 03-May-23/O        | < 0.0001     | < 0.0001     | < 0.0001     | 0.0003       |
| Barium                     | mg/L     | 0.001    | SM 3120          | 26-Apr-23/O        | 0.005        | 0.067        | 0.005        | 0.210        |
| Beryllium                  | mg/L     | 0.002    | SM 3120          | 26-Apr-23/O        | < 0.002      | < 0.002      | < 0.002      | < 0.002      |
| Boron                      | mg/L     | 0.005    | SM 3120          | 26-Apr-23/O        | 0.007        | 0.018        | 0.006        | 0.110        |
| Cadmium                    | mg/L     | 0.000010 | EPA 200.8        | 03-May-23/O        | < 0.000010   | < 0.000010   | < 0.000010   | < 0.000010   |
| Calcium                    | mg/L     | 0.02     | SM 3120          | 26-Apr-23/O        | 59.8         | 91.1         | 61.5         | 167          |
| Chromium                   | mg/L     | 0.001    | SM 3120          | 26-Apr-23/O        | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Chromium (VI)              | mg/L     | 0.001    | MOE E3056        | 05-May-23/O        | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Cobalt                     | mg/L     | 0.005    | SM 3120          | 26-Apr-23/O        | < 0.005      | < 0.005      | < 0.005      | 0.006        |

R.L. = Reporting Limit

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03061 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |         |         | Client I.D.      |                    | MW23         | MW23A        | MW23B        | DUP-3        |
|-------------------------|---------|---------|------------------|--------------------|--------------|--------------|--------------|--------------|
|                         |         |         | Sample I.D.      |                    | B23-03061-25 | B23-03061-26 | B23-03061-27 | B23-03061-28 |
|                         |         |         | Date Collected   |                    | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter               | Units   | R.L.    | Reference Method | Date/Site Analyzed |              |              |              |              |
| Copper                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0008       | 0.0007       | 0.0008       | 0.0023       |
| Iron                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | 0.008        | 0.113        | 0.007        | 0.272        |
| Lead                    | mg/L    | 0.00002 | EPA 200.8        | 03-May-23/O        | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    |
| Magnesium               | mg/L    | 0.02    | SM 3120          | 26-Apr-23/O        | 1.21         | 5.30         | 1.32         | 18.4         |
| Manganese               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 0.015        | 0.016        | 0.004        | 0.109        |
| Mercury                 | mg/L    | 0.00002 | SM 3112 B        | 26-Apr-23/O        | < 0.00002    | < 0.00002    | < 0.00002    | < 0.00002    |
| Molybdenum              | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | < 0.0001     | 0.0001       | 0.0001       | 0.0004       |
| Nickel                  | mg/L    | 0.01    | SM 3120          | 26-Apr-23/O        | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Potassium               | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | 0.3          | 1.1          | 0.3          | 4.2          |
| Phosphorus-Total        | mg/L    | 0.01    | E3516.2          | 15-May-23/K        | 0.08         | < 0.01       | 0.07         | 0.14         |
| Phosphorus              | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Selenium                | mg/L    | 0.001   | EPA 200.8        | 03-May-23/O        | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Silver                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | < 0.0001     | < 0.0001     | < 0.0001     | < 0.0001     |
| Sodium                  | mg/L    | 0.2     | SM 3120          | 26-Apr-23/O        | 0.8          | 6.0          | 0.8          | 25.8         |
| Strontium               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 0.105        | 0.180        | 0.105        | 0.343        |
| Tin                     | mg/L    | 0.05    | SM 3120          | 26-Apr-23/O        | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| Titanium                | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005      | < 0.005      | < 0.005      | < 0.005      |
| Thallium                | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | < 0.00005    | < 0.00005    | < 0.00005    | < 0.00005    |
| Uranium                 | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | 0.00010      | 0.00038      | 0.00011      | 0.00283      |
| Vanadium                | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0003       | 0.0002       | 0.0002       | < 0.0001     |
| Zinc                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005      | < 0.005      | < 0.005      | < 0.005      |
| Anion Sum               | meq/L   |         | Calc.            | 27-Apr-23/O        | 2.95         | 5.05         | 3.13         | 10.4         |
| Cation Sum              | meq/L   |         | Calc.            | 27-Apr-23/O        | 3.13         | 5.28         | 3.23         | 11.1         |
| % Difference            | %       |         | Calc.            | 27-Apr-23/O        | 3.10         | 2.28         | 1.52         | 3.55         |
| Ion Ratio               | AS/CS   |         | Calc.            | 27-Apr-23/O        | 0.940        | 0.955        | 0.970        | 0.931        |
| Conductivity (calc.)    | µmho/cm |         | Calc.            | 27-Apr-23/O        | 289          | 482          | 301          | 957          |
| Sodium Adsorption Ratio | -       |         | Calc.            | 27-Apr-23/O        | 0.0291       | 0.166        | 0.0283       | 0.506        |

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Steve Garrett

Director of Laboratory Services

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**REPORT No. B23-03061 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                       |       |      | Client I.D.      | MW23               | MW23A        | MW23B        | DUP-3        |
|-----------------------|-------|------|------------------|--------------------|--------------|--------------|--------------|
|                       |       |      | Sample I.D.      | B23-03061-25       | B23-03061-26 | B23-03061-27 | B23-03061-28 |
|                       |       |      | Date Collected   | 19-Apr-23          | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter             | Units | R.L. | Reference Method | Date/Site Analyzed |              |              |              |
| TDS(calc.)/EC(actual) | -     |      | Calc.            | 27-Apr-23/O        | 0.518        | 0.535        | 0.537        |
| Langelier Index(25°C) | S.I.  |      | Calc.            | 27-Apr-23/O        | 0.270        | 0.669        | 0.451        |
|                       |       |      |                  |                    |              |              | 0.565        |
|                       |       |      |                  |                    |              |              | 1.24         |

- 1 Chromium (VI) result is based on total Chromium
- 2 Outside of 15% Acceptance Criteria
- 3 Digested
- 4 Elevated detection limit due to dilution
- 5 filtered and acidified at lab



R.L. = Reporting Limit

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Steve Garrett

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Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

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112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                            |          |          | Client I.D.      | DUP-5              |            |  |  |
|----------------------------|----------|----------|------------------|--------------------|------------|--|--|
|                            |          |          | Sample I.D.      | B23-03061-29       |            |  |  |
|                            |          |          | Date Collected   | 19-Apr-23          |            |  |  |
| Parameter                  | Units    | R.L.     | Reference Method | Date/Site Analyzed |            |  |  |
| Alkalinity(CaCO3) to pH4.5 | mg/L     | 5        | SM 2320B         | 26-Apr-23/O        | 227        |  |  |
| Conductivity @25°C         | µmho/cm  | 1        | SM 2510B         | 26-Apr-23/O        | 469        |  |  |
| pH @25°C                   | pH Units |          | SM 4500H         | 26-Apr-23/O        | 7.88       |  |  |
| TDS(ion sum calc.)         | mg/L     | 1        | Calc.            | 27-Apr-23/O        | 252        |  |  |
| Dissolved Organic Carbon   | mg/L     | 0.2      | EPA 415.2        | 27-Apr-23/O        | 3.0        |  |  |
| COD                        | mg/L     | 5        | SM5220C          | 26-Apr-23/K        | 5          |  |  |
| Phenolics                  | mg/L     | 0.001    | MOEE 3179        | 28-Apr-23/K        | < 0.001    |  |  |
| Chloride                   | mg/L     | 0.5      | SM4110C          | 26-Apr-23/O        | 3.5        |  |  |
| Fluoride                   | mg/L     | 0.1      | SM4110C          | 26-Apr-23/O        | < 0.1      |  |  |
| Ammonia (N)-Total          | mg/L     | 0.01     | SM4500-NH3-H     | 04-May-23/K        | 0.13       |  |  |
| Sulphate                   | mg/L     | 1        | SM4110C          | 26-Apr-23/O        | 9          |  |  |
| Nitrite (N)                | mg/L     | 0.05     | SM4110C          | 26-Apr-23/O        | < 0.05     |  |  |
| Nitrate (N)                | mg/L     | 0.05     | SM4110C          | 26-Apr-23/O        | 0.33       |  |  |
| Total Kjeldahl Nitrogen    | mg/L     | 0.1      | E3516.2          | 15-May-23/K        | 0.3        |  |  |
| Hardness (as CaCO3)        | mg/L     | 1        | SM 3120          | 26-Apr-23/O        | 256        |  |  |
| Aluminum                   | mg/L     | 0.01     | SM 3120          | 26-Apr-23/O        | 0.02       |  |  |
| Antimony                   | mg/L     | 0.0001   | EPA 200.8        | 03-May-23/O        | < 0.0001   |  |  |
| Arsenic                    | mg/L     | 0.0001   | EPA 200.8        | 03-May-23/O        | < 0.0001   |  |  |
| Barium                     | mg/L     | 0.001    | SM 3120          | 26-Apr-23/O        | 0.068      |  |  |
| Beryllium                  | mg/L     | 0.002    | SM 3120          | 26-Apr-23/O        | < 0.002    |  |  |
| Boron                      | mg/L     | 0.005    | SM 3120          | 26-Apr-23/O        | 0.014      |  |  |
| Cadmium                    | mg/L     | 0.000010 | EPA 200.8        | 03-May-23/O        | < 0.000010 |  |  |
| Calcium                    | mg/L     | 0.02     | SM 3120          | 26-Apr-23/O        | 93.1       |  |  |
| Chromium                   | mg/L     | 0.001    | SM 3120          | 26-Apr-23/O        | < 0.001    |  |  |
| Chromium (VI)              | mg/L     | 0.001    | MOE E3056        | 05-May-23/O        | < 0.001    |  |  |
| Cobalt                     | mg/L     | 0.005    | SM 3120          | 26-Apr-23/O        | < 0.005    |  |  |

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Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03061 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |         |         | Client I.D.      | DUP-5              |           |  |  |
|-------------------------|---------|---------|------------------|--------------------|-----------|--|--|
|                         |         |         | Sample I.D.      | B23-03061-29       |           |  |  |
|                         |         |         | Date Collected   | 19-Apr-23          |           |  |  |
| Parameter               | Units   | R.L.    | Reference Method | Date/Site Analyzed |           |  |  |
| Copper                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0012    |  |  |
| Iron                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005   |  |  |
| Lead                    | mg/L    | 0.00002 | EPA 200.8        | 03-May-23/O        | < 0.00002 |  |  |
| Magnesium               | mg/L    | 0.02    | SM 3120          | 26-Apr-23/O        | 5.57      |  |  |
| Manganese               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | < 0.001   |  |  |
| Mercury                 | mg/L    | 0.00002 | SM 3112 B        | 26-Apr-23/O        | < 0.00002 |  |  |
| Molybdenum              | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0001    |  |  |
| Nickel                  | mg/L    | 0.01    | SM 3120          | 26-Apr-23/O        | < 0.01    |  |  |
| Potassium               | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | 1.4       |  |  |
| Phosphorus-Total        | mg/L    | 0.01    | E3516.2          | 15-May-23/K        | 0.03      |  |  |
| Phosphorus              | mg/L    | 0.1     | SM 3120          | 26-Apr-23/O        | < 0.1     |  |  |
| Selenium                | mg/L    | 0.001   | EPA 200.8        | 03-May-23/O        | < 0.001   |  |  |
| Silver                  | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | < 0.0001  |  |  |
| Sodium                  | mg/L    | 0.2     | SM 3120          | 26-Apr-23/O        | 2.7       |  |  |
| Strontium               | mg/L    | 0.001   | SM 3120          | 26-Apr-23/O        | 0.164     |  |  |
| Tin                     | mg/L    | 0.05    | SM 3120          | 26-Apr-23/O        | < 0.05    |  |  |
| Titanium                | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005   |  |  |
| Thallium                | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | < 0.00005 |  |  |
| Uranium                 | mg/L    | 0.00005 | EPA 200.8        | 03-May-23/O        | 0.00042   |  |  |
| Vanadium                | mg/L    | 0.0001  | EPA 200.8        | 03-May-23/O        | 0.0001    |  |  |
| Zinc                    | mg/L    | 0.005   | SM 3120          | 26-Apr-23/O        | < 0.005   |  |  |
| Anion Sum               | meq/L   |         | Calc.            | 27-Apr-23/O        | 4.86      |  |  |
| Cation Sum              | meq/L   |         | Calc.            | 27-Apr-23/O        | 5.26      |  |  |
| % Difference            | %       |         | Calc.            | 27-Apr-23/O        | 4.02      |  |  |
| Ion Ratio               | AS/CS   |         | Calc.            | 27-Apr-23/O        | 0.923     |  |  |
| Conductivity (calc.)    | µmho/cm |         | Calc.            | 27-Apr-23/O        | 472       |  |  |
| Sodium Adsorption Ratio | -       |         | Calc.            | 27-Apr-23/O        | 0.0733    |  |  |

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Steve Garrett

Director of Laboratory Services

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**REPORT No. B23-03061 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                       |              |             |                         |                           |       |  |  |
|-----------------------|--------------|-------------|-------------------------|---------------------------|-------|--|--|
|                       |              |             | <b>Client I.D.</b>      | DUP-5                     |       |  |  |
|                       |              |             | <b>Sample I.D.</b>      | B23-03061-29              |       |  |  |
|                       |              |             | <b>Date Collected</b>   | 19-Apr-23                 |       |  |  |
| <b>Parameter</b>      | <b>Units</b> | <b>R.L.</b> | <b>Reference Method</b> | <b>Date/Site Analyzed</b> |       |  |  |
| TDS(calc.)/EC(actual) | -            |             | Calc.                   | 27-Apr-23/O               | 0.537 |  |  |
| Langelier Index(25°C) | S.I.         |             | Calc.                   | 27-Apr-23/O               | 0.773 |  |  |

1. Chromium (VI) result is based on total Chromium
2. Outside of 15% Acceptance Criteria
3. Digested
4. Elevated detection limit due to dilution
5. filtered and acidified at lab



R.L. = Reporting Limit

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03061 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                         |       |      | Client I.D.      | MW7-13             | MW12         | MW14         | MW15         |
|-----------------------------------------|-------|------|------------------|--------------------|--------------|--------------|--------------|
|                                         |       |      | Sample I.D.      | B23-03061-8        | B23-03061-11 | B23-03061-12 | B23-03061-13 |
|                                         |       |      | Date Collected   | 19-Apr-23          | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter                               | Units | R.L. | Reference Method | Date/Site Analyzed |              |              |              |
| Dichloroethane,1,1-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichloroethylene,1,1-                   | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichloroethane,1,2-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichlorobenzene,1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | 0.7          | < 0.5        | < 0.5        |
| Dichloropropane,1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichlorobenzene,1,3-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichlorobenzene,1,4-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | 1.7          | < 0.5        | < 0.5        |
| Tetrachloroethane,1,1,1,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Tetrachloroethane,1,1,2,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Trichloroethane,1,1,1-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Trichloroethane,1,1,2-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Trichlorobenzene,1,2,4-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Acetone                                 | µg/L  | 30   | EPA 8260         | 26-Apr-23/R        | < 30         | < 30         | < 30         |
| Bromodichloromethane                    | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2          | < 2          | < 2          |
| Bromomethane                            | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Bromoform                               | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5          | < 5          | < 5          |
| Benzene                                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | 3.8          | < 0.5        | < 0.5        |
| Dichloroethene, cis-1,2-                | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichloropropene, cis-1,3-               | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Carbon Tetrachloride                    | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2        | < 0.2        | < 0.2        |
| Monochlorobenzene (Chlorobenzene)       | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | 18.0         | < 0.5        | < 0.5        |
| Chloroform                              | µg/L  | 1    | EPA 8260         | 26-Apr-23/R        | < 1          | < 1          | < 1          |
| Dibromochloromethane                    | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2          | < 2          | < 2          |
| Ethylbenzene                            | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dibromoethane,1,2- (Ethylene Dibromide) | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2        | < 0.2        | < 0.2        |



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Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03061 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                      |       |      | Client I.D.      | MW7-13             | MW12         | MW14         | MW15         |
|--------------------------------------|-------|------|------------------|--------------------|--------------|--------------|--------------|
|                                      |       |      | Sample I.D.      | B23-03061-8        | B23-03061-11 | B23-03061-12 | B23-03061-13 |
|                                      |       |      | Date Collected   | 19-Apr-23          | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter                            | Units | R.L. | Reference Method | Date/Site Analyzed |              |              |              |
| Methyl Ethyl Ketone                  | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20         | < 20         | < 20         |
| Methyl-t-butyl Ether                 | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2          | < 2          | < 2          |
| Methyl Isobutyl Ketone               | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20         | < 20         | < 20         |
| Dichloromethane (Methylene Chloride) | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5          | < 5          | < 5          |
| Xylene, m,p-                         | µg/L  | 1.0  | EPA 8260         | 26-Apr-23/R        | 23.1         | < 1.0        | < 1.0        |
| Xylene, o-                           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | 2.7          | < 0.5        | < 0.5        |
| Xylene, m,p,o-                       | µg/L  | 1.1  | EPA 8260         | 26-Apr-23/R        | 25.8         | < 1.1        | < 1.1        |
| Styrene                              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichloroethene, trans-1,2-           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichloropropene, trans-1,3-          | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Trichloroethylene                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Trichlorofluoromethane               | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5          | < 5          | < 5          |
| Toluene                              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Tetrachloroethylene                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Vinyl Chloride                       | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2        | < 0.2        | < 0.2        |



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Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                          |       |      | Client I.D.      | MW15A              | MW15B        | MW16         | DUP-5        |
|------------------------------------------|-------|------|------------------|--------------------|--------------|--------------|--------------|
|                                          |       |      | Sample I.D.      | B23-03061-14       | B23-03061-15 | B23-03061-16 | B23-03061-29 |
|                                          |       |      | Date Collected   | 19-Apr-23          | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter                                | Units | R.L. | Reference Method | Date/Site Analyzed |              |              |              |
| Dichloroethane, 1,1-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichloroethylene, 1,1-                   | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichloroethane, 1,2-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichlorobenzene, 1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichloropropane, 1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichlorobenzene, 1,3-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichlorobenzene, 1,4-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Tetrachloroethane, 1,1,1,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Tetrachloroethane, 1,1,2,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Trichloroethane, 1,1,1-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Trichloroethane, 1,1,2-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Trichlorobenzene, 1,2,4-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Acetone                                  | µg/L  | 30   | EPA 8260         | 26-Apr-23/R        | < 30         | < 30         | < 30         |
| Bromodichloromethane                     | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2          | < 2          | < 2          |
| Bromomethane                             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Bromoform                                | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5          | < 5          | < 5          |
| Benzene                                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichloroethene, cis-1,2-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichloropropene, cis-1,3-                | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Carbon Tetrachloride                     | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2        | < 0.2        | < 0.2        |
| Monochlorobenzene (Chlorobenzene)        | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Chloroform                               | µg/L  | 1    | EPA 8260         | 26-Apr-23/R        | < 1          | < 1          | < 1          |
| Dibromochloromethane                     | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2          | < 2          | < 2          |
| Ethylbenzene                             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dibromoethane, 1,2- (Ethylene Dibromide) | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2        | < 0.2        | < 0.2        |



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**C.O.C.: ---**

**REPORT No. B23-03061 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                      |       |      | Client I.D.      | MW15A              | MW15B        | MW16         | DUP-5        |
|--------------------------------------|-------|------|------------------|--------------------|--------------|--------------|--------------|
|                                      |       |      | Sample I.D.      | B23-03061-14       | B23-03061-15 | B23-03061-16 | B23-03061-29 |
|                                      |       |      | Date Collected   | 19-Apr-23          | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter                            | Units | R.L. | Reference Method | Date/Site Analyzed |              |              |              |
| Methyl Ethyl Ketone                  | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20         | < 20         | < 20         |
| Methyl-t-butyl Ether                 | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2          | < 2          | < 2          |
| Methyl Isobutyl Ketone               | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20         | < 20         | < 20         |
| Dichloromethane (Methylene Chloride) | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5          | < 5          | < 5          |
| Xylene, m,p-                         | µg/L  | 1.0  | EPA 8260         | 26-Apr-23/R        | < 1.0        | < 1.0        | < 1.0        |
| Xylene, o-                           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Xylene, m,p,o-                       | µg/L  | 1.1  | EPA 8260         | 26-Apr-23/R        | < 1.1        | < 1.1        | < 1.1        |
| Styrene                              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichloroethene, trans-1,2-           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Dichloropropene, trans-1,3-          | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Trichloroethylene                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Trichlorofluoromethane               | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5          | < 5          | < 5          |
| Toluene                              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Tetrachloroethylene                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5        | < 0.5        | < 0.5        |
| Vinyl Chloride                       | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2        | < 0.2        | < 0.2        |



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**REPORT No. B23-03061 (iii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                        |       |       | Client I.D.      | MW7-13             | MW15         | MW15A        | MW15B        |
|----------------------------------------|-------|-------|------------------|--------------------|--------------|--------------|--------------|
|                                        |       |       | Sample I.D.      | B23-03061-8        | B23-03061-13 | B23-03061-14 | B23-03061-15 |
|                                        |       |       | Date Collected   | 19-Apr-23          | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter                              | Units | R.L.  | Reference Method | Date/Site Analyzed |              |              |              |
| Poly-Chlorinated Biphenyls (PCB's)     | µg/L  | 0.05  | EPA 8082         | 27-Apr-23/K        | < 0.05       | < 0.05       | < 0.05       |
| Aroclor                                | -     |       | -                | 27-Apr-23          | -            | -            | -            |
| Aldrin                                 | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        | < 0.01       |              |              |
| Chlordane (alpha)                      | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        | < 0.05       |              |              |
| Chlordane (Gamma)                      | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        | < 0.05       |              |              |
| Chlordane Total (alpha+gamma)          | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        | < 0.05       |              |              |
| DDD, 2,4-                              | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        | < 0.05       |              |              |
| DDD, 4,4-                              | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        | < 0.05       |              |              |
| DDD Total Water                        | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        | < 0.05       |              |              |
| DDE, 2,4-                              | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        | < 0.01       |              |              |
| DDE, 4,4-                              | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        | < 0.01       |              |              |
| DDE Total water                        | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        | < 0.01       |              |              |
| DDT, 2,4-                              | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        | < 0.05       |              |              |
| DDT, 4,4-                              | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        | < 0.05       |              |              |
| DDT Total water                        | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        | < 0.05       |              |              |
| Dieldrin                               | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        | < 0.01       |              |              |
| Lindane (Hexachlorocyclohexane, Gamma) | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        | < 0.01       |              |              |
| Endosulfan I                           | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        | < 0.05       |              |              |
| Endosulfan II                          | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        | < 0.05       |              |              |
| Endosulfan I/II                        | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        | < 0.05       |              |              |
| Endrin                                 | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        | < 0.05       |              |              |
| Heptachlor                             | µg/L  | 0.004 | EPA 8080         | 28-Apr-23/K        | < 0.004      |              |              |
| Heptachlor Epoxide                     | µg/L  | 0.006 | EPA 8080         | 28-Apr-23/K        | < 0.006      |              |              |



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**REPORT No. B23-03061 (iii)**

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Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                     |       |       | Client I.D.      | MW7-13             | MW15         | MW15A        | MW15B        |
|---------------------|-------|-------|------------------|--------------------|--------------|--------------|--------------|
|                     |       |       | Sample I.D.      | B23-03061-8        | B23-03061-13 | B23-03061-14 | B23-03061-15 |
|                     |       |       | Date Collected   | 19-Apr-23          | 19-Apr-23    | 19-Apr-23    | 19-Apr-23    |
| Parameter           | Units | R.L.  | Reference Method | Date/Site Analyzed |              |              |              |
| Hexachlorobenzene   | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        | < 0.01       |              |              |
| Hexachlorobutadiene | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        | < 0.01       |              |              |
| Hexachloroethane    | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        | < 0.01       |              |              |
| Methoxychlor        | µg/L  | 0.009 | EPA 8080         | 28-Apr-23/K        | < 0.009      |              |              |



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Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                        |       |       | Client I.D.      | MW16               |        |  |  |
|----------------------------------------|-------|-------|------------------|--------------------|--------|--|--|
|                                        |       |       | Sample I.D.      | B23-03061-16       |        |  |  |
|                                        |       |       | Date Collected   | 19-Apr-23          |        |  |  |
| Parameter                              | Units | R.L.  | Reference Method | Date/Site Analyzed |        |  |  |
| Poly-Chlorinated Biphenyls (PCB's)     | µg/L  | 0.05  | EPA 8082         | 27-Apr-23/K        | < 0.05 |  |  |
| Aroclor                                | -     |       | -                | 27-Apr-23          | -      |  |  |
| Aldrin                                 | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| Chlordane (alpha)                      | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| Chlordane (Gamma)                      | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| Chlordane Total (alpha+gamma)          | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| DDD, 2,4-                              | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| DDD, 4,4-                              | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| DDD Total Water                        | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| DDE, 2,4-                              | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| DDE, 4,4-                              | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| DDE Total water                        | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| DDT, 2,4-                              | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| DDT, 4,4-                              | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| DDT Total water                        | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| Dieldrin                               | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| Lindane (Hexachlorocyclohexane, Gamma) | µg/L  | 0.01  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| Endosulfan I                           | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| Endosulfan II                          | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| Endosulfan I/II                        | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| Endrin                                 | µg/L  | 0.05  | EPA 8080         | 28-Apr-23/K        |        |  |  |
| Heptachlor                             | µg/L  | 0.004 | EPA 8080         | 28-Apr-23/K        |        |  |  |
| Heptachlor Epoxide                     | µg/L  | 0.006 | EPA 8080         | 28-Apr-23/K        |        |  |  |



R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an \*

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03061 (iii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 19-Apr-23

JOB/PROJECT NO.: Fenelon WDS

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                     |              |             | <b>Client I.D.</b>      | MW16                      |  |  |  |  |
|---------------------|--------------|-------------|-------------------------|---------------------------|--|--|--|--|
|                     |              |             | <b>Sample I.D.</b>      | B23-03061-16              |  |  |  |  |
|                     |              |             | <b>Date Collected</b>   | 19-Apr-23                 |  |  |  |  |
| <b>Parameter</b>    | <b>Units</b> | <b>R.L.</b> | <b>Reference Method</b> | <b>Date/Site Analyzed</b> |  |  |  |  |
| Hexachlorobenzene   | µg/L         | 0.01        | EPA 8080                | 28-Apr-23/K               |  |  |  |  |
| Hexachlorobutadiene | µg/L         | 0.01        | EPA 8080                | 28-Apr-23/K               |  |  |  |  |
| Hexachloroethane    | µg/L         | 0.01        | EPA 8080                | 28-Apr-23/K               |  |  |  |  |
| Methoxychlor        | µg/L         | 0.009       | EPA 8080                | 28-Apr-23/K               |  |  |  |  |



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Steve Garrett

Director of Laboratory Services

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**C.O.C.:** ---

**REPORT No. B23-03063 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 07-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                         |          |        | Client I.D.               | WP6-13             | WP6-13F     |          |  |
|-----------------------------------------|----------|--------|---------------------------|--------------------|-------------|----------|--|
|                                         |          |        | Sample I.D.               | B23-03063-1        | B23-03063-2 |          |  |
|                                         |          |        | Date Collected            | 19-Apr-23          | 19-Apr-23   |          |  |
| Parameter                               | Units    | R.L.   | Reference Method          | Date/Site Analyzed |             |          |  |
| Alkalinity(CaCO <sub>3</sub> ) to pH4.5 | mg/L     | 5      | SM 2320B                  | 25-Apr-23/O        | 320         | 323      |  |
| Conductivity @25°C                      | µmho/cm  | 1      | SM 2510B                  | 25-Apr-23/O        | 702         | 704      |  |
| pH @25°C                                | pH Units |        | SM 4500H                  | 25-Apr-23/O        | 7.93        | 7.95     |  |
| Colour                                  | TCU      | 2      | SM 2120C                  | 25-Apr-23/O        | 11          | 10       |  |
| Turbidity                               | NTU      | 0.1    | SM 2130                   | 25-Apr-23/O        | 1180        | 15.9     |  |
| TDS(ion sum calc.)                      | mg/L     | 1      | Calc.                     | 25-Apr-23/O        | 781         | 373      |  |
| Total Suspended Solids                  | mg/L     | 3      | SM2540D                   | 27-Apr-23/K        | 10000       | 222      |  |
| Dissolved Organic Carbon                | mg/L     | 0.2    | EPA 415.2                 | 25-Apr-23/O        | 8.7         | 8.8      |  |
| BOD(5 day)                              | mg/L     | 3      | SM 5210B                  | 25-Apr-23/K        | < 3         | < 3      |  |
| COD                                     | mg/L     | 5      | SM5220C                   | 25-Apr-23/K        | 117         | 17       |  |
| Phenolics                               | mg/L     | 0.001  | MOEE 3179                 | 28-Apr-23/K        | < 0.001     | 0.001    |  |
| Cyanide (Free)                          | mg/L     | 0.005  | SM 4500CN                 | 27-Apr-23/K        | < 0.005     | < 0.005  |  |
| Chloride                                | mg/L     | 0.5    | SM4110C                   | 25-Apr-23/O        | 28.9        | 28.8     |  |
| Fluoride                                | mg/L     | 0.1    | SM4110C                   | 25-Apr-23/O        | < 0.1       | < 0.1    |  |
| Ammonia (N)-Total                       | mg/L     | 0.01   | SM4500-NH <sub>3</sub> -H | 04-May-23/K        | 0.02        | 0.31     |  |
| Ammonia (N)-unionized                   | mg/L     | 0.01   | CALC                      | 04-May-23/K        | < 0.01      | 0.01     |  |
| Sulphate                                | mg/L     | 1      | SM4110C                   | 25-Apr-23/O        | 5           | 5        |  |
| Nitrite (N)                             | mg/L     | 0.05   | SM4110C                   | 25-Apr-23/O        | < 0.05      | < 0.05   |  |
| Nitrate (N)                             | mg/L     | 0.05   | SM4110C                   | 25-Apr-23/O        | < 0.05      | < 0.05   |  |
| Total Kjeldahl Nitrogen                 | mg/L     | 0.1    | E3516.2                   | 08-May-23/K        | 0.9         | 0.6      |  |
| Hardness (as CaCO <sub>3</sub> )        | mg/L     | 1      | SM 3120                   | 26-Apr-23/O        | 1300        | 352      |  |
| Aluminum (total)                        | mg/L     | 0.01   | SM 3120                   | 26-Apr-23/O        | 11.7        | 0.04     |  |
| Antimony                                | mg/L     | 0.0001 | EPA 200.8                 | 03-May-23/O        | 0.0003      | 0.0002   |  |
| Arsenic                                 | mg/L     | 0.0001 | EPA 200.8                 | 03-May-23/O        | 0.0022      | < 0.0001 |  |
| Barium                                  | mg/L     | 0.001  | SM 3120                   | 26-Apr-23/O        | 0.435       | 0.185    |  |
| Beryllium                               | mg/L     | 0.002  | SM 3120                   | 26-Apr-23/O        | < 0.002     | < 0.002  |  |
| Boron                                   | mg/L     | 0.005  | SM 3120                   | 26-Apr-23/O        | 0.047       | 0.018    |  |



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Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03063 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 07-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                  |       |          | Client I.D.      | WP6-13             | WP6-13F     |            |  |
|------------------|-------|----------|------------------|--------------------|-------------|------------|--|
|                  |       |          | Sample I.D.      | B23-03063-1        | B23-03063-2 |            |  |
|                  |       |          | Date Collected   | 19-Apr-23          | 19-Apr-23   |            |  |
| Parameter        | Units | R.L.     | Reference Method | Date/Site Analyzed |             |            |  |
| Cadmium          | mg/L  | 0.000015 | EPA 200.8        | 03-May-23/O        | 0.000154    | < 0.000015 |  |
| Calcium          | mg/L  | 0.02     | SM 3120          | 26-Apr-23/O        | 479         | 124        |  |
| Chromium         | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | 0.023       | < 0.001    |  |
| Chromium (VI)    | mg/L  | 0.001    | MOE E3056        | 05-May-23/O        | < 0.001     | < 0.001    |  |
| Cobalt           | mg/L  | 0.0001   | EPA 200.8        | 03-May-23/O        | 0.0122      | 0.0002     |  |
| Copper           | mg/L  | 0.0001   | EPA 200.8        | 03-May-23/O        | 0.0506      | 0.0002     |  |
| Iron             | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | 37.6        | 2.04       |  |
| Lead             | mg/L  | 0.00002  | EPA 200.8        | 03-May-23/O        | 0.0141      | < 0.00002  |  |
| Magnesium        | mg/L  | 0.02     | SM 3120          | 26-Apr-23/O        | 25.5        | 10.3       |  |
| Manganese        | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | 0.611       | 0.083      |  |
| Mercury          | mg/L  | 0.00002  | SM 3112 B        | 28-Apr-23/O        | < 0.00002   | < 0.00002  |  |
| Molybdenum       | mg/L  | 0.0001   | EPA 200.8        | 03-May-23/O        | < 0.0001    | < 0.0001   |  |
| Nickel           | mg/L  | 0.01     | SM 3120          | 26-Apr-23/O        | 0.02        | < 0.01     |  |
| Potassium        | mg/L  | 0.1      | SM 3120          | 26-Apr-23/O        | 4.7         | 1.9        |  |
| Phosphorus-Total | mg/L  | 0.01     | E3516.2          | 08-May-23/K        | 2.76        | 0.03       |  |
| Phosphorus       | mg/L  | 0.1      | SM 3120          | 26-Apr-23/O        | 2.2         | < 0.1      |  |
| Selenium         | mg/L  | 0.001    | EPA 200.8        | 03-May-23/O        | 0.002       | < 0.001    |  |
| Silver           | mg/L  | 0.0001   | EPA 200.8        | 03-May-23/O        | 0.0002      | < 0.0001   |  |
| Sodium           | mg/L  | 0.2      | SM 3120          | 26-Apr-23/O        | 8.3         | 7.6        |  |
| Strontium        | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | 1.02        | 0.439      |  |
| Tin              | mg/L  | 0.05     | SM 3120          | 26-Apr-23/O        | < 0.05      | < 0.05     |  |
| Titanium         | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | 0.973       | < 0.005    |  |
| Thallium         | mg/L  | 0.00005  | EPA 200.8        | 03-May-23/O        | 0.00021     | < 0.00005  |  |
| Uranium          | mg/L  | 0.00005  | EPA 200.8        | 03-May-23/O        | 0.00116     | < 0.00005  |  |
| Vanadium         | mg/L  | 0.0001   | EPA 200.8        | 03-May-23/O        | 0.0467      | 0.0006     |  |
| Zinc             | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | 0.057       | 0.008      |  |
| Anion Sum        | meq/L |          | Calc.            | 25-Apr-23/O        | 7.31        | 7.37       |  |



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Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03063 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 07-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |         |      | Client I.D.      | WP6-13             | WP6-13F           |       |  |
|-------------------------|---------|------|------------------|--------------------|-------------------|-------|--|
|                         |         |      | Sample I.D.      | B23-03063-1        | B23-03063-2       |       |  |
|                         |         |      | Date Collected   | 19-Apr-23          | 19-Apr-23         |       |  |
| Parameter               | Units   | R.L. | Reference Method | Date/Site Analyzed |                   |       |  |
| Cation Sum              | meq/L   |      | Calc.            | 25-Apr-23/O        | 28.5              | 7.52  |  |
| % Difference            | %       |      | Calc.            | 25-Apr-23/O        | 59.2 <sup>2</sup> | 0.995 |  |
| Ion Ratio               | AS/CS   |      | Calc.            | 25-Apr-23/O        | 0.256             | 0.980 |  |
| Conductivity (calc.)    | µmho/cm |      | Calc.            | 25-Apr-23/O        | 1517              | 683   |  |
| Sodium Adsorption Ratio | -       |      | Calc.            | 25-Apr-23/O        | 0.0999            | 0.176 |  |
| TDS(calc.)/EC(actual)   | -       |      | Calc.            | 25-Apr-23/O        | 1.11              | 0.530 |  |
| Langelier Index(25°C)   | S.I.    |      | Calc.            | 25-Apr-23/O        | 1.63              | 1.10  |  |

1 Chromium (VI) result is based on total Chromium

2 Outside of 15% Acceptance Criteria



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Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03063 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 07-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                          |       |      | Client I.D.      | WP6-13             |       |  |  |
|------------------------------------------|-------|------|------------------|--------------------|-------|--|--|
|                                          |       |      | Sample I.D.      | B23-03063-1        |       |  |  |
|                                          |       |      | Date Collected   | 19-Apr-23          |       |  |  |
| Parameter                                | Units | R.L. | Reference Method | Date/Site Analyzed |       |  |  |
| Dichloroethane, 1,1-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloroethylene, 1,1-                   | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloroethane, 1,2-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichlorobenzene, 1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloropropane, 1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichlorobenzene, 1,3-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichlorobenzene, 1,4-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Tetrachloroethane, 1,1,1,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Tetrachloroethane, 1,1,2,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Trichloroethane, 1,1,1-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Trichloroethane, 1,1,2-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Trichlorobenzene, 1,2,4-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Acetone                                  | µg/L  | 30   | EPA 8260         | 26-Apr-23/R        | < 30  |  |  |
| Bromodichloromethane                     | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2   |  |  |
| Bromomethane                             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Bromoform                                | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5   |  |  |
| Benzene                                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloroethene, cis-1,2-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloropropene, cis-1,3-                | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Carbon Tetrachloride                     | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2 |  |  |
| Monochlorobenzene (Chlorobenzene)        | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Chloroform                               | µg/L  | 1    | EPA 8260         | 26-Apr-23/R        | < 1   |  |  |
| Dibromochloromethane                     | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2   |  |  |
| Ethylbenzene                             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dibromoethane, 1,2- (Ethylene Dibromide) | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2 |  |  |
| Methyl Ethyl Ketone                      | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20  |  |  |



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Steve Garrett

Director of Laboratory Services

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**REPORT No. B23-03063 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 07-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                      |       |      | Client I.D.      | WP6-13             |       |  |  |
|--------------------------------------|-------|------|------------------|--------------------|-------|--|--|
|                                      |       |      | Sample I.D.      | B23-03063-1        |       |  |  |
|                                      |       |      | Date Collected   | 19-Apr-23          |       |  |  |
| Parameter                            | Units | R.L. | Reference Method | Date/Site Analyzed |       |  |  |
| Methyl-t-butyl Ether                 | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2   |  |  |
| Methyl Isobutyl Ketone               | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20  |  |  |
| Dichloromethane (Methylene Chloride) | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5   |  |  |
| Xylene, m,p-                         | µg/L  | 1.0  | EPA 8260         | 26-Apr-23/R        | < 1.0 |  |  |
| Xylene, o-                           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Xylene, m,p,o-                       | µg/L  | 1.1  | EPA 8260         | 26-Apr-23/R        | < 1.1 |  |  |
| Styrene                              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloroethene, trans-1,2-           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloropropene, trans-1,3-          | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Trichloroethylene                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Trichlorofluoromethane               | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5   |  |  |
| Toluene                              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Tetrachloroethylene                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Vinyl Chloride                       | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2 |  |  |



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Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03068 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

| Parameter                               | Units    | R.L.   | Client I.D.               |                    | MW26        | MW26-1      | MW26-2      | MW27-1      |
|-----------------------------------------|----------|--------|---------------------------|--------------------|-------------|-------------|-------------|-------------|
|                                         |          |        | Sample I.D.               |                    | B23-03068-1 | B23-03068-2 | B23-03068-3 | B23-03068-4 |
|                                         |          |        | Date Collected            |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
|                                         |          |        | Reference Method          | Date/Site Analyzed |             |             |             |             |
| Alkalinity(CaCO <sub>3</sub> ) to pH4.5 | mg/L     | 5      | SM 2320B                  | 25-Apr-23/O        | 289         | 329         | 387         | 173         |
| Conductivity @25°C                      | µmho/cm  | 1      | SM 2510B                  | 25-Apr-23/O        | 686         | 760         | 849         | 8480        |
| pH @25°C                                | pH Units |        | SM 4500H                  | 25-Apr-23/O        | 8.09        | 7.96        | 7.94        | 7.76        |
| Colour                                  | TCU      | 2      | SM 2120C                  | 25-Apr-23/O        | 3           | 7           | 6           | < 2         |
| Turbidity                               | NTU      | 0.1    | SM 2130                   | 25-Apr-23/O        | 856         | 12.0        | 42.8        | 10.1        |
| TDS(ion sum calc.)                      | mg/L     | 1      | Calc.                     | 27-Apr-23/O        | 383         | 422         | 475         | 4626        |
| Total Suspended Solids                  | mg/L     | 3      | SM2540D                   | 26-Apr-23/K        | 30500       | 17          | 9           | 16          |
| Dissolved Organic Carbon                | mg/L     | 0.2    | EPA 415.2                 | 25-Apr-23/O        | 2.4         | 2.1         | 3.5         | < 0.2       |
| BOD(5 day)                              | mg/L     | 3      | SM 5210B                  | 28-Apr-23/K        | < 3         | < 3         | < 3         | < 3         |
| COD                                     | mg/L     | 5      | SM5220C                   | 26-Apr-23/K        | 34          | 15          | 17          | 129         |
| Phenolics                               | mg/L     | 0.001  | MOEE 3179                 | 28-Apr-23/K        | < 0.001     | < 0.001     | < 0.001     | < 0.001     |
| Cyanide (Free)                          | mg/L     | 0.005  | SM 4500CN                 | 27-Apr-23/K        | < 0.005     | < 0.005     | < 0.005     | < 0.005     |
| Chloride                                | mg/L     | 0.5    | SM4110C                   | 26-Apr-23/O        | 39.8        | 47.0        | 48.3        | 2920        |
| Fluoride                                | mg/L     | 0.1    | SM4110C                   | 26-Apr-23/O        | < 0.1       | < 0.1       | < 0.1       | < 0.1       |
| Ammonia (N)-Total                       | mg/L     | 0.01   | SM4500-NH <sub>3</sub> -H | 04-May-23/K        | 0.06        | 0.36        | 0.29        | 6.66        |
| Ammonia (N)-unionized                   | mg/L     | 0.01   | CALC                      | 04-May-23/K        | < 0.01      | < 0.01      | < 0.01      | 0.01        |
| Sulphate                                | mg/L     | 1      | SM4110C                   | 26-Apr-23/O        | 17          | 8           | < 1         | < 1         |
| Nitrite (N)                             | mg/L     | 0.05   | SM4110C                   | 26-Apr-23/O        | < 0.05      | < 0.05      | < 0.05      | < 0.05      |
| Nitrate (N)                             | mg/L     | 0.05   | SM4110C                   | 26-Apr-23/O        | < 0.05      | < 0.05      | < 0.05      | < 0.05      |
| Total Kjeldahl Nitrogen                 | mg/L     | 0.1    | E3516.2                   | 11-May-23/K        | 0.3         | 0.5         | 0.6         | 9.4         |
| Hardness (as CaCO <sub>3</sub> )        | mg/L     | 1      | SM 3120                   | 27-Apr-23/O        | 346         | 379         | 430         | 1690        |
| Aluminum                                | mg/L     | 0.01   | SM 3120                   | 27-Apr-23/O        | 0.03        | 0.03        | 0.04        | 0.08        |
| Antimony                                | mg/L     | 0.0001 | EPA 200.8                 | 27-Apr-23/O        | < 0.0001    | < 0.0001    | < 0.0001    | 0.0003      |
| Arsenic                                 | mg/L     | 0.0001 | EPA 200.8                 | 27-Apr-23/O        | < 0.0001    | < 0.0001    | < 0.0001    | < 0.0005    |
| Barium                                  | mg/L     | 0.001  | SM 3120                   | 27-Apr-23/O        | 0.173       | 0.208       | 0.207       | 2.07        |
| Beryllium                               | mg/L     | 0.002  | SM 3120                   | 27-Apr-23/O        | < 0.002     | < 0.002     | < 0.002     | < 0.002     |
| Boron                                   | mg/L     | 0.005  | SM 3120                   | 27-Apr-23/O        | 0.049       | 0.057       | 0.046       | 1.12        |



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Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03068 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                  |       |          | Client I.D.      |                    | MW26                 | MW26-1               | MW26-2      | MW27-1               |
|------------------|-------|----------|------------------|--------------------|----------------------|----------------------|-------------|----------------------|
|                  |       |          | Sample I.D.      |                    | B23-03068-1          | B23-03068-2          | B23-03068-3 | B23-03068-4          |
|                  |       |          | Date Collected   |                    | 19-Apr-23            | 19-Apr-23            | 19-Apr-23   | 19-Apr-23            |
| Parameter        | Units | R.L.     | Reference Method | Date/Site Analyzed |                      |                      |             |                      |
| Cadmium          | mg/L  | 0.000010 | EPA 200.8        | 27-Apr-23/O        | < 0.000010           | < 0.000010           | < 0.000010  | < 0.000059           |
| Calcium          | mg/L  | 0.02     | SM 3120          | 27-Apr-23/O        | 120                  | 130                  | 150         | 361                  |
| Chromium         | mg/L  | 0.001    | SM 3120          | 27-Apr-23/O        | < 0.001              | < 0.001              | < 0.001     | < 0.001              |
| Chromium (VI)    | mg/L  | 0.001    | MOE E3056        | 28-Apr-23/O        | < 0.001 <sup>1</sup> | < 0.001 <sup>1</sup> | < 0.001     | < 0.001 <sup>1</sup> |
| Cobalt           | mg/L  | 0.005    | SM 3120          | 27-Apr-23/O        | < 0.005              | < 0.005              | < 0.005     | 0.006                |
| Copper           | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | 0.0003               | 0.0003               | 0.0005      | 0.0004               |
| Iron             | mg/L  | 0.005    | SM 3120          | 27-Apr-23/O        | 0.730                | 1.31                 | 3.59        | 0.635                |
| Lead             | mg/L  | 0.00002  | EPA 200.8        | 27-Apr-23/O        | < 0.00002            | < 0.00002            | < 0.00002   | < 0.0002             |
| Magnesium        | mg/L  | 0.02     | SM 3120          | 27-Apr-23/O        | 11.4                 | 13.3                 | 13.0        | 193                  |
| Manganese        | mg/L  | 0.001    | SM 3120          | 27-Apr-23/O        | 0.038                | 0.062                | 0.097       | 0.013                |
| Mercury          | mg/L  | 0.00002  | SM 3112 B        | 01-May-23/O        | < 0.00002            | < 0.00002            | < 0.00002   | < 0.00002            |
| Molybdenum       | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | 0.0002               | 0.0001               | 0.0001      | < 0.0004             |
| Nickel           | mg/L  | 0.01     | SM 3120          | 27-Apr-23/O        | < 0.01               | < 0.01               | 0.01        | < 0.01               |
| Potassium        | mg/L  | 0.1      | SM 3120          | 27-Apr-23/O        | 3.0                  | 3.0                  | 2.7         | 51.9                 |
| Phosphorus-Total | mg/L  | 0.01     | E3516.2          | 11-May-23/K        | 2.10                 | 0.02                 | 0.02        | 0.02                 |
| Phosphorus       | mg/L  | 0.1      | SM 3120          | 27-Apr-23/O        | < 0.1                | < 0.1                | < 0.1       | < 0.1                |
| Selenium         | mg/L  | 0.001    | EPA 200.8        | 27-Apr-23/O        | < 0.001              | < 0.001              | < 0.001     | < 0.002              |
| Silver           | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | < 0.0001             | < 0.0001             | < 0.0001    | < 0.0002             |
| Sodium           | mg/L  | 0.2      | SM 3120          | 27-Apr-23/O        | 18.6                 | 22.9                 | 24.3        | 995                  |
| Strontium        | mg/L  | 0.001    | SM 3120          | 27-Apr-23/O        | 0.408                | 0.556                | 0.632       | 31.2                 |
| Tin              | mg/L  | 0.05     | SM 3120          | 27-Apr-23/O        | < 0.05               | < 0.05               | < 0.05      | < 0.05               |
| Thallium         | mg/L  | 0.00005  | EPA 200.8        | 27-Apr-23/O        | < 0.00005            | < 0.00005            | < 0.00005   | 0.00007              |
| Titanium         | mg/L  | 0.005    | SM 3120          | 27-Apr-23/O        | < 0.005              | < 0.005              | < 0.005     | < 0.005              |
| Uranium          | mg/L  | 0.00005  | EPA 200.8        | 27-Apr-23/O        | 0.00031              | 0.00010              | 0.00005     | 0.00007              |
| Vanadium         | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | 0.0002               | 0.0004               | 0.0007      | < 0.0007             |
| Zinc             | mg/L  | 0.005    | SM 3120          | 27-Apr-23/O        | < 0.005              | < 0.005              | < 0.005     | < 0.005              |
| Anion Sum        | meq/L |          | Calc.            | 27-Apr-23/O        | 7.25                 | 8.06                 | 9.09        | 85.8                 |



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**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |         |      | Client I.D.      |                    | MW26        | MW26-1      | MW26-2      | MW27-I      |
|-------------------------|---------|------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                         |         |      | Sample I.D.      |                    | B23-03068-1 | B23-03068-2 | B23-03068-3 | B23-03068-4 |
|                         |         |      | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter               | Units   | R.L. | Reference Method | Date/Site Analyzed |             |             |             |             |
| Cation Sum              | meq/L   |      | Calc.            | 27-Apr-23/O        | 7.84        | 8.70        | 9.90        | 78.5        |
| % Difference            | %       |      | Calc.            | 27-Apr-23/O        | 3.93        | 3.84        | 4.27        | 4.47        |
| Ion Ratio               | AS/CS   |      | Calc.            | 27-Apr-23/O        | 0.924       | 0.926       | 0.918       | 1.09        |
| Conductivity (calc.)    | µmho/cm |      | Calc.            | 27-Apr-23/O        | 709         | 778         | 862         | 7363        |
| Sodium Adsorption Ratio | -       |      | Calc.            | 27-Apr-23/O        | 0.436       | 0.512       | 0.510       | 10.5        |
| TDS(calc.)/EC(actual)   | -       |      | Calc.            | 27-Apr-23/O        | 0.559       | 0.556       | 0.559       | 0.545       |
| Langelier Index(25°C)   | S.I.    |      | Calc.            | 27-Apr-23/O        | 1.18        | 1.13        | 1.24        | 1.00        |

1 Chromium (VI) result is based on total Chromium



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Barrie ON L4N 8W8

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DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                         |          |        | Client I.D.               |                    | MW27-II     | MW27-III    | MW28-I      | MW28-II     |
|-----------------------------------------|----------|--------|---------------------------|--------------------|-------------|-------------|-------------|-------------|
|                                         |          |        | Sample I.D.               |                    | B23-03068-5 | B23-03068-6 | B23-03068-7 | B23-03068-8 |
|                                         |          |        | Date Collected            |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter                               | Units    | R.L.   | Reference Method          | Date/Site Analyzed |             |             |             |             |
| Alkalinity(CaCO <sub>3</sub> ) to pH4.5 | mg/L     | 5      | SM 2320B                  | 25-Apr-23/O        | 217         | 194         | 220         | 234         |
| Conductivity @25°C                      | µmho/cm  | 1      | SM 2510B                  | 25-Apr-23/O        | 471         | 481         | 545         | 557         |
| pH @25°C                                | pH Units |        | SM 4500H                  | 25-Apr-23/O        | 8.10        | 8.09        | 8.06        | 8.05        |
| Colour                                  | TCU      | 2      | SM 2120C                  | 25-Apr-23/O        | < 2         | 2           | < 2         | < 2         |
| Turbidity                               | NTU      | 0.1    | SM 2130                   | 25-Apr-23/O        | 64.0        | 8080        | 13.4        | 1430        |
| TDS(ion sum calc.)                      | mg/L     | 1      | Calc.                     | 27-Apr-23/O        | 261         | 262         | 297         | 311         |
| Total Suspended Solids                  | mg/L     | 3      | SM2540D                   | 26-Apr-23/K        | 267         | 6920        | 13          | 26500       |
| Dissolved Organic Carbon                | mg/L     | 0.2    | EPA 415.2                 | 25-Apr-23/O        | 1.4         | 1.2         | 1.4         | 1.0         |
| BOD(5 day)                              | mg/L     | 3      | SM 5210B                  | 28-Apr-23/K        | < 3         | < 3         | < 3         | < 3         |
| COD                                     | mg/L     | 5      | SM5220C                   | 26-Apr-23/K        | < 5         | 246         | 10          | 79          |
| Phenolics                               | mg/L     | 0.001  | MOEE 3179                 | 28-Apr-23/K        | < 0.001     | < 0.001     | < 0.001     | < 0.001     |
| Cyanide (Free)                          | mg/L     | 0.005  | SM 4500CN                 | 27-Apr-23/K        | < 0.005     | < 0.005     | < 0.005     | < 0.005     |
| Chloride                                | mg/L     | 0.5    | SM4110C                   | 26-Apr-23/O        | 12.5        | 24.1        | 32.0        | 28.9        |
| Fluoride                                | mg/L     | 0.1    | SM4110C                   | 26-Apr-23/O        | < 0.1       | < 0.1       | < 0.1       | < 0.1       |
| Ammonia (N)-Total                       | mg/L     | 0.01   | SM4500-NH <sub>3</sub> -H | 04-May-23/K        | 0.06        | 0.45        | 0.15        | 0.98        |
| Ammonia (N)-unionized                   | mg/L     | 0.01   | CALC                      | 04-May-23/K        | < 0.01      | < 0.01      | < 0.01      | < 0.01      |
| Sulphate                                | mg/L     | 1      | SM4110C                   | 26-Apr-23/O        | 14          | 20          | 15          | 15          |
| Nitrite (N)                             | mg/L     | 0.05   | SM4110C                   | 26-Apr-23/O        | < 0.05      | < 0.05      | < 0.05      | < 0.05      |
| Nitrate (N)                             | mg/L     | 0.05   | SM4110C                   | 26-Apr-23/O        | 0.58        | < 0.05      | < 0.05      | < 0.05      |
| Total Kjeldahl Nitrogen                 | mg/L     | 0.1    | E3516.2                   | 11-May-23/K        | 0.2         | 3.7         | 0.3         | 0.8         |
| Hardness (as CaCO <sub>3</sub> )        | mg/L     | 1      | SM 3120                   | 27-Apr-23/O        | 239         | 252         | 271         | 294         |
| Aluminum                                | mg/L     | 0.01   | SM 3120                   | 27-Apr-23/O        | 0.02        | 0.02        | 0.02        | 0.08        |
| Antimony                                | mg/L     | 0.0001 | EPA 200.8                 | 27-Apr-23/O        | < 0.0001    | < 0.0001    | < 0.0001    | < 0.0001    |
| Arsenic                                 | mg/L     | 0.0001 | EPA 200.8                 | 27-Apr-23/O        | 0.0002      | 0.0001      | < 0.0001    | 0.0003      |
| Barium                                  | mg/L     | 0.001  | SM 3120                   | 27-Apr-23/O        | 0.069       | 0.143       | 0.129       | 0.126       |
| Beryllium                               | mg/L     | 0.002  | SM 3120                   | 27-Apr-23/O        | < 0.002     | < 0.002     | < 0.002     | < 0.002     |
| Boron                                   | mg/L     | 0.005  | SM 3120                   | 27-Apr-23/O        | 0.013       | 0.009       | 0.021       | 0.019       |



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Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                  |       |          | Client I.D.      |                    | MW27-II              | MW27-III             | MW28-I               | MW28-II              |
|------------------|-------|----------|------------------|--------------------|----------------------|----------------------|----------------------|----------------------|
|                  |       |          | Sample I.D.      |                    | B23-03068-5          | B23-03068-6          | B23-03068-7          | B23-03068-8          |
|                  |       |          | Date Collected   |                    | 19-Apr-23            | 19-Apr-23            | 19-Apr-23            | 19-Apr-23            |
| Parameter        | Units | R.L.     | Reference Method | Date/Site Analyzed |                      |                      |                      |                      |
| Cadmium          | mg/L  | 0.000010 | EPA 200.8        | 27-Apr-23/O        | < 0.000010           | < 0.000010           | < 0.000010           | < 0.000010           |
| Calcium          | mg/L  | 0.02     | SM 3120          | 27-Apr-23/O        | 83.4                 | 86.7                 | 91.5                 | 104                  |
| Chromium         | mg/L  | 0.001    | SM 3120          | 27-Apr-23/O        | < 0.001              | < 0.001              | < 0.001              | < 0.001              |
| Chromium (VI)    | mg/L  | 0.001    | MOE E3056        | 28-Apr-23/O        | < 0.001 <sup>1</sup> | < 0.001 <sup>1</sup> | < 0.001 <sup>1</sup> | < 0.001 <sup>1</sup> |
| Cobalt           | mg/L  | 0.005    | SM 3120          | 27-Apr-23/O        | < 0.005              | < 0.005              | < 0.005              | < 0.005              |
| Copper           | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | 0.0005               | 0.0002               | 0.0002               | 0.0006               |
| Iron             | mg/L  | 0.005    | SM 3120          | 27-Apr-23/O        | 0.024                | 0.329                | 0.488                | 0.485                |
| Lead             | mg/L  | 0.00002  | EPA 200.8        | 27-Apr-23/O        | < 0.00002            | < 0.00002            | < 0.00002            | 0.00011              |
| Magnesium        | mg/L  | 0.02     | SM 3120          | 27-Apr-23/O        | 7.51                 | 8.60                 | 10.2                 | 8.60                 |
| Manganese        | mg/L  | 0.001    | SM 3120          | 27-Apr-23/O        | 0.005                | 0.028                | 0.023                | 0.049                |
| Mercury          | mg/L  | 0.00002  | SM 3112 B        | 01-May-23/O        | < 0.00002            | < 0.00002            | < 0.00002            | < 0.00002            |
| Molybdenum       | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | 0.0003               | 0.0005               | 0.0003               | 0.0003               |
| Nickel           | mg/L  | 0.01     | SM 3120          | 27-Apr-23/O        | < 0.01               | < 0.01               | < 0.01               | < 0.01               |
| Potassium        | mg/L  | 0.1      | SM 3120          | 27-Apr-23/O        | 1.9                  | 1.8                  | 2.4                  | 2.3                  |
| Phosphorus-Total | mg/L  | 0.01     | E3516.2          | 11-May-23/K        | 0.16                 | 7.62                 | 0.04                 | 5.63                 |
| Phosphorus       | mg/L  | 0.1      | SM 3120          | 27-Apr-23/O        | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Selenium         | mg/L  | 0.001    | EPA 200.8        | 27-Apr-23/O        | < 0.001              | < 0.001              | < 0.001              | < 0.001              |
| Silver           | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | < 0.0001             | < 0.0001             | < 0.0001             | < 0.0001             |
| Sodium           | mg/L  | 0.2      | SM 3120          | 27-Apr-23/O        | 12.3                 | 3.9                  | 13.1                 | 11.2                 |
| Strontium        | mg/L  | 0.001    | SM 3120          | 27-Apr-23/O        | 0.192                | 0.198                | 0.285                | 0.262                |
| Tin              | mg/L  | 0.05     | SM 3120          | 27-Apr-23/O        | < 0.05               | < 0.05               | < 0.05               | < 0.05               |
| Thallium         | mg/L  | 0.00005  | EPA 200.8        | 27-Apr-23/O        | < 0.00005            | < 0.00005            | < 0.00005            | < 0.00005            |
| Titanium         | mg/L  | 0.005    | SM 3120          | 27-Apr-23/O        | < 0.005              | < 0.005              | < 0.005              | < 0.005              |
| Uranium          | mg/L  | 0.00005  | EPA 200.8        | 27-Apr-23/O        | 0.00289              | < 0.00005            | 0.00013              | 0.00041              |
| Vanadium         | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | 0.0003               | < 0.0001             | < 0.0001             | 0.0002               |
| Zinc             | mg/L  | 0.005    | SM 3120          | 27-Apr-23/O        | < 0.005              | < 0.005              | < 0.005              | < 0.005              |
| Anion Sum        | meq/L |          | Calc.            | 27-Apr-23/O        | 5.01                 | 4.97                 | 5.61                 | 5.81                 |



R.L. = Reporting Limit

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Site Analyzed=K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill, B-Barrie

Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03068 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |         |      | Client I.D.      |                    | MW27-II     | MW27-III    | MW28-I      | MW28-II     |
|-------------------------|---------|------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                         |         |      | Sample I.D.      |                    | B23-03068-5 | B23-03068-6 | B23-03068-7 | B23-03068-8 |
|                         |         |      | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter               | Units   | R.L. | Reference Method | Date/Site Analyzed |             |             |             |             |
| Cation Sum              | meq/L   |      | Calc.            | 27-Apr-23/O        | 5.37        | 5.27        | 6.07        | 6.45        |
| % Difference            | %       |      | Calc.            | 27-Apr-23/O        | 3.44        | 2.87        | 3.89        | 5.27        |
| Ion Ratio               | AS/CS   |      | Calc.            | 27-Apr-23/O        | 0.933       | 0.944       | 0.925       | 0.900       |
| Conductivity (calc.)    | µmho/cm |      | Calc.            | 27-Apr-23/O        | 488         | 496         | 561         | 585         |
| Sodium Adsorption Ratio | -       |      | Calc.            | 27-Apr-23/O        | 0.345       | 0.106       | 0.347       | 0.285       |
| TDS(calc.)/EC(actual)   | -       |      | Calc.            | 27-Apr-23/O        | 0.555       | 0.544       | 0.545       | 0.558       |
| Langelier Index(25°C)   | S.I.    |      | Calc.            | 27-Apr-23/O        | 0.925       | 0.882       | 0.921       | 0.992       |

1 Chromium (VI) result is based on total Chromium



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JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                         |          |        | Client I.D.               | MW28-III           |          |  |  |
|-----------------------------------------|----------|--------|---------------------------|--------------------|----------|--|--|
|                                         |          |        | Sample I.D.               | B23-03068-9        |          |  |  |
|                                         |          |        | Date Collected            | 19-Apr-23          |          |  |  |
| Parameter                               | Units    | R.L.   | Reference Method          | Date/Site Analyzed |          |  |  |
| Alkalinity(CaCO <sub>3</sub> ) to pH4.5 | mg/L     | 5      | SM 2320B                  | 25-Apr-23/O        | 250      |  |  |
| Conductivity @25°C                      | µmho/cm  | 1      | SM 2510B                  | 25-Apr-23/O        | 635      |  |  |
| pH @25°C                                | pH Units |        | SM 4500H                  | 25-Apr-23/O        | 8.02     |  |  |
| Colour                                  | TCU      | 2      | SM 2120C                  | 25-Apr-23/O        | < 2      |  |  |
| Turbidity                               | NTU      | 0.1    | SM 2130                   | 25-Apr-23/O        | 758      |  |  |
| TDS(ion sum calc.)                      | mg/L     | 1      | Calc.                     | 27-Apr-23/O        | 361      |  |  |
| Total Suspended Solids                  | mg/L     | 3      | SM2540D                   | 26-Apr-23/K        | 4170     |  |  |
| Dissolved Organic Carbon                | mg/L     | 0.2    | EPA 415.2                 | 25-Apr-23/O        | 1.0      |  |  |
| BOD(5 day)                              | mg/L     | 3      | SM 5210B                  | 28-Apr-23/K        | < 3      |  |  |
| COD                                     | mg/L     | 5      | SM5220C                   | 26-Apr-23/K        | 36       |  |  |
| Phenolics                               | mg/L     | 0.001  | MOEE 3179                 | 28-Apr-23/K        | < 0.001  |  |  |
| Cyanide (Free)                          | mg/L     | 0.005  | SM 4500CN                 | 27-Apr-23/K        | < 0.005  |  |  |
| Chloride                                | mg/L     | 0.5    | SM4110C                   | 26-Apr-23/O        | 29.5     |  |  |
| Fluoride                                | mg/L     | 0.1    | SM4110C                   | 26-Apr-23/O        | < 0.1    |  |  |
| Ammonia (N)-Total                       | mg/L     | 0.01   | SM4500-NH <sub>3</sub> -H | 04-May-23/K        | 0.06     |  |  |
| Ammonia (N)-unionized                   | mg/L     | 0.01   | CALC                      | 04-May-23/K        | < 0.01   |  |  |
| Sulphate                                | mg/L     | 1      | SM4110C                   | 26-Apr-23/O        | 41       |  |  |
| Nitrite (N)                             | mg/L     | 0.05   | SM4110C                   | 26-Apr-23/O        | < 0.05   |  |  |
| Nitrate (N)                             | mg/L     | 0.05   | SM4110C                   | 26-Apr-23/O        | < 0.05   |  |  |
| Total Kjeldahl Nitrogen                 | mg/L     | 0.1    | E3516.2                   | 11-May-23/K        | 0.3      |  |  |
| Hardness (as CaCO <sub>3</sub> )        | mg/L     | 1      | SM 3120                   | 27-Apr-23/O        | 324      |  |  |
| Aluminum                                | mg/L     | 0.01   | SM 3120                   | 27-Apr-23/O        | 0.03     |  |  |
| Antimony                                | mg/L     | 0.0001 | EPA 200.8                 | 27-Apr-23/O        | < 0.0001 |  |  |
| Arsenic                                 | mg/L     | 0.0001 | EPA 200.8                 | 27-Apr-23/O        | 0.0002   |  |  |
| Barium                                  | mg/L     | 0.001  | SM 3120                   | 27-Apr-23/O        | 0.136    |  |  |
| Beryllium                               | mg/L     | 0.002  | SM 3120                   | 27-Apr-23/O        | < 0.002  |  |  |
| Boron                                   | mg/L     | 0.005  | SM 3120                   | 27-Apr-23/O        | 0.042    |  |  |



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PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                  |       |          | Client I.D.      | MW28-III           |            |  |  |
|------------------|-------|----------|------------------|--------------------|------------|--|--|
|                  |       |          | Sample I.D.      | B23-03068-9        |            |  |  |
|                  |       |          | Date Collected   | 19-Apr-23          |            |  |  |
| Parameter        | Units | R.L.     | Reference Method | Date/Site Analyzed |            |  |  |
| Cadmium          | mg/L  | 0.000010 | EPA 200.8        | 27-Apr-23/O        | < 0.000010 |  |  |
| Calcium          | mg/L  | 0.02     | SM 3120          | 27-Apr-23/O        | 114        |  |  |
| Chromium         | mg/L  | 0.001    | SM 3120          | 27-Apr-23/O        | < 0.001    |  |  |
| Chromium (VI)    | mg/L  | 0.001    | MOE E3056        | 28-Apr-23/O        | < 0.001    |  |  |
| Cobalt           | mg/L  | 0.005    | SM 3120          | 27-Apr-23/O        | < 0.005    |  |  |
| Copper           | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | < 0.0001   |  |  |
| Iron             | mg/L  | 0.005    | SM 3120          | 27-Apr-23/O        | 0.330      |  |  |
| Lead             | mg/L  | 0.00002  | EPA 200.8        | 27-Apr-23/O        | < 0.00002  |  |  |
| Magnesium        | mg/L  | 0.02     | SM 3120          | 27-Apr-23/O        | 9.18       |  |  |
| Manganese        | mg/L  | 0.001    | SM 3120          | 27-Apr-23/O        | 0.074      |  |  |
| Mercury          | mg/L  | 0.00002  | SM 3112 B        | 01-May-23/O        | < 0.00002  |  |  |
| Molybdenum       | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | 0.0004     |  |  |
| Nickel           | mg/L  | 0.01     | SM 3120          | 27-Apr-23/O        | < 0.01     |  |  |
| Potassium        | mg/L  | 0.1      | SM 3120          | 27-Apr-23/O        | 2.6        |  |  |
| Phosphorus-Total | mg/L  | 0.01     | E3516.2          | 11-May-23/K        | 1.14       |  |  |
| Phosphorus       | mg/L  | 0.1      | SM 3120          | 27-Apr-23/O        | < 0.1      |  |  |
| Selenium         | mg/L  | 0.001    | EPA 200.8        | 27-Apr-23/O        | < 0.001    |  |  |
| Silver           | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | < 0.0001   |  |  |
| Sodium           | mg/L  | 0.2      | SM 3120          | 27-Apr-23/O        | 14.0       |  |  |
| Strontium        | mg/L  | 0.001    | SM 3120          | 27-Apr-23/O        | 0.226      |  |  |
| Tin              | mg/L  | 0.05     | SM 3120          | 27-Apr-23/O        | < 0.05     |  |  |
| Thallium         | mg/L  | 0.00005  | EPA 200.8        | 27-Apr-23/O        | < 0.00005  |  |  |
| Titanium         | mg/L  | 0.005    | SM 3120          | 27-Apr-23/O        | < 0.005    |  |  |
| Uranium          | mg/L  | 0.00005  | EPA 200.8        | 27-Apr-23/O        | 0.00032    |  |  |
| Vanadium         | mg/L  | 0.0001   | EPA 200.8        | 27-Apr-23/O        | < 0.0001   |  |  |
| Zinc             | mg/L  | 0.005    | SM 3120          | 27-Apr-23/O        | < 0.005    |  |  |
| Anion Sum        | meq/L |          | Calc.            | 27-Apr-23/O        | 6.67       |  |  |



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**REPORT No. B23-03068 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |              |             | <b>Client I.D.</b>      | MW28-III                  |       |  |  |
|-------------------------|--------------|-------------|-------------------------|---------------------------|-------|--|--|
|                         |              |             | <b>Sample I.D.</b>      | B23-03068-9               |       |  |  |
|                         |              |             | <b>Date Collected</b>   | 19-Apr-23                 |       |  |  |
| <b>Parameter</b>        | <b>Units</b> | <b>R.L.</b> | <b>Reference Method</b> | <b>Date/Site Analyzed</b> |       |  |  |
| Cation Sum              | meq/L        |             | Calc.                   | 27-Apr-23/O               | 7.16  |  |  |
| % Difference            | %            |             | Calc.                   | 27-Apr-23/O               | 3.55  |  |  |
| Ion Ratio               | AS/CS        |             | Calc.                   | 27-Apr-23/O               | 0.932 |  |  |
| Conductivity (calc.)    | µmho/cm      |             | Calc.                   | 27-Apr-23/O               | 657   |  |  |
| Sodium Adsorption Ratio | -            |             | Calc.                   | 27-Apr-23/O               | 0.339 |  |  |
| TDS(calc.)/EC(actual)   | -            |             | Calc.                   | 27-Apr-23/O               | 0.568 |  |  |
| Langelier Index(25°C)   | S.I.         |             | Calc.                   | 27-Apr-23/O               | 1.02  |  |  |

1 Chromium (VI) result is based on total Chromium



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**REPORT No. B23-03068 (ii)**

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**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

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DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

| Parameter                          | Units | R.L. | Client I.D.      |                    | MW26        | MW26-1      | MW26-2      | MW27-1      |
|------------------------------------|-------|------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                                    |       |      | Sample I.D.      |                    | B23-03068-1 | B23-03068-2 | B23-03068-3 | B23-03068-4 |
|                                    |       |      | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
|                                    |       |      | Reference Method | Date/Site Analyzed |             |             |             |             |
| Poly-Chlorinated Biphenyls (PCB's) | µg/L  | 0.05 | EPA 8082         | 27-Apr-23/K        | < 0.05      | < 0.05      | < 0.05      | < 0.05      |
| Aroclor                            | -     |      | -                | 27-Apr-23          | -           | -           | -           | -           |
| Dichloroethane, 1,1-               | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethylene, 1,1-             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethane, 1,2-               | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichlorobenzene, 1,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloropropane, 1,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichlorobenzene, 1,3-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichlorobenzene, 1,4-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Tetrachloroethane, 1,1,1,2-        | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Tetrachloroethane, 1,1,2,2-        | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Trichloroethane, 1,1,1-            | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Trichloroethane, 1,1,2-            | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Trichlorobenzene, 1,2,4-           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Acetone                            | µg/L  | 30   | EPA 8260         | 26-Apr-23/R        | < 30        | < 30        | < 30        | < 30        |
| Bromodichloromethane               | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         | < 2         | < 2         | < 2         |
| Bromomethane                       | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Bromoform                          | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         | < 5         | < 5         | < 5         |
| Benzene                            | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethene, cis-1,2-           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | 0.6         | 1.6         | 1.6         | < 0.5       |
| Dichloropropene, cis-1,3-          | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Carbon Tetrachloride               | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       | < 0.2       | < 0.2       | < 0.2       |
| Monochlorobenzene (Chlorobenzene)  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Chloroform                         | µg/L  | 1    | EPA 8260         | 26-Apr-23/R        | < 1         | < 1         | < 1         | < 1         |
| Dibromochloromethane               | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         | < 2         | < 2         | < 2         |
| Ethylbenzene                       | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |

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**Attention:** Kayla Pantaleo

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Tel: 705-252-5743

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DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                             |       |      | Client I.D.      |                    | MW26        | MW26-1      | MW26-2      | MW27-I      |
|---------------------------------------------|-------|------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                                             |       |      | Sample I.D.      |                    | B23-03068-1 | B23-03068-2 | B23-03068-3 | B23-03068-4 |
|                                             |       |      | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter                                   | Units | R.L. | Reference Method | Date/Site Analyzed |             |             |             |             |
| Dibromoethane, 1,2-<br>(Ethylene Dibromide) | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       | < 0.2       | < 0.2       | < 0.2       |
| Methyl Ethyl Ketone                         | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20        | < 20        | < 20        | < 20        |
| Methyl-t-butyl Ether                        | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         | < 2         | < 2         | < 2         |
| Methyl Isobutyl Ketone                      | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20        | < 20        | < 20        | < 20        |
| Dichloromethane<br>(Methylene Chloride)     | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         | < 5         | < 5         | < 5         |
| Xylene, m,p-                                | µg/L  | 1.0  | EPA 8260         | 26-Apr-23/R        | < 1.0       | < 1.0       | < 1.0       | < 1.0       |
| Xylene, o-                                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Xylene, m,p,o-                              | µg/L  | 1.1  | EPA 8260         | 26-Apr-23/R        | < 1.1       | < 1.1       | < 1.1       | < 1.1       |
| Styrene                                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethene, trans-1,2-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloropropene, trans-1,3-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Trichloroethylene                           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Trichlorofluoromethane                      | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         | < 5         | < 5         | < 5         |
| Toluene                                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Tetrachloroethylene                         | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Vinyl Chloride                              | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       | < 0.2       | < 0.2       | < 0.2       |



R.L. = Reporting Limit

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03068 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                    |       |      | Client I.D.      |                    | MW27-II     | MW27-III    | MW28-I      | MW28-II     |
|------------------------------------|-------|------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                                    |       |      | Sample I.D.      |                    | B23-03068-5 | B23-03068-6 | B23-03068-7 | B23-03068-8 |
|                                    |       |      | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter                          | Units | R.L. | Reference Method | Date/Site Analyzed |             |             |             |             |
| Poly-Chlorinated Biphenyls (PCB's) | µg/L  | 0.05 | EPA 8082         | 27-Apr-23/K        | < 0.05      | < 0.05      | < 0.05      | < 0.05      |
| Aroclor                            | -     |      | -                | 27-Apr-23          | -           | -           | -           | -           |
| Dichloroethane,1,1-                | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethylene,1,1-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethane,1,2-                | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichlorobenzene,1,2-               | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloropropane,1,2-               | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichlorobenzene,1,3-               | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichlorobenzene,1,4-               | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Tetrachloroethane,1,1,1,2-         | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Tetrachloroethane,1,1,2,2-         | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Trichloroethane,1,1,1-             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Trichloroethane,1,1,2-             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Trichlorobenzene,1,2,4-            | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Acetone                            | µg/L  | 30   | EPA 8260         | 26-Apr-23/R        | < 30        | < 30        | < 30        | < 30        |
| Bromodichloromethane               | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         | < 2         | < 2         | < 2         |
| Bromomethane                       | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Bromoform                          | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         | < 5         | < 5         | < 5         |
| Benzene                            | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethene, cis-1,2-           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloropropene, cis-1,3-          | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Carbon Tetrachloride               | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       | < 0.2       | < 0.2       | < 0.2       |
| Monochlorobenzene (Chlorobenzene)  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Chloroform                         | µg/L  | 1    | EPA 8260         | 26-Apr-23/R        | < 1         | < 1         | < 1         | < 1         |
| Dibromochloromethane               | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         | < 2         | < 2         | < 2         |
| Ethylbenzene                       | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |



R.L. = Reporting Limit

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Site Analyzed=K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill, B-Barrie

Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03068 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                             |       |      | Client I.D.      |                    | MW27-II     | MW27-III    | MW28-I      | MW28-II     |
|---------------------------------------------|-------|------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                                             |       |      | Sample I.D.      |                    | B23-03068-5 | B23-03068-6 | B23-03068-7 | B23-03068-8 |
|                                             |       |      | Date Collected   |                    | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   | 19-Apr-23   |
| Parameter                                   | Units | R.L. | Reference Method | Date/Site Analyzed |             |             |             |             |
| Dibromoethane, 1,2-<br>(Ethylene Dibromide) | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       | < 0.2       | < 0.2       | < 0.2       |
| Methyl Ethyl Ketone                         | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20        | < 20        | < 20        | < 20        |
| Methyl-t-butyl Ether                        | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         | < 2         | < 2         | < 2         |
| Methyl Isobutyl Ketone                      | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20        | < 20        | < 20        | < 20        |
| Dichloromethane<br>(Methylene Chloride)     | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         | < 5         | < 5         | < 5         |
| Xylene, m,p-                                | µg/L  | 1.0  | EPA 8260         | 26-Apr-23/R        | < 1.0       | < 1.0       | < 1.0       | < 1.0       |
| Xylene, o-                                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Xylene, m,p,o-                              | µg/L  | 1.1  | EPA 8260         | 26-Apr-23/R        | < 1.1       | < 1.1       | < 1.1       | < 1.1       |
| Styrene                                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethene, trans-1,2-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Dichloropropene, trans-1,3-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Trichloroethylene                           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Trichlorofluoromethane                      | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         | < 5         | < 5         | < 5         |
| Toluene                                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Tetrachloroethylene                         | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       | < 0.5       |
| Vinyl Chloride                              | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       | < 0.2       | < 0.2       | < 0.2       |



R.L. = Reporting Limit

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Steve Garrett

Director of Laboratory Services

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**REPORT No. B23-03068 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                    |       |      | Client I.D.      | MW28-III           |        |  |  |
|------------------------------------|-------|------|------------------|--------------------|--------|--|--|
|                                    |       |      | Sample I.D.      | B23-03068-9        |        |  |  |
|                                    |       |      | Date Collected   | 19-Apr-23          |        |  |  |
| Parameter                          | Units | R.L. | Reference Method | Date/Site Analyzed |        |  |  |
| Poly-Chlorinated Biphenyls (PCB's) | µg/L  | 0.05 | EPA 8082         | 27-Apr-23/K        | < 0.05 |  |  |
| Aroclor                            | -     |      | -                | 27-Apr-23          | -      |  |  |
| Dichloroethane, 1,1-               | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Dichloroethylene, 1,1-             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Dichloroethane, 1,2-               | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Dichlorobenzene, 1,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Dichloropropane, 1,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Dichlorobenzene, 1,3-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Dichlorobenzene, 1,4-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Tetrachloroethane, 1,1,1,2-        | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Tetrachloroethane, 1,1,2,2-        | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Trichloroethane, 1,1,1-            | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Trichloroethane, 1,1,2-            | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Trichlorobenzene, 1,2,4-           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Acetone                            | µg/L  | 30   | EPA 8260         | 26-Apr-23/R        | < 30   |  |  |
| Bromodichloromethane               | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2    |  |  |
| Bromomethane                       | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Bromoform                          | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5    |  |  |
| Benzene                            | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Dichloroethene, cis-1,2-           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Dichloropropene, cis-1,3-          | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Carbon Tetrachloride               | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2  |  |  |
| Monochlorobenzene (Chlorobenzene)  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |
| Chloroform                         | µg/L  | 1    | EPA 8260         | 26-Apr-23/R        | < 1    |  |  |
| Dibromochloromethane               | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2    |  |  |
| Ethylbenzene                       | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5  |  |  |



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Steve Garrett

Director of Laboratory Services

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**REPORT No. B23-03068 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 13-Jun-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                          |       |      | Client I.D.      | MW28-III           |       |  |  |
|------------------------------------------|-------|------|------------------|--------------------|-------|--|--|
|                                          |       |      | Sample I.D.      | B23-03068-9        |       |  |  |
|                                          |       |      | Date Collected   | 19-Apr-23          |       |  |  |
| Parameter                                | Units | R.L. | Reference Method | Date/Site Analyzed |       |  |  |
| Dibromoethane, 1,2- (Ethylene Dibromide) | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2 |  |  |
| Methyl Ethyl Ketone                      | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20  |  |  |
| Methyl-t-butyl Ether                     | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2   |  |  |
| Methyl Isobutyl Ketone                   | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20  |  |  |
| Dichloromethane (Methylene Chloride)     | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5   |  |  |
| Xylene, m,p-                             | µg/L  | 1.0  | EPA 8260         | 26-Apr-23/R        | < 1.0 |  |  |
| Xylene, o-                               | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Xylene, m,p,o-                           | µg/L  | 1.1  | EPA 8260         | 26-Apr-23/R        | < 1.1 |  |  |
| Styrene                                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloroethene, trans-1,2-               | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Dichloropropene, trans-1,3-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Trichloroethylene                        | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Trichlorofluoromethane                   | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5   |  |  |
| Toluene                                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Tetrachloroethylene                      | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5 |  |  |
| Vinyl Chloride                           | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2 |  |  |



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Test methods may be modified from specified reference method unless indicated by an \*

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Steve Garrett

Director of Laboratory Services

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**REPORT No. B23-03058 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 29-May-23

P.O. NUMBER:

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

|                            |          |        | Client I.D.      |                    | SW4         | SW3         | SW2         | SW13-10m    |
|----------------------------|----------|--------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                            |          |        | Sample I.D.      |                    | B23-03058-1 | B23-03058-2 | B23-03058-3 | B23-03058-4 |
|                            |          |        | Date Collected   |                    | 20-Apr-23   | 20-Apr-23   | 20-Apr-23   | 20-Apr-23   |
| Parameter                  | Units    | R.L.   | Reference Method | Date/Site Analyzed |             |             |             |             |
| Alkalinity(CaCO3) to pH4.5 | mg/L     | 5      | SM 2320B         | 25-Apr-23/O        | 139         | 160         | 139         | 275         |
| Conductivity @25°C         | µmho/cm  | 1      | SM 2510B         | 25-Apr-23/O        | 319         | 361         | 317         | 613         |
| pH @25°C                   | pH Units |        | SM 4500H         | 25-Apr-23/O        | 7.65        | 7.88        | 7.78        | 7.86        |
| Colour                     | TCU      | 2      | SM 2120C         | 25-Apr-23/O        | 58          | 63          | 41          | 91          |
| Turbidity                  | NTU      | 0.1    | SM 2130          | 25-Apr-23/O        | 0.6         | 1.2         | 0.4         | 6.8         |
| TDS(ion sum calc.)         | mg/L     | 1      | Calc.            | 25-Apr-23/O        | 165         | 186         | 160         | 305         |
| Total Suspended Solids     | mg/L     | 3      | SM2540D          | 25-Apr-23/K        | < 3         | < 3         | < 3         | 103         |
| Dissolved Organic Carbon   | mg/L     | 0.2    | EPA 415.2        | 25-Apr-23/O        | 9.5         | 16.9        | 6.6         | 27.8        |
| BOD(5 day)                 | mg/L     | 3      | SM 5210B         | 28-Apr-23/K        | < 3         | < 3         | < 3         | 8           |
| COD                        | mg/L     | 5      | SM5220C          | 25-Apr-23/K        | 30          | 156         | 20          | 105         |
| Phenolics                  | mg/L     | 0.001  | MOEE 3179        | 28-Apr-23/K        | < 0.001     | < 0.001     | < 0.001     | < 0.001     |
| Cyanide (Free)             | mg/L     | 0.005  | SM 4500CN        | 24-Apr-23/K        | < 0.005     | < 0.005     | < 0.005     | < 0.005     |
| Chloride                   | mg/L     | 0.5    | SM4110C          | 24-Apr-23/O        | 12.0        | 12.9        | 8.0         | 19.5        |
| Fluoride                   | mg/L     | 0.1    | SM4110C          | 24-Apr-23/O        | < 0.1       | < 0.1       | < 0.1       | < 0.1       |
| Ammonia (N)-Total          | mg/L     | 0.01   | SM4500-NH3-H     | 04-May-23/K        | 0.19        | 0.27        | 0.10        | 1.41        |
| Ammonia (N)-unionized      | mg/L     | 0.01   | CALC             | 04-May-23/K        | < 0.01      | < 0.01      | < 0.01      | 0.01        |
| Sulphate                   | mg/L     | 1      | SM4110C          | 24-Apr-23/O        | 3           | 3           | 6           | < 1         |
| Nitrite (N)                | mg/L     | 0.05   | SM4110C          | 24-Apr-23/O        | < 0.05      | < 0.05      | < 0.05      | < 0.05      |
| Nitrate (N)                | mg/L     | 0.05   | SM4110C          | 24-Apr-23/O        | 0.10        | < 0.05      | 0.12        | 0.24        |
| Total Kjeldahl Nitrogen    | mg/L     | 0.1    | E3516.2          | 10-May-23/K        | 0.7         | 0.8         | 0.5         | 3.3         |
| Hardness (as CaCO3)        | mg/L     | 1      | SM 3120          | 26-Apr-23/O        | 154         | 172         | 156         | 274         |
| Aluminum                   | mg/L     | 0.01   | SM 3120          | 26-Apr-23/O        | 0.01        | 0.02        | 0.01        | 0.03        |
| Aluminum (total)           | mg/L     | 0.01   | SM 3120          | 26-Apr-23/O        | 0.02        | 0.02        | 0.02        | 0.13        |
| Antimony                   | mg/L     | 0.0001 | EPA 200.8        | 02-May-23/O        | 0.0006      | 0.0005      | 0.0003      | 0.0005      |
| Arsenic                    | mg/L     | 0.0001 | EPA 200.8        | 02-May-23/O        | 0.0002      | 0.0002      | 0.0002      | 0.0009      |
| Barium                     | mg/L     | 0.001  | SM 3120          | 26-Apr-23/O        | 0.022       | 0.022       | 0.021       | 0.042       |
| Beryllium                  | mg/L     | 0.002  | SM 3120          | 26-Apr-23/O        | < 0.002     | < 0.002     | < 0.002     | < 0.002     |



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Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03058 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 29-May-23

P.O. NUMBER:

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

|                  |       |          | Client I.D.      |                    | SW4                  | SW3                  | SW2                  | SW13-10m             |
|------------------|-------|----------|------------------|--------------------|----------------------|----------------------|----------------------|----------------------|
|                  |       |          | Sample I.D.      |                    | B23-03058-1          | B23-03058-2          | B23-03058-3          | B23-03058-4          |
|                  |       |          | Date Collected   |                    | 20-Apr-23            | 20-Apr-23            | 20-Apr-23            | 20-Apr-23            |
| Parameter        | Units | R.L.     | Reference Method | Date/Site Analyzed |                      |                      |                      |                      |
| Boron            | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | 0.006                | 0.005                | 0.006                | 0.041                |
| Cadmium          | mg/L  | 0.000015 | EPA 200.8        | 02-May-23/O        | < 0.000015           | < 0.000015           | < 0.000015           | 0.000027             |
| Calcium          | mg/L  | 0.02     | SM 3120          | 26-Apr-23/O        | 54.8                 | 61.8                 | 53.6                 | 90.6                 |
| Chromium         | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | 0.002                | < 0.001              | < 0.001              | < 0.001              |
| Chromium (VI)    | mg/L  | 0.001    | MOE E3056        | 03-May-23/O        | < 0.001 <sup>1</sup> | < 0.001 <sup>1</sup> | < 0.001 <sup>1</sup> | < 0.001 <sup>1</sup> |
| Cobalt           | mg/L  | 0.0001   | EPA 200.8        | 02-May-23/O        | < 0.0001             | 0.0001               | < 0.0001             | 0.0007               |
| Copper           | mg/L  | 0.0001   | EPA 200.8        | 02-May-23/O        | 0.0003               | 0.0004               | 0.0001               | 0.0010               |
| Iron             | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | 0.083                | 0.066                | 0.019                | 4.80                 |
| Lead             | mg/L  | 0.00002  | EPA 200.8        | 02-May-23/O        | 0.00005              | 0.00006              | 0.00004              | 0.00111              |
| Magnesium        | mg/L  | 0.02     | SM 3120          | 26-Apr-23/O        | 3.73                 | 4.28                 | 4.14                 | 5.78                 |
| Manganese        | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | 0.009                | 0.008                | 0.008                | 0.177                |
| Mercury          | mg/L  | 0.00002  | SM 3112 B        | 28-Apr-23/O        | < 0.00002            | < 0.00002            | < 0.00002            | < 0.00002            |
| Molybdenum       | mg/L  | 0.0001   | EPA 200.8        | 02-May-23/O        | 0.0001               | 0.0002               | 0.0002               | < 0.0001             |
| Nickel           | mg/L  | 0.01     | SM 3120          | 26-Apr-23/O        | < 0.01               | < 0.01               | < 0.01               | < 0.01               |
| Potassium        | mg/L  | 0.1      | SM 3120          | 26-Apr-23/O        | 1.2                  | 1.3                  | 0.9                  | 5.7                  |
| Phosphorus-Total | mg/L  | 0.01     | E3516.2          | 10-May-23/K        | 0.01                 | < 0.01               | < 0.01               | 0.21                 |
| Phosphorus       | mg/L  | 0.1      | SM 3120          | 26-Apr-23/O        | < 0.1                | < 0.1                | < 0.1                | 0.2                  |
| Selenium         | mg/L  | 0.001    | EPA 200.8        | 02-May-23/O        | < 0.001              | < 0.001              | < 0.001              | < 0.001              |
| Silver           | mg/L  | 0.0001   | EPA 200.8        | 02-May-23/O        | < 0.0001             | < 0.0001             | < 0.0001             | < 0.0001             |
| Sodium           | mg/L  | 0.2      | SM 3120          | 26-Apr-23/O        | 6.5                  | 7.0                  | 3.6                  | 13.6                 |
| Strontium        | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | 0.131                | 0.150                | 0.127                | 0.224                |
| Tin              | mg/L  | 0.05     | SM 3120          | 26-Apr-23/O        | < 0.05               | < 0.05               | < 0.05               | < 0.05               |
| Titanium         | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | < 0.005              | < 0.005              | < 0.005              | < 0.005              |
| Thallium         | mg/L  | 0.00005  | EPA 200.8        | 02-May-23/O        | < 0.00005            | < 0.00005            | < 0.00005            | < 0.00005            |
| Uranium          | mg/L  | 0.00005  | EPA 200.8        | 02-May-23/O        | 0.00011              | 0.00034              | 0.00014              | < 0.00005            |
| Vanadium         | mg/L  | 0.0001   | EPA 200.8        | 02-May-23/O        | < 0.0001             | 0.0001               | < 0.0001             | 0.0005               |
| Zinc             | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | 0.007                | < 0.005              | < 0.005              | 0.013                |

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Steve Garrett

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**REPORT No. B23-03058 (i)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 29-May-23

P.O. NUMBER:

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

|                         |         |      | Client I.D.      |                    | SW4         | SW3         | SW2         | SW13-10m    |
|-------------------------|---------|------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                         |         |      | Sample I.D.      |                    | B23-03058-1 | B23-03058-2 | B23-03058-3 | B23-03058-4 |
|                         |         |      | Date Collected   |                    | 20-Apr-23   | 20-Apr-23   | 20-Apr-23   | 20-Apr-23   |
| Parameter               | Units   | R.L. | Reference Method | Date/Site Analyzed |             |             |             |             |
| Anion Sum               | meq/L   |      | Calc.            | 25-Apr-23/O        | 3.19        | 3.62        | 3.15        | 6.06        |
| Cation Sum              | meq/L   |      | Calc.            | 25-Apr-23/O        | 3.36        | 3.78        | 3.20        | 6.00        |
| % Difference            | %       |      | Calc.            | 25-Apr-23/O        | 2.66        | 2.13        | 0.840       | 0.570       |
| Ion Ratio               | AS/CS   |      | Calc.            | 25-Apr-23/O        | 0.948       | 0.958       | 0.983       | 1.01        |
| Conductivity (calc.)    | µmho/cm |      | Calc.            | 25-Apr-23/O        | 319         | 358         | 307         | 547         |
| Sodium Adsorption Ratio | -       |      | Calc.            | 25-Apr-23/O        | 0.228       | 0.234       | 0.128       | 0.373       |
| TDS(calc.)/EC(actual)   | -       |      | Calc.            | 25-Apr-23/O        | 0.516       | 0.516       | 0.505       | 0.498       |
| Langelier Index(25°C)   | S.I.    |      | Calc.            | 25-Apr-23/O        | 0.130       | 0.452       | 0.251       | 0.814       |

1 Chromium (VI) result is based on total Chromium



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DATE REPORTED: 29-May-23

P.O. NUMBER:

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

|                            |          |        | Client I.D.      |                    | SW13-30m    | SW14        | SW16        | DUP-1       |
|----------------------------|----------|--------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                            |          |        | Sample I.D.      |                    | B23-03058-5 | B23-03058-6 | B23-03058-7 | B23-03058-8 |
|                            |          |        | Date Collected   |                    | 20-Apr-23   | 20-Apr-23   | 20-Apr-23   | 20-Apr-23   |
| Parameter                  | Units    | R.L.   | Reference Method | Date/Site Analyzed |             |             |             |             |
| Alkalinity(CaCO3) to pH4.5 | mg/L     | 5      | SM 2320B         | 25-Apr-23/O        | 122         | 108         | 221         | 159         |
| Conductivity @25°C         | µmho/cm  | 1      | SM 2510B         | 25-Apr-23/O        | 263         | 235         | 500         | 356         |
| pH @25°C                   | pH Units |        | SM 4500H         | 25-Apr-23/O        | 7.38        | 7.37        | 8.11        | 7.95        |
| Colour                     | TCU      | 2      | SM 2120C         | 25-Apr-23/O        | 95          | 142         | 36          | 56          |
| Turbidity                  | NTU      | 0.1    | SM 2130          | 25-Apr-23/O        | 10.2        | 1.4         | 0.6         | 0.5         |
| TDS(ion sum calc.)         | mg/L     | 1      | Calc.            | 25-Apr-23/O        | 134         | 117         | 255         | 184         |
| Total Suspended Solids     | mg/L     | 3      | SM2540D          | 25-Apr-23/K        | 16          | < 3         | < 3         | < 3         |
| Dissolved Organic Carbon   | mg/L     | 0.2    | EPA 415.2        | 25-Apr-23/O        | 11.8        | 15.0        | 4.5         | 16.6        |
| BOD(5 day)                 | mg/L     | 3      | SM 5210B         | 28-Apr-23/K        | < 3         | < 3         | < 3         | < 3         |
| COD                        | mg/L     | 5      | SM5220C          | 25-Apr-23/K        | 51          | 53          | 15          | 28          |
| Phenolics                  | mg/L     | 0.001  | MOEE 3179        | 28-Apr-23/K        | < 0.001     | < 0.001     | < 0.001     | < 0.001     |
| Cyanide (Free)             | mg/L     | 0.005  | SM 4500CN        | 24-Apr-23/K        | < 0.005     | < 0.005     | < 0.005     | < 0.005     |
| Chloride                   | mg/L     | 0.5    | SM4110C          | 24-Apr-23/O        | 5.3         | 4.6         | 13.0        | 12.9        |
| Fluoride                   | mg/L     | 0.1    | SM4110C          | 24-Apr-23/O        | < 0.1       | < 0.1       | < 0.1       | < 0.1       |
| Ammonia (N)-Total          | mg/L     | 0.01   | SM4500-NH3-H     | 04-May-23/K        | 0.06        | 0.81        | 1.80        | 0.29        |
| Ammonia (N)-unionized      | mg/L     | 0.01   | CALC             | 04-May-23/K        | < 0.01      | 0.02        | 0.03        | < 0.01      |
| Sulphate                   | mg/L     | 1      | SM4110C          | 24-Apr-23/O        | < 1         | < 1         | 9           | 3           |
| Nitrite (N)                | mg/L     | 0.05   | SM4110C          | 24-Apr-23/O        | < 0.05      | < 0.05      | < 0.05      | < 0.05      |
| Nitrate (N)                | mg/L     | 0.05   | SM4110C          | 24-Apr-23/O        | 0.06        | < 0.05      | 1.87        | < 0.05      |
| Total Kjeldahl Nitrogen    | mg/L     | 0.1    | E3516.2          | 10-May-23/K        | 0.8         | 1.0         | 2.0         | 0.8         |
| Hardness (as CaCO3)        | mg/L     | 1      | SM 3120          | 26-Apr-23/O        | 130         | 118         | 255         | 173         |
| Aluminum                   | mg/L     | 0.01   | SM 3120          | 26-Apr-23/O        | 0.02        | 0.03        | 0.03        | 0.02        |
| Aluminum (total)           | mg/L     | 0.01   | SM 3120          | 26-Apr-23/O        | 0.03        | 0.02        | 0.03        | 0.01        |
| Antimony                   | mg/L     | 0.0001 | EPA 200.8        | 02-May-23/O        | 0.0006      | 0.0005      | 0.0004      | 0.0005      |
| Arsenic                    | mg/L     | 0.0001 | EPA 200.8        | 02-May-23/O        | 0.0004      | 0.0003      | 0.0002      | 0.0002      |
| Barium                     | mg/L     | 0.001  | SM 3120          | 26-Apr-23/O        | 0.015       | 0.011       | 0.029       | 0.021       |
| Beryllium                  | mg/L     | 0.002  | SM 3120          | 26-Apr-23/O        | < 0.002     | < 0.002     | < 0.002     | < 0.002     |



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**Attention:** Kayla Pantaleo

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Tel: 705-252-5743

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DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 29-May-23

P.O. NUMBER:

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

|                  |       |          | Client I.D.      |                    | SW13-30m             | SW14                 | SW16                 | DUP-1                |
|------------------|-------|----------|------------------|--------------------|----------------------|----------------------|----------------------|----------------------|
|                  |       |          | Sample I.D.      |                    | B23-03058-5          | B23-03058-6          | B23-03058-7          | B23-03058-8          |
|                  |       |          | Date Collected   |                    | 20-Apr-23            | 20-Apr-23            | 20-Apr-23            | 20-Apr-23            |
| Parameter        | Units | R.L.     | Reference Method | Date/Site Analyzed |                      |                      |                      |                      |
| Boron            | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | 0.007                | < 0.005              | 0.007                | < 0.005              |
| Cadmium          | mg/L  | 0.000015 | EPA 200.8        | 02-May-23/O        | < 0.000015           | < 0.000015           | < 0.000015           | < 0.000015           |
| Calcium          | mg/L  | 0.02     | SM 3120          | 26-Apr-23/O        | 46.5                 | 40.4                 | 89.1                 | 59.9                 |
| Chromium         | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | < 0.001              | 0.001                | 0.001                | < 0.001              |
| Chromium (VI)    | mg/L  | 0.001    | MOE E3056        | 03-May-23/O        | < 0.001 <sup>1</sup> | < 0.001 <sup>1</sup> | < 0.001 <sup>1</sup> | < 0.001 <sup>1</sup> |
| Cobalt           | mg/L  | 0.0001   | EPA 200.8        | 02-May-23/O        | 0.0002               | 0.0001               | 0.0001               | < 0.0001             |
| Copper           | mg/L  | 0.0001   | EPA 200.8        | 02-May-23/O        | 0.0003               | 0.0003               | 0.0006               | 0.0003               |
| Iron             | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | 0.527                | 0.139                | 0.043                | 0.076                |
| Lead             | mg/L  | 0.00002  | EPA 200.8        | 02-May-23/O        | 0.00024              | 0.00005              | 0.00004              | 0.00022              |
| Magnesium        | mg/L  | 0.02     | SM 3120          | 26-Apr-23/O        | 2.79                 | 2.50                 | 5.36                 | 4.12                 |
| Manganese        | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | 0.081                | 0.020                | 0.011                | 0.008                |
| Mercury          | mg/L  | 0.00002  | SM 3112 B        | 28-Apr-23/O        | < 0.00002            | < 0.00002            | < 0.00002            | < 0.00002            |
| Molybdenum       | mg/L  | 0.0001   | EPA 200.8        | 02-May-23/O        | < 0.0001             | < 0.0001             | 0.0001               | 0.0002               |
| Nickel           | mg/L  | 0.01     | SM 3120          | 26-Apr-23/O        | < 0.01               | < 0.01               | < 0.01               | < 0.01               |
| Potassium        | mg/L  | 0.1      | SM 3120          | 26-Apr-23/O        | 1.8                  | 1.7                  | 1.5                  | 1.2                  |
| Phosphorus-Total | mg/L  | 0.01     | E3516.2          | 10-May-23/K        | 0.05                 | 0.01                 | 0.01                 | 0.02                 |
| Phosphorus       | mg/L  | 0.1      | SM 3120          | 26-Apr-23/O        | < 0.1                | < 0.1                | < 0.1                | < 0.1                |
| Selenium         | mg/L  | 0.001    | EPA 200.8        | 02-May-23/O        | < 0.001              | < 0.001              | < 0.001              | < 0.001              |
| Silver           | mg/L  | 0.0001   | EPA 200.8        | 02-May-23/O        | < 0.0001             | < 0.0001             | < 0.0001             | < 0.0001             |
| Sodium           | mg/L  | 0.2      | SM 3120          | 26-Apr-23/O        | 3.8                  | 3.3                  | 5.0                  | 6.9                  |
| Strontium        | mg/L  | 0.001    | SM 3120          | 26-Apr-23/O        | 0.100                | 0.089                | 0.222                | 0.144                |
| Tin              | mg/L  | 0.05     | SM 3120          | 26-Apr-23/O        | < 0.05               | < 0.05               | < 0.05               | < 0.05               |
| Titanium         | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | < 0.005              | < 0.005              | < 0.005              | < 0.005              |
| Thallium         | mg/L  | 0.00005  | EPA 200.8        | 02-May-23/O        | < 0.00005            | < 0.00005            | < 0.00005            | < 0.00005            |
| Uranium          | mg/L  | 0.00005  | EPA 200.8        | 02-May-23/O        | < 0.00005            | < 0.00005            | 0.00082              | 0.00036              |
| Vanadium         | mg/L  | 0.0001   | EPA 200.8        | 02-May-23/O        | 0.0002               | 0.0001               | 0.0003               | 0.0001               |
| Zinc             | mg/L  | 0.005    | SM 3120          | 26-Apr-23/O        | 0.007                | < 0.005              | 0.011                | < 0.005              |

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Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 29-May-23

P.O. NUMBER:

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

|                         |         |      | Client I.D.      |                    | SW13-30m    | SW14        | SW16        | DUP-1       |
|-------------------------|---------|------|------------------|--------------------|-------------|-------------|-------------|-------------|
|                         |         |      | Sample I.D.      |                    | B23-03058-5 | B23-03058-6 | B23-03058-7 | B23-03058-8 |
|                         |         |      | Date Collected   |                    | 20-Apr-23   | 20-Apr-23   | 20-Apr-23   | 20-Apr-23   |
| Parameter               | Units   | R.L. | Reference Method | Date/Site Analyzed |             |             |             |             |
| Anion Sum               | meq/L   |      | Calc.            | 25-Apr-23/O        | 2.60        | 2.28        | 5.09        | 3.60        |
| Cation Sum              | meq/L   |      | Calc.            | 25-Apr-23/O        | 2.79        | 2.42        | 5.15        | 3.66        |
| % Difference            | %       |      | Calc.            | 25-Apr-23/O        | 3.57        | 2.84        | 0.577       | 0.853       |
| Ion Ratio               | AS/CS   |      | Calc.            | 25-Apr-23/O        | 0.931       | 0.945       | 0.989       | 0.983       |
| Conductivity (calc.)    | µmho/cm |      | Calc.            | 25-Apr-23/O        | 260         | 229         | 477         | 351         |
| Sodium Adsorption Ratio | -       |      | Calc.            | 25-Apr-23/O        | 0.145       | 0.138       | 0.139       | 0.232       |
| TDS(calc.)/EC(actual)   | -       |      | Calc.            | 25-Apr-23/O        | 0.511       | 0.499       | 0.510       | 0.516       |
| Langelier Index(25°C)   | S.I.    |      | Calc.            | 25-Apr-23/O        | -0.417      | -0.544      | 0.971       | 0.516       |

1 Chromium (VI) result is based on total Chromium



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PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 29-May-23

P.O. NUMBER:

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

|                                          |       |      | Client I.D.      | SW4                | SW3         | SW2         | SW13-10m    |
|------------------------------------------|-------|------|------------------|--------------------|-------------|-------------|-------------|
|                                          |       |      | Sample I.D.      | B23-03058-1        | B23-03058-2 | B23-03058-3 | B23-03058-4 |
|                                          |       |      | Date Collected   | 20-Apr-23          | 20-Apr-23   | 20-Apr-23   | 20-Apr-23   |
| Parameter                                | Units | R.L. | Reference Method | Date/Site Analyzed |             |             |             |
| Dichloroethane, 1,1-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethylene, 1,1-                   | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethane, 1,2-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichlorobenzene, 1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichloropropane, 1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichlorobenzene, 1,3-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichlorobenzene, 1,4-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Tetrachloroethane, 1,1,1,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Tetrachloroethane, 1,1,2,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Trichloroethane, 1,1,1-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Trichloroethane, 1,1,2-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Trichlorobenzene, 1,2,4-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Acetone                                  | µg/L  | 30   | EPA 8260         | 26-Apr-23/R        | < 30        | < 30        | < 30        |
| Bromodichloromethane                     | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         | < 2         | < 2         |
| Bromomethane                             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Bromoform                                | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         | < 5         | < 5         |
| Benzene                                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethene, cis-1,2-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichloropropene, cis-1,3-                | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Carbon Tetrachloride                     | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       | < 0.2       | < 0.2       |
| Monochlorobenzene (Chlorobenzene)        | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Chloroform                               | µg/L  | 1    | EPA 8260         | 26-Apr-23/R        | < 1         | < 1         | < 1         |
| Dibromochloromethane                     | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         | < 2         | < 2         |
| Ethylbenzene                             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dibromoethane, 1,2- (Ethylene Dibromide) | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       | < 0.2       | < 0.2       |
| Methyl Ethyl Ketone                      | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20        | < 20        | < 20        |



R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an \*

Site Analyzed=K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill, B-Barrie

Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03058 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 29-May-23

P.O. NUMBER:

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

|                                      |       |      | Client I.D.      | SW4                | SW3         | SW2         | SW13-10m    |
|--------------------------------------|-------|------|------------------|--------------------|-------------|-------------|-------------|
|                                      |       |      | Sample I.D.      | B23-03058-1        | B23-03058-2 | B23-03058-3 | B23-03058-4 |
|                                      |       |      | Date Collected   | 20-Apr-23          | 20-Apr-23   | 20-Apr-23   | 20-Apr-23   |
| Parameter                            | Units | R.L. | Reference Method | Date/Site Analyzed |             |             |             |
| Methyl-t-butyl Ether                 | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         | < 2         | < 2         |
| Methyl Isobutyl Ketone               | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20        | < 20        | < 20        |
| Dichloromethane (Methylene Chloride) | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         | < 5         | < 5         |
| Xylene, m,p-                         | µg/L  | 1.0  | EPA 8260         | 26-Apr-23/R        | < 1.0       | < 1.0       | < 1.0       |
| Xylene, o-                           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Xylene, m,p,o-                       | µg/L  | 1.1  | EPA 8260         | 26-Apr-23/R        | < 1.1       | < 1.1       | < 1.1       |
| Styrene                              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichloroethene, trans-1,2-           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Dichloropropene, trans-1,3-          | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Trichloroethylene                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Trichlorofluoromethane               | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         | < 5         | < 5         |
| Toluene                              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Tetrachloroethylene                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5       | < 0.5       |
| Vinyl Chloride                       | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       | < 0.2       | < 0.2       |



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**REPORT No. B23-03058 (ii)**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 29-May-23

P.O. NUMBER:

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

|                                          |       |      | Client I.D.      | SW14               | DUP-1       |  |  |
|------------------------------------------|-------|------|------------------|--------------------|-------------|--|--|
|                                          |       |      | Sample I.D.      | B23-03058-6        | B23-03058-8 |  |  |
|                                          |       |      | Date Collected   | 20-Apr-23          | 20-Apr-23   |  |  |
| Parameter                                | Units | R.L. | Reference Method | Date/Site Analyzed |             |  |  |
| Dichloroethane, 1,1-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Dichloroethylene, 1,1-                   | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Dichloroethane, 1,2-                     | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Dichlorobenzene, 1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Dichloropropane, 1,2-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Dichlorobenzene, 1,3-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Dichlorobenzene, 1,4-                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Tetrachloroethane, 1,1,1,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Tetrachloroethane, 1,1,2,2-              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Trichloroethane, 1,1,1-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Trichloroethane, 1,1,2-                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Trichlorobenzene, 1,2,4-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Acetone                                  | µg/L  | 30   | EPA 8260         | 26-Apr-23/R        | < 30        |  |  |
| Bromodichloromethane                     | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         |  |  |
| Bromomethane                             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Bromoform                                | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         |  |  |
| Benzene                                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Dichloroethene, cis-1,2-                 | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Dichloropropene, cis-1,3-                | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Carbon Tetrachloride                     | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       |  |  |
| Monochlorobenzene (Chlorobenzene)        | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Chloroform                               | µg/L  | 1    | EPA 8260         | 26-Apr-23/R        | < 1         |  |  |
| Dibromochloromethane                     | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         |  |  |
| Ethylbenzene                             | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |  |  |
| Dibromoethane, 1,2- (Ethylene Dibromide) | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       |  |  |
| Methyl Ethyl Ketone                      | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20        |  |  |



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**REPORT No. B23-03058 (ii)**

**Report To:**

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PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 20-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 29-May-23

P.O. NUMBER:

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

|                                      |       |      | Client I.D.      | SW14               | DUP-1       |       |  |
|--------------------------------------|-------|------|------------------|--------------------|-------------|-------|--|
|                                      |       |      | Sample I.D.      | B23-03058-6        | B23-03058-8 |       |  |
|                                      |       |      | Date Collected   | 20-Apr-23          | 20-Apr-23   |       |  |
| Parameter                            | Units | R.L. | Reference Method | Date/Site Analyzed |             |       |  |
| Methyl-t-butyl Ether                 | µg/L  | 2    | EPA 8260         | 26-Apr-23/R        | < 2         |       |  |
| Methyl Isobutyl Ketone               | µg/L  | 20   | EPA 8260         | 26-Apr-23/R        | < 20        |       |  |
| Dichloromethane (Methylene Chloride) | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         |       |  |
| Xylene, m,p-                         | µg/L  | 1.0  | EPA 8260         | 26-Apr-23/R        | < 1.0       |       |  |
| Xylene, o-                           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |       |  |
| Xylene, m,p,o-                       | µg/L  | 1.1  | EPA 8260         | 26-Apr-23/R        | < 1.1       |       |  |
| Styrene                              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |       |  |
| Dichloroethene, trans-1,2-           | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |       |  |
| Dichloropropene, trans-1,3-          | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |       |  |
| Trichloroethylene                    | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       |       |  |
| Trichlorofluoromethane               | µg/L  | 5    | EPA 8260         | 26-Apr-23/R        | < 5         |       |  |
| Toluene                              | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5 |  |
| Tetrachloroethylene                  | µg/L  | 0.5  | EPA 8260         | 26-Apr-23/R        | < 0.5       | < 0.5 |  |
| Vinyl Chloride                       | µg/L  | 0.2  | EPA 8260         | 26-Apr-23/R        | < 0.2       | < 0.2 |  |



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Test methods may be modified from specified reference method unless indicated by an \*

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Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03142**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 27-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                                         |          |          | Client I.D.               | MW13               | DUP-2       |            |  |
|-----------------------------------------|----------|----------|---------------------------|--------------------|-------------|------------|--|
|                                         |          |          | Sample I.D.               | B23-03142-1        | B23-03142-2 |            |  |
|                                         |          |          | Date Collected            | 26-Apr-23          | 26-Apr-23   |            |  |
| Parameter                               | Units    | R.L.     | Reference Method          | Date/Site Analyzed |             |            |  |
| Alkalinity(CaCO <sub>3</sub> ) to pH4.5 | mg/L     | 5        | SM 2320B                  | 28-Apr-23/O        | 189         | 189        |  |
| Conductivity @25°C                      | µmho/cm  | 1        | SM 2510B                  | 28-Apr-23/O        | 387         | 385        |  |
| pH @25°C                                | pH Units |          | SM 4500H                  | 28-Apr-23/O        | 8.02        | 7.93       |  |
| TDS(ion sum calc.)                      | mg/L     | 1        | Calc.                     | 03-May-23/O        | 198         | 199        |  |
| Dissolved Organic Carbon                | mg/L     | 0.2      | EPA 415.2                 | 28-Apr-23/O        | 1.2         | 1.8        |  |
| COD                                     | mg/L     | 5        | SM5220C                   | 05-May-23/K        | < 5         | < 5        |  |
| Phenolics                               | mg/L     | 0.001    | MOEE 3179                 | 02-May-23/K        | < 0.001     | < 0.001    |  |
| Chloride                                | mg/L     | 0.5      | SM4110C                   | 01-May-23/O        | 5.4         | 5.3        |  |
| Fluoride                                | mg/L     | 0.1      | SM4110C                   | 01-May-23/O        | < 0.1       | < 0.1      |  |
| Ammonia (N)-Total                       | mg/L     | 0.01     | SM4500-NH <sub>3</sub> -H | 08-May-23/K        | 0.35        | 0.46       |  |
| Sulphate                                | mg/L     | 1        | SM4110C                   | 01-May-23/O        | 6           | 6          |  |
| Nitrite (N)                             | mg/L     | 0.05     | SM4110C                   | 01-May-23/O        | < 0.05      | < 0.05     |  |
| Nitrate (N)                             | mg/L     | 0.05     | SM4110C                   | 01-May-23/O        | 0.15        | 0.14       |  |
| Total Kjeldahl Nitrogen                 | mg/L     | 0.1      | E3516.2                   | 11-May-23/K        | 0.5         | 0.6        |  |
| Hardness (as CaCO <sub>3</sub> )        | mg/L     | 1        | SM 3120                   | 02-May-23/O        | 175         | 175        |  |
| Aluminum                                | mg/L     | 0.01     | SM 3120                   | 02-May-23/O        | 0.02        | 0.02       |  |
| Antimony                                | mg/L     | 0.0001   | EPA 200.8                 | 04-May-23/O        | < 0.0001    | < 0.0001   |  |
| Arsenic                                 | mg/L     | 0.0001   | EPA 200.8                 | 04-May-23/O        | < 0.0001    | < 0.0001   |  |
| Barium                                  | mg/L     | 0.001    | SM 3120                   | 02-May-23/O        | 0.045       | 0.045      |  |
| Beryllium                               | mg/L     | 0.002    | SM 3120                   | 02-May-23/O        | < 0.002     | < 0.002    |  |
| Boron                                   | mg/L     | 0.005    | SM 3120                   | 02-May-23/O        | 0.008       | 0.009      |  |
| Cadmium                                 | mg/L     | 0.000010 | EPA 200.8                 | 04-May-23/O        | < 0.000010  | < 0.000010 |  |
| Calcium                                 | mg/L     | 0.02     | SM 3120                   | 02-May-23/O        | 62.9        | 63.1       |  |
| Chromium                                | mg/L     | 0.001    | SM 3120                   | 02-May-23/O        | 0.002       | 0.002      |  |
| Chromium (VI)                           | mg/L     | 0.001    | MOE E3056                 | 05-May-23/O        | < 0.001     | < 0.001    |  |
| Cobalt                                  | mg/L     | 0.005    | SM 3120                   | 02-May-23/O        | < 0.005     | < 0.005    |  |
| Copper                                  | mg/L     | 0.0001   | EPA 200.8                 | 04-May-23/O        | 0.0006      | 0.0009     |  |



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DATE RECEIVED: 27-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                         |         |         | Client I.D.      | MW13               | DUP-2       |           |  |
|-------------------------|---------|---------|------------------|--------------------|-------------|-----------|--|
|                         |         |         | Sample I.D.      | B23-03142-1        | B23-03142-2 |           |  |
|                         |         |         | Date Collected   | 26-Apr-23          | 26-Apr-23   |           |  |
| Parameter               | Units   | R.L.    | Reference Method | Date/Site Analyzed |             |           |  |
| Iron                    | mg/L    | 0.005   | SM 3120          | 02-May-23/O        | 0.340       | 0.341     |  |
| Lead                    | mg/L    | 0.00002 | EPA 200.8        | 04-May-23/O        | < 0.00002   | < 0.00002 |  |
| Magnesium               | mg/L    | 0.02    | SM 3120          | 02-May-23/O        | 4.23        | 4.21      |  |
| Manganese               | mg/L    | 0.001   | SM 3120          | 02-May-23/O        | 0.025       | 0.025     |  |
| Mercury                 | mg/L    | 0.00002 | SM 3112 B        | 02-May-23/O        | < 0.00002   | < 0.00002 |  |
| Molybdenum              | mg/L    | 0.0001  | EPA 200.8        | 04-May-23/O        | 0.0002      | 0.0002    |  |
| Nickel                  | mg/L    | 0.01    | SM 3120          | 02-May-23/O        | < 0.01      | < 0.01    |  |
| Potassium               | mg/L    | 0.1     | SM 3120          | 02-May-23/O        | 2.1         | 2.1       |  |
| Phosphorus-Total        | mg/L    | 0.01    | E3516.2          | 11-May-23/K        | 0.06        | 0.06      |  |
| Phosphorus              | mg/L    | 0.1     | SM 3120          | 02-May-23/O        | < 0.1       | < 0.1     |  |
| Selenium                | mg/L    | 0.001   | EPA 200.8        | 04-May-23/O        | < 0.001     | < 0.001   |  |
| Silver                  | mg/L    | 0.0001  | EPA 200.8        | 04-May-23/O        | < 0.0001    | < 0.0001  |  |
| Sodium                  | mg/L    | 0.2     | SM 3120          | 02-May-23/O        | 4.2         | 4.1       |  |
| Strontium               | mg/L    | 0.001   | SM 3120          | 02-May-23/O        | 0.142       | 0.140     |  |
| Tin                     | mg/L    | 0.05    | SM 3120          | 02-May-23/O        | < 0.05      | < 0.05    |  |
| Titanium                | mg/L    | 0.005   | SM 3120          | 02-May-23/O        | < 0.005     | < 0.005   |  |
| Thallium                | mg/L    | 0.00005 | EPA 200.8        | 04-May-23/O        | < 0.00005   | < 0.00005 |  |
| Uranium                 | mg/L    | 0.00005 | EPA 200.8        | 04-May-23/O        | 0.00040     | 0.00041   |  |
| Vanadium                | mg/L    | 0.0001  | EPA 200.8        | 04-May-23/O        | < 0.0001    | < 0.0001  |  |
| Zinc                    | mg/L    | 0.005   | SM 3120          | 02-May-23/O        | < 0.005     | < 0.005   |  |
| Anion Sum               | meq/L   |         | Calc.            | 03-May-23/O        | 4.05        | 4.07      |  |
| Cation Sum              | meq/L   |         | Calc.            | 03-May-23/O        | 3.74        | 3.74      |  |
| % Difference            | %       |         | Calc.            | 03-May-23/O        | 3.97        | 4.14      |  |
| Ion Ratio               | AS/CS   |         | Calc.            | 03-May-23/O        | 1.08        | 1.09      |  |
| Conductivity (calc.)    | µmho/cm |         | Calc.            | 03-May-23/O        | 366         | 367       |  |
| Sodium Adsorption Ratio | -       |         | Calc.            | 03-May-23/O        | 0.139       | 0.134     |  |
| TDS(calc.)/EC(actual)   | -       |         | Calc.            | 03-May-23/O        | 0.512       | 0.516     |  |

R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an \*

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Steve Garrett

Director of Laboratory Services

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**C.O.C.: ---**

**REPORT No. B23-03142**

**Report To:**

**City of Kawartha Lakes**

PO Box 9000, 12 Peel St

Lindsay ON K9V 5R8

**Attention:** Kayla Pantaleo

**Caduceon Environmental Laboratories**

112 Commerce Park Drive

Barrie ON L4N 8W8

Tel: 705-252-5743

Fax: 705-252-5746

DATE RECEIVED: 27-Apr-23

JOB/PROJECT NO.: Fenelon Landfill

DATE REPORTED: 19-May-23

P.O. NUMBER:

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

|                       |              |             |                         |                           |             |       |  |
|-----------------------|--------------|-------------|-------------------------|---------------------------|-------------|-------|--|
|                       |              |             | <b>Client I.D.</b>      | MW13                      | DUP-2       |       |  |
|                       |              |             | <b>Sample I.D.</b>      | B23-03142-1               | B23-03142-2 |       |  |
|                       |              |             | <b>Date Collected</b>   | 26-Apr-23                 | 26-Apr-23   |       |  |
| <b>Parameter</b>      | <b>Units</b> | <b>R.L.</b> | <b>Reference Method</b> | <b>Date/Site Analyzed</b> |             |       |  |
| Langelier Index(25°C) | S.I.         |             | Calc.                   | 03-May-23/O               | 0.672       | 0.585 |  |

1 Chromium (VI) result is based on total Chromium



R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an \*

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Steve Garrett

Director of Laboratory Services

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**C.O.C.:** -

**REPORT No:** 23-023119 - Rev. 0

**Report To:**

City of Kawartha Lakes  
PO Box 9000  
322 Kent Street West  
Lindsay, ON K9V 4T7

**CADUCEON Environmental Laboratories**

110 West Beaver Creek Rd  
Unit #14  
Richmond Hill, ON L4B 1J9

**Attention: Kayla Pantaleo**

DATE RECEIVED: 2023-Aug-31  
DATE REPORTED: 2023-Sep-26  
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Fenelon Falls Landfill  
P.O. NUMBER:

| Analyses                       | Qty | Site Analyzed | Authorized | Date Analyzed | Lab Method               | Reference Method         |
|--------------------------------|-----|---------------|------------|---------------|--------------------------|--------------------------|
| Anions (Liquid)                | 3   | OTTAWA        | VKASYAN    | 2023-Sep-06   | A-IC-01                  | SM 4110B                 |
| BOD5 (Liquid)                  | 3   | KINGSTON      | JWOLFE     | 2023-Sep-06   | BOD-001                  | SM 5210B                 |
| COD (Liquid)                   | 3   | KINGSTON      | EHINCH     | 2023-Sep-08   | COD-001                  | SM 5220D                 |
| Colour (Liquid)                | 3   | OTTAWA        | MDON       | 2023-Sep-06   | A-COL-01                 | SM 2120C                 |
| Cond/pH/Alk Auto (Liquid)      | 3   | OTTAWA        | SBOUDREAU  | 2023-Sep-01   | COND-02/PH-02/A<br>LK-02 | SM 2510B/4500H/<br>2320B |
| Cyanide WAD (Liquid)           | 3   | KINGSTON      | JMACINNES  | 2023-Sep-07   | CN-001                   | SM 4500-CN-E             |
| DOC/DIC (Liquid)               | 3   | OTTAWA        | VKASYAN    | 2023-Sep-05   | C-OC-01                  | EPA 415.2                |
| Ion Balance (Calc.)            | 3   | OTTAWA        | STAILLON   |               | CP-028                   | MECP E3196               |
| Chromium VI (Liquid)           | 3   | OTTAWA        | STAILLON   | 2023-Sep-07   | D-CRVI-01                | MECP E3056               |
| ICP/MS Total (Liquid)          | 3   | OTTAWA        | TPRICE     | 2023-Sep-07   | D-ICPMS-01               | EPA 6020                 |
| ICP/OES Total (Liquid)         | 3   | OTTAWA        | APRUDYVUS  | 2023-Sep-05   | D-ICP-01                 | SM 3120B                 |
| ICP/OES (Liquid)               | 3   | OTTAWA        | NHOGAN     | 2023-Sep-05   | D-ICP-01                 | SM 3120B                 |
| Mercury (Liquid)               | 3   | OTTAWA        | TBENNETT   | 2023-Sep-06   | D-HG-02                  | SM 3112B                 |
| Ammonia & o-Phosphate (Liquid) | 3   | KINGSTON      | KDIBBITS   | 2023-Sep-13   | NH3-001                  | SM 4500NH3               |
| Phenols (Liquid)               | 3   | KINGSTON      | JMACINNES  | 2023-Sep-14   | PHEN-01                  | MECP E3179               |
| TP & TKN (Liquid)              | 3   | KINGSTON      | KDIBBITS   | 2023-Sep-11   | TPTKN-001                | MECP E3516.2             |
| TSS (Liquid)                   | 3   | KINGSTON      | AMANIYA    | 2023-Sep-11   | TSS-001                  | SM 2540D                 |
| Turbidity (Liquid)             | 3   | OTTAWA        | MDON       | 2023-Sep-07   | A-TURB-01                | SM 2130B                 |
| VOC-Volatiles Full (Water)     | 3   | RICHMOND_HILL | FLENA      | 2023-Sep-07   | C-VOC-02                 | EPA 8260                 |

R.L. = Reporting Limit

NC = Not Calculated

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**Michelle Dubien**  
**Data Specialist**



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**Final Report**  
**REPORT No: 23-023119 - Rev. 0**

|                             |          |       | Client I.D.    | SW2         | SW3         | SW4         |
|-----------------------------|----------|-------|----------------|-------------|-------------|-------------|
|                             |          |       | Sample I.D.    | 23-023119-1 | 23-023119-2 | 23-023119-3 |
|                             |          |       | Date Collected | 2023-08-30  | 2023-08-30  | 2023-08-30  |
| Parameter                   | Units    | R.L.  |                | -           | -           | -           |
| Alkalinity(CaCO3) to pH4.5  | mg/L     | 5     |                | 191         | 215         | 207         |
| pH @25°C                    | pH units | -     |                | 7.90        | 7.42        | 7.06        |
| Conductivity @25°C          | uS/cm    | 1     |                | 406         | 443         | 426         |
| Colour                      | TCU      | 2     |                | 51          | 88          | 91          |
| Turbidity                   | NTU      | 0.1   |                | 0.7         | 0.9         | 1.4         |
| Fluoride                    | mg/L     | 0.1   |                | <0.1        | <0.1        | <0.1        |
| Chloride                    | mg/L     | 0.5   |                | 11.2        | 13.3        | 15.0        |
| Nitrate (N)                 | mg/L     | 0.05  |                | <0.05       | <0.05       | 0.10        |
| Nitrite (N)                 | mg/L     | 0.05  |                | <0.05       | <0.05       | <0.05       |
| Sulphate                    | mg/L     | 1     |                | 8           | 3           | <1          |
| BOD5                        | mg/L     | 3     |                | <3          | <3          | <3          |
| Total Suspended Solids      | mg/L     | 3     |                | <3          | <3          | 6           |
| Phosphorus (Total)          | mg/L     | 0.01  |                | 0.27        | 0.26        | 0.02        |
| Total Kjeldahl Nitrogen     | mg/L     | 0.1   |                | 3.0         | 0.8         | 1.0         |
| Ammonia (N)-Total (NH3+NH4) | mg/L     | 0.05  |                | 0.06        | <0.05       | <0.05       |
| Ammonia (N)-unionized       | mg/L     | 0.01  |                | <0.01       | <0.01       | <0.01       |
| Dissolved Organic Carbon    | mg/L     | 0.2   |                | 13.5        | 24.8        | 27.1        |
| Cyanide (WAD)               | mg/L     | 0.005 |                | <0.005      | <0.005      | <0.005      |
| Phenolics                   | mg/L     | 0.001 |                | <0.001      | <0.001      | <0.001      |
| COD                         | mg/L     | 5     |                | 37          | 54          | 61          |
| Aluminum                    | mg/L     | 0.01  |                | 0.02        | 0.03        | 0.03        |



**Michelle Dubien**  
**Data Specialist**

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**Final Report**  
**REPORT No: 23-023119 - Rev. 0**

|                                  |       |          | Client I.D.    | SW2         | SW3         | SW4         |
|----------------------------------|-------|----------|----------------|-------------|-------------|-------------|
|                                  |       |          | Sample I.D.    | 23-023119-1 | 23-023119-2 | 23-023119-3 |
|                                  |       |          | Date Collected | 2023-08-30  | 2023-08-30  | 2023-08-30  |
| Parameter                        | Units | R.L.     |                | -           | -           | -           |
| Hardness (as CaCO <sub>3</sub> ) | mg/L  | -        |                | 193         | 198         | 190         |
| Aluminum (Total)                 | mg/L  | 0.01     |                | 0.01        | 0.03        | 0.03        |
| Barium (Total)                   | mg/L  | 0.001    |                | 0.038       | 0.040       | 0.045       |
| Boron (Total)                    | mg/L  | 0.005    |                | 0.007       | 0.007       | 0.007       |
| Calcium (Total)                  | mg/L  | 0.02     |                | 68.1        | 70.6        | 68.2        |
| Iron (Total)                     | mg/L  | 0.005    |                | 0.119       | 0.397       | 0.753       |
| Magnesium (Total)                | mg/L  | 0.02     |                | 5.52        | 5.29        | 4.86        |
| Manganese (Total)                | mg/L  | 0.001    |                | 0.198       | 0.124       | 0.363       |
| Phosphorus (Total)               | mg/L  | 0.1      |                | <0.1        | <0.1        | <0.1        |
| Potassium (Total)                | mg/L  | 0.1      |                | 1.6         | 1.6         | 1.2         |
| Sodium (Total)                   | mg/L  | 0.2      |                | 5.4         | 7.0         | 6.9         |
| Strontium (Total)                | mg/L  | 0.001    |                | 0.167       | 0.190       | 0.181       |
| Tin (Total)                      | mg/L  | 0.05     |                | <0.05       | <0.05       | <0.05       |
| Titanium (Total)                 | mg/L  | 0.005    |                | <0.005      | <0.005      | <0.005      |
| Zinc (Total)                     | mg/L  | 0.005    |                | 0.013       | 0.018       | 0.040       |
| Antimony (Total)                 | mg/L  | 0.0001   |                | 0.0004      | 0.0004      | 0.0004      |
| Arsenic (Total)                  | mg/L  | 0.0001   |                | 0.0003      | 0.0007      | 0.0005      |
| Beryllium (Total)                | mg/L  | 0.0001   |                | <0.0001     | <0.0001     | <0.0001     |
| Cadmium (Total)                  | mg/L  | 0.000015 |                | <0.000015   | <0.000015   | <0.000015   |
| Chromium (Total)                 | mg/L  | 0.001    |                | <0.001      | <0.001      | <0.001      |
| Cobalt (Total)                   | mg/L  | 0.0001   |                | 0.0003      | 0.0003      | 0.0003      |



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**Data Specialist**

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**Final Report**  
**REPORT No: 23-023119 - Rev. 0**

| Client I.D.                      |         |         | SW2         | SW3         | SW4         |
|----------------------------------|---------|---------|-------------|-------------|-------------|
| Sample I.D.                      |         |         | 23-023119-1 | 23-023119-2 | 23-023119-3 |
| Date Collected                   |         |         | 2023-08-30  | 2023-08-30  | 2023-08-30  |
| Parameter                        | Units   | R.L.    | -           | -           | -           |
| Copper (Total)                   | mg/L    | 0.0001  | 0.0003      | 0.0001      | 0.0002      |
| Lead (Total)                     | mg/L    | 0.00002 | 0.00005     | 0.00003     | 0.00004     |
| Molybdenum (Total)               | mg/L    | 0.0001  | 0.0001      | 0.0001      | <0.0001     |
| Nickel (Total)                   | mg/L    | 0.0002  | <0.0002     | <0.0002     | <0.0002     |
| Selenium (Total)                 | mg/L    | 0.001   | <0.001      | <0.001      | <0.001      |
| Silver (Total)                   | mg/L    | 0.0001  | <0.0001     | <0.0001     | <0.0001     |
| Thallium (Total)                 | mg/L    | 0.00005 | <0.00005    | <0.00005    | <0.00005    |
| Uranium (Total)                  | mg/L    | 0.00005 | 0.00011     | <0.00005    | <0.00005    |
| Vanadium (Total)                 | mg/L    | 0.0001  | <0.0001     | <0.0001     | <0.0001     |
| Chromium (VI)                    | mg/L    | 0.001   | <0.001      | <0.001      | <0.001      |
| Mercury                          | mg/L    | 0.00002 | <0.00002    | <0.00002    | <0.00002    |
| Anion Sum                        | meq/L   | -       | 4.30        | 4.73        | 4.58        |
| Cation Sum                       | meq/L   | -       | 4.15        | 4.33        | 4.19        |
| % Difference                     | %       | -       | 1.82        | 4.39        | 4.41        |
| Ion Ratio                        | -       | -       | 1.04        | 1.09        | 1.09        |
| Sodium Adsorption Ratio          | -       | -       | 0.169       | 0.217       | 0.219       |
| TDS (Ion Sum Calc)               | mg/L    | 1       | 215         | 230         | 222         |
| TDS(calc.)/EC(actual)            | -       | -       | 0.530       | 0.520       | 0.522       |
| Conductivity Calc                | µmho/cm | -       | 401         | 426         | 412         |
| Conductivity Calc / Conductivity | -       | -       | 0.989       | 0.961       | 0.966       |
| Langelier Index(25°C)            | -       | -       | 0.581       | 0.168       | -0.222      |



**Michelle Dubien**  
**Data Specialist**

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**Final Report**  
**REPORT No: 23-023119 - Rev. 0**

|                           |          |      | Client I.D.    | SW2         | SW3         | SW4         |
|---------------------------|----------|------|----------------|-------------|-------------|-------------|
|                           |          |      | Sample I.D.    | 23-023119-1 | 23-023119-2 | 23-023119-3 |
|                           |          |      | Date Collected | 2023-08-30  | 2023-08-30  | 2023-08-30  |
| Parameter                 | Units    | R.L. |                | -           | -           | -           |
| Saturation pH (25°C)      | -        | -    |                | 7.32        | 7.25        | 7.28        |
| pH (Client Data)          | pH units | -    |                | 7.28        | 7.29        | 6.93        |
| Temperature (Client Data) | °C       | -    |                | 17.7        | 17.8        | 17.6        |



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**Final Report**  
**REPORT No: 23-023119 - Rev. 0**

| Client I.D.                     |       |      | SW2         | SW3         | SW4         |
|---------------------------------|-------|------|-------------|-------------|-------------|
| Sample I.D.                     |       |      | 23-023119-1 | 23-023119-2 | 23-023119-3 |
| Date Collected                  |       |      | 2023-08-30  | 2023-08-30  | 2023-08-30  |
| Parameter                       | Units | R.L. | -           | -           | -           |
| Acetone                         | µg/L  | 30   | <30         | <30         | <30         |
| Benzene                         | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Bromodichloromethane            | µg/L  | 2    | <2          | <2          | <2          |
| Bromoform                       | µg/L  | 5    | <5          | <5          | <5          |
| Bromomethane                    | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Carbon Tetrachloride            | µg/L  | 0.2  | <0.2        | <0.2        | <0.2        |
| Chlorobenzene                   | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Chloroform                      | µg/L  | 1    | <1          | <1          | <1          |
| Chloromethane (Methyl Chloride) | µg/L  | 2    | <2          | <2          | <2          |
| Dibromochloromethane            | µg/L  | 2    | <2          | <2          | <2          |
| Ethylene Dibromide              | µg/L  | 0.2  | <0.2        | <0.2        | <0.2        |
| Dichlorobenzene,1,2-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Dichlorobenzene,1,3-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Dichlorobenzene,1,4-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Dichloroethane,1,1-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Dichloroethane,1,2-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Dichloroethylene,1,1-           | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Dichloroethylene,1,2-cis-       | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Dichloroethylene,1,2-trans-     | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Dichloropropane,1,2-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Dichloropropene,1,3-cis-        | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |



**Michelle Dubien**  
**Data Specialist**

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**Final Report**  
**REPORT No: 23-023119 - Rev. 0**

| Client I.D.                          |       |      | SW2         | SW3         | SW4         |
|--------------------------------------|-------|------|-------------|-------------|-------------|
| Sample I.D.                          |       |      | 23-023119-1 | 23-023119-2 | 23-023119-3 |
| Date Collected                       |       |      | 2023-08-30  | 2023-08-30  | 2023-08-30  |
| Parameter                            | Units | R.L. | -           | -           | -           |
| Dichloropropene, 1,3-trans-          | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Ethylbenzene                         | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Dichloromethane (Methylene Chloride) | µg/L  | 5    | <5          | <5          | <5          |
| Methyl Ethyl Ketone                  | µg/L  | 20   | <20         | <20         | <20         |
| Methyl Isobutyl Ketone               | µg/L  | 20   | <20         | <20         | <20         |
| Methyl tert-Butyl Ether (MTBE)       | µg/L  | 2    | <2          | <2          | <2          |
| Styrene                              | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Tetrachloroethane, 1,1,1,2-          | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Tetrachloroethane, 1,1,2,2-          | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Tetrachloroethylene                  | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Toluene                              | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Trichlorobenzene, 1,2,4-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Trichloroethane, 1,1,1,-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Trichloroethane, 1,1,2,-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Trichloroethylene                    | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |
| Trichlorofluoromethane (Freon 11)    | µg/L  | 5    | <5          | <5          | <5          |
| Vinyl Chloride                       | µg/L  | 0.2  | <0.2        | <0.2        | <0.2        |
| Xylene, m,p-                         | µg/L  | 1    | <1          | <1          | <1          |
| Xylene, o-                           | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        |



**Michelle Dubien**  
**Data Specialist**

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**C.O.C.:** -

**REPORT No: 23-028626 - Rev. 0**

**Report To:**

City of Kawartha Lakes  
PO Box 9000  
322 Kent Street West  
Lindsay, ON K9V 4T7

**CADUCEON Environmental Laboratories**

112 Commerce Park Dr Unit L  
Barrie, ON L4N 8W8

**Attention: Deyonte Levene**

DATE RECEIVED: 2023-Oct-13  
DATE REPORTED: 2023-Nov-06  
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Fenelon Falls Landfill  
P.O. NUMBER:

| Analyses                       | Qty | Site Analyzed | Authorized  | Date Analyzed | Lab Method               | Reference Method         |
|--------------------------------|-----|---------------|-------------|---------------|--------------------------|--------------------------|
| Anions (Liquid)                | 16  | OTTAWA        | VKASYAN     | 2023-Oct-25   | A-IC-01                  | SM 4110B                 |
| BOD5 (Liquid)                  | 16  | KINGSTON      | JWOLFE2     | 2023-Oct-26   | BOD-001                  | SM 5210B                 |
| COD (Liquid)                   | 16  | KINGSTON      | EHINCH      | 2023-Oct-20   | COD-001                  | SM 5220D                 |
| Colour (Liquid)                | 16  | OTTAWA        | MDON        | 2023-Oct-19   | A-COL-01                 | SM 2120C                 |
| Cond/pH/Alk Auto (Liquid)      | 16  | OTTAWA        | SBOUDREAU   | 2023-Oct-19   | COND-02/PH-02/A<br>LK-02 | SM 2510B/4500H/<br>2320B |
| Cyanide WAD (Liquid)           | 16  | KINGSTON      | JMACINNES   | 2023-Oct-25   | CN-001                   | SM 4500-CN-E             |
| DOC/DIC (Liquid)               | 16  | OTTAWA        | VKASYAN     | 2023-Oct-25   | C-OC-01                  | EPA 415.2                |
| Ion Balance (Calc.)            | 16  | OTTAWA        | ASCHNEIDER  |               | CP-028                   | MECP E3196               |
| Chromium VI (Liquid)           | 16  | OTTAWA        | STAILLON    | 2023-Oct-23   | D-CRVI-01                | MECP E3056               |
| ICP/MS (Liquid)                | 16  | OTTAWA        | TPRICE      | 2023-Oct-20   | D-ICPMS-01               | EPA 200.8                |
| ICP/OES (Liquid)               | 16  | OTTAWA        | NHOGAN      | 2023-Oct-18   | D-ICP-01                 | SM 3120B                 |
| Mercury (Liquid)               | 16  | OTTAWA        | TBENNETT    | 2023-Oct-19   | D-HG-02                  | SM 3112B                 |
| Ammonia & o-Phosphate (Liquid) | 16  | KINGSTON      | KDIBBITS    | 2023-Oct-27   | NH3-001                  | SM 4500NH3               |
| PCB's (Liquid)                 | 9   | KINGSTON      | CSUMMERHAYS | 2023-Oct-20   | PCB-001                  | EPA 8081                 |
| Phenols (Liquid)               | 16  | KINGSTON      | JMACINNES   | 2023-Oct-30   | PHEN-01                  | MECP E3179               |
| TP & TKN (Liquid)              | 16  | KINGSTON      | KDIBBITS    | 2023-Nov-01   | TPTKN-001                | MECP E3516.2             |
| TSS (Liquid)                   | 16  | KINGSTON      | KKHUTSYEVA  | 2023-Oct-20   | TSS-001                  | SM 2540D                 |
| Turbidity (Liquid)             | 16  | OTTAWA        | MDON        | 2023-Oct-19   | A-TURB-01                | SM 2130B                 |
| VOC-Volatiles Full (Water)     | 16  | RICHMOND_HILL | JEVANS      | 2023-Oct-20   | C-VOC-02                 | EPA 8260                 |

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an \*



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**Data Specialist**

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**REPORT No: 23-028626 - Rev. 0**

| Client I.D.                 |          |       | MW26        | MW26-1      | MW26-2      | MW27-I      | MW27-II     |
|-----------------------------|----------|-------|-------------|-------------|-------------|-------------|-------------|
| Sample I.D.                 |          |       | 23-028626-1 | 23-028626-2 | 23-028626-3 | 23-028626-4 | 23-028626-5 |
| Date Collected              |          |       | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                   | Units    | R.L.  | -           | -           | -           | -           | -           |
| Alkalinity(CaCO3) to pH4.5  | mg/L     | 5     | 288         | 331         | 393         | 173         | 229         |
| TDS (Calc. from Cond.)      | mg/L     | 3     | 357         | 401         | 462         | 5300        | 249         |
| Conductivity @25°C          | uS/cm    | 1     | 688         | 766         | 873         | 9220        | 481         |
| pH @25°C                    | pH units | -     | 7.33        | 7.35        | 7.39        | 7.28        | 7.44        |
| Colour                      | TCU      | 2     | 3           | 5           | 7           | <2          | <2          |
| Turbidity                   | NTU      | 0.1   | 765         | 10.0        | 41.4        | 6.7         | 64.2        |
| Fluoride                    | mg/L     | 0.1   | <0.1        | <0.1        | <0.1        | <0.1        | <0.1        |
| Chloride                    | mg/L     | 0.5   | 42.4        | 51.8        | 53.9        | 3640        | 13.0        |
| Nitrate (N)                 | mg/L     | 0.05  | <0.05       | <0.05       | <0.05       | <0.05       | 0.70        |
| Nitrite (N)                 | mg/L     | 0.05  | <0.05       | <0.05       | <0.05       | <0.05       | <0.05       |
| Sulphate                    | mg/L     | 1     | 21          | 9           | <1          | <2          | 15          |
| BOD5                        | mg/L     | 3     | <3          | <3          | <3          | <3          | <3          |
| Total Suspended Solids      | mg/L     | 3     | 11800       | 8           | 10          | 17          | 253         |
| Phosphorus (Total)          | mg/L     | 0.01  | 2.00        | <0.01       | <0.01       | <0.01       | 0.18        |
| Total Kjeldahl Nitrogen     | mg/L     | 0.1   | 0.3         | 0.2         | 0.4         | 10.8        | <0.1        |
| Ammonia (N)-Total (NH3+NH4) | mg/L     | 0.05  | 0.22        | 0.18        | 0.25        | 9.78        | 0.07        |
| Ammonia (N)-unionized       | mg/L     | 0.01  | <0.01       | <0.01       | <0.01       | 0.03        | <0.01       |
| Dissolved Organic Carbon    | mg/L     | 0.2   | 6.0         | 7.7         | 10.8        | 1.1         | 2.7         |
| Cyanide (WAD)               | mg/L     | 0.005 | <0.005      | <0.005      | <0.005      | <0.005      | <0.005      |
| Phenolics                   | mg/L     | 0.001 | <0.001      | <0.001      | <0.001      | <0.001      | <0.001      |
| COD                         | mg/L     | 5     | 19          | 10          | 21          | 151         | 12          |



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|                     |       |          | Client I.D.    | MW26        | MW26-1      | MW26-2      | MW27-I      | MW27-II     |
|---------------------|-------|----------|----------------|-------------|-------------|-------------|-------------|-------------|
|                     |       |          | Sample I.D.    | 23-028626-1 | 23-028626-2 | 23-028626-3 | 23-028626-4 | 23-028626-5 |
|                     |       |          | Date Collected | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter           | Units | R.L.     |                | -           | -           | -           | -           | -           |
| Hardness (as CaCO3) | mg/L  | 0.02     |                | 313         | 346         | 398         | 1630        | 220         |
| Aluminum            | mg/L  | 0.01     |                | 0.07        | 0.09        | 0.10        | 0.12        | 0.06        |
| Barium              | mg/L  | 0.001    |                | 0.157       | 0.190       | 0.194       | 2.08        | 0.064       |
| Boron               | mg/L  | 0.005    |                | 0.045       | 0.058       | 0.043       | 1.12        | 0.012       |
| Calcium             | mg/L  | 0.02     |                | 108         | 118         | 139         | 344         | 76.6        |
| Iron                | mg/L  | 0.005    |                | 0.719       | 1.16        | 3.27        | 0.621       | 0.006       |
| Magnesium           | mg/L  | 0.02     |                | 10.4        | 12.3        | 12.2        | 188         | 7.04        |
| Manganese           | mg/L  | 0.001    |                | 0.031       | 0.053       | 0.089       | 0.013       | 0.004       |
| Phosphorus          | mg/L  | 0.1      |                | <0.1        | <0.1        | <0.1        | <0.1        | <0.1        |
| Potassium           | mg/L  | 0.1      |                | 2.7         | 2.8         | 2.5         | 56.3        | 1.7         |
| Sodium              | mg/L  | 0.2      |                | 17.1        | 22.0        | 23.3        | 1070        | 11.7        |
| Strontium           | mg/L  | 0.001    |                | 0.370       | 0.513       | 0.582       | 30.7        | 0.177       |
| Tin                 | mg/L  | 0.05     |                | <0.05       | <0.05       | <0.05       | <0.05       | <0.05       |
| Titanium            | mg/L  | 0.005    |                | <0.005      | <0.005      | <0.005      | <0.005      | <0.005      |
| Zinc                | mg/L  | 0.005    |                | <0.005      | <0.005      | <0.005      | <0.005      | <0.005      |
| Antimony            | mg/L  | 0.0001   |                | <0.0001     | 0.0001      | <0.0001     | 0.0003      | <0.0001     |
| Arsenic             | mg/L  | 0.0001   |                | <0.0001     | <0.0001     | <0.0001     | <0.0003     | 0.0002      |
| Beryllium           | mg/L  | 0.0001   |                | <0.0001     | <0.0001     | <0.0001     | <0.0001     | <0.0001     |
| Cadmium             | mg/L  | 0.000015 |                | <0.000015   | <0.000015   | <0.000015   | <0.000030   | <0.000015   |
| Chromium            | mg/L  | 0.001    |                | <0.001      | <0.001      | <0.001      | <0.001      | <0.001      |
| Cobalt              | mg/L  | 0.0001   |                | 0.0003      | 0.0004      | 0.0020      | 0.0006      | 0.0003      |



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|                                  |         |         | Client I.D.    | MW26        | MW26-1      | MW26-2      | MW27-I      | MW27-II     |
|----------------------------------|---------|---------|----------------|-------------|-------------|-------------|-------------|-------------|
|                                  |         |         | Sample I.D.    | 23-028626-1 | 23-028626-2 | 23-028626-3 | 23-028626-4 | 23-028626-5 |
|                                  |         |         | Date Collected | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                        | Units   | R.L.    |                | -           | -           | -           | -           | -           |
| Copper                           | mg/L    | 0.0001  |                | 0.0006      | 0.0005      | 0.0003      | 0.0004      | 0.0016      |
| Lead                             | mg/L    | 0.00002 |                | 0.00003     | <0.00002    | <0.00002    | <0.00009    | <0.00002    |
| Molybdenum                       | mg/L    | 0.0001  |                | 0.0004      | <0.0001     | <0.0001     | <0.0002     | 0.0003      |
| Nickel                           | mg/L    | 0.0002  |                | 0.0003      | 0.0006      | 0.0153      | <0.0002     | 0.0007      |
| Selenium                         | mg/L    | 0.001   |                | <0.001      | <0.001      | <0.001      | <0.001      | <0.001      |
| Silver                           | mg/L    | 0.0001  |                | <0.0001     | <0.0001     | <0.0001     | <0.0001     | <0.0001     |
| Thallium                         | mg/L    | 0.00005 |                | <0.00005    | <0.00005    | <0.00005    | <0.00005    | <0.00005    |
| Uranium                          | mg/L    | 0.00005 |                | 0.00027     | 0.00009     | <0.00005    | <0.00005    | 0.00298     |
| Vanadium                         | mg/L    | 0.0001  |                | 0.0002      | 0.0004      | 0.0007      | <0.0004     | 0.0003      |
| Chromium (VI)                    | mg/L    | 0.01    |                | <0.01       | <0.01       | <0.01       | <0.01       | <0.01       |
| Mercury                          | mg/L    | 0.00002 |                | <0.00002    | <0.00002    | <0.00002    | <0.00002    | <0.00002    |
| Anion Sum                        | meq/L   | -       |                | 7.40        | 8.28        | 9.39        | 101         | 5.29        |
| Cation Sum                       | meq/L   | -       |                | 7.12        | 8.02        | 9.23        | 81.9        | 4.96        |
| % Difference                     | %       | -       |                | 1.90        | 1.61        | 0.854       | 10.5        | 3.22        |
| Ion Ratio                        | -       | -       |                | 1.04        | 1.03        | 1.02        | 1.24        | 1.07        |
| Sodium Adsorption Ratio          | -       | -       |                | 0.421       | 0.515       | 0.509       | 11.5        | 0.343       |
| TDS (Ion Sum Calc)               | mg/L    | 1       |                | 376         | 417         | 471         | 5240        | 265         |
| TDS(calc.)/EC(actual)            | -       | -       |                | 0.546       | 0.544       | 0.540       | 0.568       | 0.552       |
| Conductivity Calc                | µmho/cm | -       |                | 684         | 758         | 846         | 8180        | 483         |
| Conductivity Calc / Conductivity | -       | -       |                | 0.994       | 0.990       | 0.969       | 0.887       | 1.00        |
| Langelier Index(25°C)            | -       | -       |                | 0.371       | 0.480       | 0.665       | 0.502       | 0.251       |



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|                           |          |      | Client I.D.    | MW26        | MW26-1      | MW26-2      | MW27-I      | MW27-II     |
|---------------------------|----------|------|----------------|-------------|-------------|-------------|-------------|-------------|
|                           |          |      | Sample I.D.    | 23-028626-1 | 23-028626-2 | 23-028626-3 | 23-028626-4 | 23-028626-5 |
|                           |          |      | Date Collected | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                 | Units    | R.L. |                | -           | -           | -           | -           | -           |
| Saturation pH (25°C)      | -        | -    |                | 6.96        | 6.87        | 6.72        | 6.78        | 7.19        |
| pH (Client Data)          | pH units | -    |                | 7.44        | 7.55        | 7.18        | 7.24        | 7.87        |
| Temperature (Client Data) | °C       | -    |                | 8.1         | 9.5         | 9.9         | 8.4         | 9.2         |



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| Client I.D.                 |          |       | MW27-III    | MW28-I      | MW28-II     | MW28-III    | WP1-10       |
|-----------------------------|----------|-------|-------------|-------------|-------------|-------------|--------------|
| Sample I.D.                 |          |       | 23-028626-6 | 23-028626-7 | 23-028626-8 | 23-028626-9 | 23-028626-10 |
| Date Collected              |          |       | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12   |
| Parameter                   | Units    | R.L.  | -           | -           | -           | -           | -            |
| Alkalinity(CaCO3) to pH4.5  | mg/L     | 5     | 205         | 228         | 244         | 257         | 287          |
| TDS (Calc. from Cond.)      | mg/L     | 3     | 249         | 284         | 289         | 329         | 305          |
| Conductivity @25°C          | uS/cm    | 1     | 481         | 548         | 558         | 634         | 588          |
| pH @25°C                    | pH units | -     | 7.37        | 7.28        | 7.47        | 7.30        | 7.06         |
| Colour                      | TCU      | 2     | <2          | <2          | 3           | <2          | 65           |
| Turbidity                   | NTU      | 0.1   | 3150        | 7.5         | 2730        | 269         | 940          |
| Fluoride                    | mg/L     | 0.1   | <0.1        | <0.1        | <0.1        | <0.1        | <0.1         |
| Chloride                    | mg/L     | 0.5   | 26.0        | 37.5        | 32.0        | 34.1        | 18.0         |
| Nitrate (N)                 | mg/L     | 0.05  | 0.05        | <0.05       | <0.05       | <0.05       | <0.05        |
| Nitrite (N)                 | mg/L     | 0.05  | <0.05       | <0.05       | <0.05       | <0.05       | <0.05        |
| Sulphate                    | mg/L     | 1     | 23          | 16          | 19          | 41          | 4            |
| BOD5                        | mg/L     | 3     | <3          | <3          | <3          | <3          | <3           |
| Total Suspended Solids      | mg/L     | 3     | 4110        | 7           | 72500       | 1560        | 750          |
| Phosphorus (Total)          | mg/L     | 0.01  | 2.76        | 0.02        | 8.22        | 0.68        | 1.01         |
| Total Kjeldahl Nitrogen     | mg/L     | 0.1   | 1.2         | 0.4         | 0.4         | 0.1         | 9.2          |
| Ammonia (N)-Total (NH3+NH4) | mg/L     | 0.05  | 0.08        | 0.42        | 0.08        | <0.05       | 0.82         |
| Ammonia (N)-unionized       | mg/L     | 0.01  | <0.01       | <0.01       | <0.01       | <0.01       | <0.01        |
| Dissolved Organic Carbon    | mg/L     | 0.2   | 3.2         | 3.6         | 3.7         | 4.3         | 26.5         |
| Cyanide (WAD)               | mg/L     | 0.005 | <0.005      | <0.005      | <0.005      | <0.005      | <0.008       |
| Phenolics                   | mg/L     | 0.001 | <0.001      | <0.001      | <0.001      | <0.001      | <0.005       |
| COD                         | mg/L     | 5     | 68          | 5           | 51          | 9           | 553          |



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|                     |       |          | Client I.D.    | MW27-III    | MW28-I      | MW28-II     | MW28-III    | WP1-10       |
|---------------------|-------|----------|----------------|-------------|-------------|-------------|-------------|--------------|
|                     |       |          | Sample I.D.    | 23-028626-6 | 23-028626-7 | 23-028626-8 | 23-028626-9 | 23-028626-10 |
|                     |       |          | Date Collected | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12   |
| Parameter           | Units | R.L.     |                | -           | -           | -           | -           | -            |
| Hardness (as CaCO3) | mg/L  | 0.02     |                | 232         | 248         | 260         | 295         | 278          |
| Aluminum            | mg/L  | 0.01     |                | 0.07        | 0.07        | 0.07        | 0.07        | 0.08         |
| Barium              | mg/L  | 0.001    |                | 0.152       | 0.118       | 0.108       | 0.127       | 0.040        |
| Boron               | mg/L  | 0.005    |                | 0.011       | 0.019       | 0.017       | 0.042       | <0.005       |
| Calcium             | mg/L  | 0.02     |                | 79.5        | 83.7        | 91.2        | 104         | 101          |
| Iron                | mg/L  | 0.005    |                | 0.276       | 0.433       | 0.394       | 0.436       | 0.583        |
| Magnesium           | mg/L  | 0.02     |                | 8.09        | 9.37        | 7.77        | 8.58        | 6.11         |
| Manganese           | mg/L  | 0.001    |                | 0.025       | 0.020       | 0.038       | 0.051       | 0.522        |
| Phosphorus          | mg/L  | 0.1      |                | <0.1        | <0.1        | <0.1        | <0.1        | 0.2          |
| Potassium           | mg/L  | 0.1      |                | 1.8         | 2.2         | 2.2         | 2.4         | 2.2          |
| Sodium              | mg/L  | 0.2      |                | 3.8         | 13.3        | 11.6        | 13.6        | 8.4          |
| Strontium           | mg/L  | 0.001    |                | 0.187       | 0.258       | 0.234       | 0.209       | 0.233        |
| Tin                 | mg/L  | 0.05     |                | <0.05       | <0.05       | <0.05       | <0.05       | <0.05        |
| Titanium            | mg/L  | 0.005    |                | <0.005      | <0.005      | <0.005      | <0.005      | <0.005       |
| Zinc                | mg/L  | 0.005    |                | <0.005      | <0.005      | <0.005      | <0.005      | 0.201        |
| Antimony            | mg/L  | 0.0001   |                | <0.0001     | <0.0001     | <0.0001     | <0.0001     | <0.0001      |
| Arsenic             | mg/L  | 0.0001   |                | 0.0002      | <0.0001     | 0.0003      | 0.0001      | 0.0003       |
| Beryllium           | mg/L  | 0.0001   |                | <0.0001     | <0.0001     | <0.0001     | <0.0001     | <0.0001      |
| Cadmium             | mg/L  | 0.000015 |                | <0.000015   | <0.000015   | <0.000015   | <0.000015   | <0.000015    |
| Chromium            | mg/L  | 0.001    |                | <0.001      | <0.001      | <0.001      | <0.001      | <0.001       |
| Cobalt              | mg/L  | 0.0001   |                | 0.0002      | 0.0002      | 0.0002      | 0.0002      | 0.0003       |



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| Client I.D.                      |         |         | MW27-III    | MW28-I      | MW28-II     | MW28-III    | WP1-10       |
|----------------------------------|---------|---------|-------------|-------------|-------------|-------------|--------------|
| Sample I.D.                      |         |         | 23-028626-6 | 23-028626-7 | 23-028626-8 | 23-028626-9 | 23-028626-10 |
| Date Collected                   |         |         | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12   |
| Parameter                        | Units   | R.L.    | -           | -           | -           | -           | -            |
| Copper                           | mg/L    | 0.0001  | 0.0004      | 0.0002      | 0.0005      | 0.0005      | 0.0005       |
| Lead                             | mg/L    | 0.00002 | <0.00002    | <0.00002    | 0.00003     | 0.00002     | 0.00006      |
| Molybdenum                       | mg/L    | 0.0001  | 0.0005      | 0.0002      | 0.0002      | 0.0003      | <0.0001      |
| Nickel                           | mg/L    | 0.0002  | <0.0002     | <0.0002     | <0.0002     | <0.0002     | 0.0003       |
| Selenium                         | mg/L    | 0.001   | <0.001      | <0.001      | <0.001      | <0.001      | <0.001       |
| Silver                           | mg/L    | 0.0001  | <0.0001     | <0.0001     | <0.0001     | <0.0001     | <0.0001      |
| Thallium                         | mg/L    | 0.00005 | <0.00005    | <0.00005    | <0.00005    | <0.00005    | <0.00005     |
| Uranium                          | mg/L    | 0.00005 | 0.00005     | 0.00017     | 0.00035     | 0.00030     | <0.00005     |
| Vanadium                         | mg/L    | 0.0001  | 0.0002      | <0.0001     | <0.0001     | <0.0001     | 0.0004       |
| Chromium (VI)                    | mg/L    | 0.01    | <0.01       | <0.01       | <0.01       | <0.01       | <0.01        |
| Mercury                          | mg/L    | 0.00002 | <0.00002    | <0.00002    | <0.00002    | <0.00002    | <0.00002     |
| Anion Sum                        | meq/L   | -       | 5.31        | 5.96        | 6.19        | 6.94        | 6.34         |
| Cation Sum                       | meq/L   | -       | 4.87        | 5.64        | 5.78        | 6.58        | 6.08         |
| % Difference                     | %       | -       | 4.34        | 2.71        | 3.38        | 2.67        | 2.08         |
| Ion Ratio                        | -       | -       | 1.09        | 1.06        | 1.07        | 1.05        | 1.04         |
| Sodium Adsorption Ratio          | -       | -       | 0.110       | 0.368       | 0.313       | 0.344       | 0.219        |
| TDS (Ion Sum Calc)               | mg/L    | 1       | 266         | 300         | 311         | 358         | 315          |
| TDS(calc.)/EC(actual)            | -       | -       | 0.553       | 0.548       | 0.558       | 0.565       | 0.535        |
| Conductivity Calc                | µmho/cm | -       | 492         | 558         | 570         | 644         | 574          |
| Conductivity Calc / Conductivity | -       | -       | 1.02        | 1.02        | 1.02        | 1.02        | 0.976        |
| Langelier Index(25°C)            | -       | -       | 0.150       | 0.118       | 0.375       | 0.274       | 0.0799       |



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Data Specialist**

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**REPORT No: 23-028626 - Rev. 0**

|                           |          |      | Client I.D.    | MW27-III    | MW28-I      | MW28-II     | MW28-III    | WP1-10       |
|---------------------------|----------|------|----------------|-------------|-------------|-------------|-------------|--------------|
|                           |          |      | Sample I.D.    | 23-028626-6 | 23-028626-7 | 23-028626-8 | 23-028626-9 | 23-028626-10 |
|                           |          |      | Date Collected | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12   |
| Parameter                 | Units    | R.L. |                | -           | -           | -           | -           | -            |
| Saturation pH (25°C)      | -        | -    |                | 7.22        | 7.16        | 7.09        | 7.03        | 6.98         |
| pH (Client Data)          | pH units | -    |                | 7.69        | 7.35        | 7.74        | 7.65        | 6.96         |
| Temperature (Client Data) | °C       | -    |                | 9.6         | 9.5         | 9.1         | 10.2        | 8.8          |



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| Client I.D.                 |          |       | WP2-10       | WP3-10       | WP4-10       | WP5-10       | WP6-13       |
|-----------------------------|----------|-------|--------------|--------------|--------------|--------------|--------------|
| Sample I.D.                 |          |       | 23-028626-11 | 23-028626-12 | 23-028626-13 | 23-028626-14 | 23-028626-15 |
| Date Collected              |          |       | 2023-10-12   | 2023-10-12   | 2023-10-12   | 2023-10-12   | 2023-10-12   |
| Parameter                   | Units    | R.L.  | -            | -            | -            | -            | -            |
| Alkalinity(CaCO3) to pH4.5  | mg/L     | 5     | 492          | 2950         | 663          | 320          | 338          |
| TDS (Calc. from Cond.)      | mg/L     | 3     | 504          | 4840         | 739          | 317          | 363          |
| Conductivity @25°C          | uS/cm    | 1     | 947          | 8450         | 1360         | 610          | 698          |
| pH @25°C                    | pH units | -     | 7.21         | 7.34         | 7.51         | 7.09         | 7.53         |
| Colour                      | TCU      | 2     | 50           | 270          | 104          | 39           | 12           |
| Turbidity                   | NTU      | 0.1   | 2510         | 561          | 398          | 367          | 1900         |
| Fluoride                    | mg/L     | 0.1   | <0.1         | <0.1         | <0.1         | <0.1         | <0.1         |
| Chloride                    | mg/L     | 0.5   | 19.6         | 93.4         | 51.8         | 9.4          | 30.0         |
| Nitrate (N)                 | mg/L     | 0.05  | 0.29         | <0.05        | <0.40        | 0.14         | 0.26         |
| Nitrite (N)                 | mg/L     | 0.05  | <0.05        | <0.05        | <0.05        | <0.05        | <0.05        |
| Sulphate                    | mg/L     | 1     | <1           | <1           | 2            | 4            | 5            |
| BOD5                        | mg/L     | 3     | <3           | 22           | <3           | 4            | <3           |
| Total Suspended Solids      | mg/L     | 3     | 3060         | 2640         | 660          | 385          | 7290         |
| Phosphorus (Total)          | mg/L     | 0.01  | 3.77         | 3.04         | 0.66         | 0.20         | 6.76         |
| Total Kjeldahl Nitrogen     | mg/L     | 0.1   | 45.0         | 525          | 19.7         | 2.8          | 1.3          |
| Ammonia (N)-Total (NH3+NH4) | mg/L     | 0.05  | 6.69         | 437          | 20.0         | 0.28         | 0.28         |
| Ammonia (N)-unionized       | mg/L     | 0.01  | <0.01        | <0.01        | <0.01        | <0.01        | <0.01        |
| Dissolved Organic Carbon    | mg/L     | 0.2   | 24.7         | 107          | 57.8         | 21.7         | 12.3         |
| Cyanide (WAD)               | mg/L     | 0.005 | <0.085       | <0.017       | <0.017       | <0.005       | <0.005       |
| Phenolics                   | mg/L     | 0.001 | <0.010       | <0.020       | 0.006        | <0.001       | <0.001       |
| COD                         | mg/L     | 5     | 1930         | 697          | 226          | 123          | 78           |



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| Client I.D.         |       |          | WP2-10       | WP3-10       | WP4-10       | WP5-10       | WP6-13       |
|---------------------|-------|----------|--------------|--------------|--------------|--------------|--------------|
| Sample I.D.         |       |          | 23-028626-11 | 23-028626-12 | 23-028626-13 | 23-028626-14 | 23-028626-15 |
| Date Collected      |       |          | 2023-10-12   | 2023-10-12   | 2023-10-12   | 2023-10-12   | 2023-10-12   |
| Parameter           | Units | R.L.     | -            | -            | -            | -            | -            |
| Hardness (as CaCO3) | mg/L  | 0.02     | 403          | 1290         | 444          | 236          | 339          |
| Aluminum            | mg/L  | 0.01     | 0.10         | 0.19         | 0.10         | 0.06         | 0.07         |
| Barium              | mg/L  | 0.001    | 0.078        | 0.322        | 0.284        | 0.041        | 0.204        |
| Boron               | mg/L  | 0.005    | 0.135        | 3.26         | 0.489        | 0.174        | 0.019        |
| Calcium             | mg/L  | 0.02     | 144          | 392          | 143          | 81.6         | 118          |
| Iron                | mg/L  | 0.005    | 21.7         | 1.98         | 0.932        | 0.207        | 1.24         |
| Magnesium           | mg/L  | 0.02     | 10.5         | 74.7         | 21.0         | 7.78         | 10.6         |
| Manganese           | mg/L  | 0.001    | 0.588        | 1.39         | 0.202        | 0.624        | 0.051        |
| Phosphorus          | mg/L  | 0.1      | <0.1         | 0.1          | <0.1         | <0.1         | <0.1         |
| Potassium           | mg/L  | 0.1      | 14.2         | 294          | 45.2         | 16.2         | 2.2          |
| Sodium              | mg/L  | 0.2      | 45.5         | 780          | 47.2         | 33.9         | 8.5          |
| Strontium           | mg/L  | 0.001    | 0.402        | 1.82         | 0.402        | 0.246        | 0.456        |
| Tin                 | mg/L  | 0.05     | <0.05        | <0.05        | <0.05        | <0.05        | <0.05        |
| Titanium            | mg/L  | 0.005    | <0.005       | <0.005       | <0.005       | <0.005       | <0.005       |
| Zinc                | mg/L  | 0.005    | 0.310        | 0.049        | 0.428        | 1.38         | <0.005       |
| Antimony            | mg/L  | 0.0001   | 0.0002       | 0.0014       | 0.0002       | 0.0004       | <0.0001      |
| Arsenic             | mg/L  | 0.0001   | 0.0012       | 0.0035 (11)  | 0.0004       | 0.0013 (11)  | <0.0001      |
| Beryllium           | mg/L  | 0.0001   | <0.0001      | <0.0001      | <0.0001      | <0.0001      | <0.0001      |
| Cadmium             | mg/L  | 0.000015 | <0.000015    | <0.000030    | <0.000015    | 0.000112     | <0.000015    |
| Chromium            | mg/L  | 0.001    | <0.001       | 0.007        | <0.001       | 0.001        | <0.001       |
| Cobalt              | mg/L  | 0.0001   | 0.0019       | 0.0163       | 0.0016       | 0.0009       | 0.0004       |



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| Client I.D.                      |         |         | WP2-10       | WP3-10       | WP4-10       | WP5-10       | WP6-13       |
|----------------------------------|---------|---------|--------------|--------------|--------------|--------------|--------------|
| Sample I.D.                      |         |         | 23-028626-11 | 23-028626-12 | 23-028626-13 | 23-028626-14 | 23-028626-15 |
| Date Collected                   |         |         | 2023-10-12   | 2023-10-12   | 2023-10-12   | 2023-10-12   | 2023-10-12   |
| Parameter                        | Units   | R.L.    | -            | -            | -            | -            | -            |
| Copper                           | mg/L    | 0.0001  | 0.0008       | 0.0008       | 0.0010       | 0.0021       | 0.0007       |
| Lead                             | mg/L    | 0.00002 | 0.00012      | 0.00012      | 0.00006      | 0.00336      | 0.00003      |
| Molybdenum                       | mg/L    | 0.0001  | 0.0004       | 0.0008       | <0.0001      | 0.0006       | <0.0001      |
| Nickel                           | mg/L    | 0.0002  | 0.0019       | 0.0434       | 0.0022       | 0.0020       | 0.0006       |
| Selenium                         | mg/L    | 0.001   | <0.001       | 0.008        | <0.001       | <0.001       | <0.001       |
| Silver                           | mg/L    | 0.0001  | <0.0001      | <0.0001      | <0.0001      | <0.0001      | <0.0001      |
| Thallium                         | mg/L    | 0.00005 | <0.00005     | <0.00005     | <0.00005     | <0.00005     | <0.00005     |
| Uranium                          | mg/L    | 0.00005 | 0.00007      | 0.00006      | <0.00005     | 0.00057      | <0.00005     |
| Vanadium                         | mg/L    | 0.0001  | 0.0002       | 0.0022       | 0.0005       | 0.0008       | 0.0006       |
| Chromium (VI)                    | mg/L    | 0.01    | <0.01        | <0.01        | <0.01        | <0.01        | <0.01        |
| Mercury                          | mg/L    | 0.00002 | <0.00002     | <0.00002     | <0.00002     | <0.00002     | <0.00002     |
| Anion Sum                        | meq/L   | -       | 10.4         | 61.7         | 14.8         | 6.75         | 7.72         |
| Cation Sum                       | meq/L   | -       | 11.6         | 67.9         | 12.3         | 6.69         | 7.27         |
| % Difference                     | %       | -       | 5.59         | 4.84         | 9.13         | 0.432        | 3.03         |
| Ion Ratio                        | -       | -       | 0.894        | 0.908        | 1.20         | 1.01         | 1.06         |
| Sodium Adsorption Ratio          | -       | -       | 0.986        | 9.46         | 0.975        | 0.961        | 0.201        |
| TDS (Ion Sum Calc)               | mg/L    | 1       | 554          | 3420         | 712          | 346          | 379          |
| TDS(calc.)/EC(actual)            | -       | -       | 0.585        | 0.405        | 0.523        | 0.567        | 0.544        |
| Conductivity Calc                | µmho/cm | -       | 911          | 4540         | 1180         | 608          | 686          |
| Conductivity Calc / Conductivity | -       | -       | 0.962        | 0.537        | 0.867        | 0.997        | 0.983        |
| Langelier Index(25°C)            | -       | -       | 0.588        | 1.87         | 1.00         | 0.0541       | 0.678        |



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**Data Specialist**

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|                           |          |      | Client I.D.    | WP2-10       | WP3-10       | WP4-10       | WP5-10       | WP6-13       |
|---------------------------|----------|------|----------------|--------------|--------------|--------------|--------------|--------------|
|                           |          |      | Sample I.D.    | 23-028626-11 | 23-028626-12 | 23-028626-13 | 23-028626-14 | 23-028626-15 |
|                           |          |      | Date Collected | 2023-10-12   | 2023-10-12   | 2023-10-12   | 2023-10-12   | 2023-10-12   |
| Parameter                 | Units    | R.L. |                | -            | -            | -            | -            | -            |
| Saturation pH (25°C)      | -        | -    |                | 6.62         | 5.47         | 6.51         | 7.04         | 6.85         |
| pH (Client Data)          | pH units | -    |                | 6.87         | 6.87         | 6.94         | 7.21         | 7.62         |
| Temperature (Client Data) | °C       | -    |                | 10.4         | 10.7         | 11.1         | 11.7         | 12.1         |



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|                             |              |                       |              |
|-----------------------------|--------------|-----------------------|--------------|
|                             |              | <b>Client I.D.</b>    | DUP-1        |
|                             |              | <b>Sample I.D.</b>    | 23-028626-16 |
|                             |              | <b>Date Collected</b> | 2023-10-12   |
| <b>Parameter</b>            | <b>Units</b> | <b>R.L.</b>           | -            |
| Alkalinity(CaCO3) to pH4.5  | mg/L         | 5                     | 294          |
| TDS (Calc. from Cond.)      | mg/L         | 3                     | 306          |
| Conductivity @25°C          | uS/cm        | 1                     | 590          |
| pH @25°C                    | pH units     | -                     | 6.93         |
| Colour                      | TCU          | 2                     | 49           |
| Turbidity                   | NTU          | 0.1                   | 608          |
| Fluoride                    | mg/L         | 0.1                   | <0.1         |
| Chloride                    | mg/L         | 0.5                   | 18.0         |
| Nitrate (N)                 | mg/L         | 0.05                  | <0.05        |
| Nitrite (N)                 | mg/L         | 0.05                  | <0.05        |
| Sulphate                    | mg/L         | 1                     | 3            |
| BOD5                        | mg/L         | 3                     | <3           |
| Total Suspended Solids      | mg/L         | 3                     | 1110         |
| Phosphorus (Total)          | mg/L         | 0.01                  | 1.05         |
| Total Kjeldahl Nitrogen     | mg/L         | 0.1                   | 9.5          |
| Ammonia (N)-Total (NH3+NH4) | mg/L         | 0.05                  | 0.87         |
| Ammonia (N)-unionized       | mg/L         | 0.01                  | <0.01        |
| Dissolved Organic Carbon    | mg/L         | 0.2                   | 24.8         |
| Cyanide (WAD)               | mg/L         | 0.005                 | <0.017       |
| Phenolics                   | mg/L         | 0.001                 | 0.011        |
| COD                         | mg/L         | 5                     | 555          |



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|                     |              |                       |              |
|---------------------|--------------|-----------------------|--------------|
|                     |              | <b>Client I.D.</b>    | DUP-1        |
|                     |              | <b>Sample I.D.</b>    | 23-028626-16 |
|                     |              | <b>Date Collected</b> | 2023-10-12   |
| <b>Parameter</b>    | <b>Units</b> | <b>R.L.</b>           | -            |
| Hardness (as CaCO3) | mg/L         | 0.02                  | 288          |
| Aluminum            | mg/L         | 0.01                  | 0.07         |
| Barium              | mg/L         | 0.001                 | 0.041        |
| Boron               | mg/L         | 0.005                 | <0.005       |
| Calcium             | mg/L         | 0.02                  | 105          |
| Iron                | mg/L         | 0.005                 | 0.612        |
| Magnesium           | mg/L         | 0.02                  | 6.25         |
| Manganese           | mg/L         | 0.001                 | 0.543        |
| Phosphorus          | mg/L         | 0.1                   | 0.2          |
| Potassium           | mg/L         | 0.1                   | 2.2          |
| Sodium              | mg/L         | 0.2                   | 8.5          |
| Strontium           | mg/L         | 0.001                 | 0.237        |
| Tin                 | mg/L         | 0.05                  | <0.05        |
| Titanium            | mg/L         | 0.005                 | <0.005       |
| Zinc                | mg/L         | 0.005                 | 0.200        |
| Antimony            | mg/L         | 0.0001                | 0.0002       |
| Arsenic             | mg/L         | 0.0001                | 0.0003       |
| Beryllium           | mg/L         | 0.0001                | <0.0001      |
| Cadmium             | mg/L         | 0.00001<br>5          | <0.000015    |
| Chromium            | mg/L         | 0.001                 | <0.001       |
| Cobalt              | mg/L         | 0.0001                | 0.0003       |



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|                                  |              |                       |              |
|----------------------------------|--------------|-----------------------|--------------|
|                                  |              | <b>Client I.D.</b>    | DUP-1        |
|                                  |              | <b>Sample I.D.</b>    | 23-028626-16 |
|                                  |              | <b>Date Collected</b> | 2023-10-12   |
| <b>Parameter</b>                 | <b>Units</b> | <b>R.L.</b>           | -            |
| Copper                           | mg/L         | 0.0001                | 0.0005       |
| Lead                             | mg/L         | 0.00002               | 0.00005      |
| Molybdenum                       | mg/L         | 0.0001                | <0.0001      |
| Nickel                           | mg/L         | 0.0002                | 0.0003       |
| Selenium                         | mg/L         | 0.001                 | <0.001       |
| Silver                           | mg/L         | 0.0001                | <0.0001      |
| Thallium                         | mg/L         | 0.00005               | <0.00005     |
| Uranium                          | mg/L         | 0.00005               | <0.00005     |
| Vanadium                         | mg/L         | 0.0001                | 0.0004       |
| Chromium (VI)                    | mg/L         | 0.01                  | <0.01        |
| Mercury                          | mg/L         | 0.00002               | <0.00002     |
| Anion Sum                        | meq/L        | -                     | 6.44         |
| Cation Sum                       | meq/L        | -                     | 6.24         |
| % Difference                     | %            | -                     | 1.57         |
| Ion Ratio                        | -            | -                     | 1.03         |
| Sodium Adsorption Ratio          | -            | -                     | 0.218        |
| TDS (Ion Sum Calc)               | mg/L         | 1                     | 321          |
| TDS(calc.)/EC(actual)            | -            | -                     | 0.543        |
| Conductivity Calc                | µmho/cm      | -                     | 584          |
| Conductivity Calc / Conductivity | -            | -                     | 0.990        |
| Langelier Index(25°C)            | -            | -                     | -0.0232      |



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|                           |          |                |              |
|---------------------------|----------|----------------|--------------|
|                           |          | Client I.D.    | DUP-1        |
|                           |          | Sample I.D.    | 23-028626-16 |
|                           |          | Date Collected | 2023-10-12   |
| Parameter                 | Units    | R.L.           | -            |
| Saturation pH (25°C)      | -        | -              | 6.95         |
| pH (Client Data)          | pH units | -              | 6.96         |
| Temperature (Client Data) | °C       | -              | 8.8          |



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| Client I.D.                     |       |      | MW26        | MW26-1      | MW26-2      | MW27-I      | MW27-II     |
|---------------------------------|-------|------|-------------|-------------|-------------|-------------|-------------|
| Sample I.D.                     |       |      | 23-028626-1 | 23-028626-2 | 23-028626-3 | 23-028626-4 | 23-028626-5 |
| Date Collected                  |       |      | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                       | Units | R.L. | -           | -           | -           | -           | -           |
| Acetone                         | µg/L  | 30   | <30         | <30         | <30         | <30         | <30         |
| Benzene                         | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | 0.7         | <0.5        |
| Bromodichloromethane            | µg/L  | 2    | <2          | <2          | <2          | <2          | <2          |
| Bromoform                       | µg/L  | 5    | <5          | <5          | <5          | <5          | <5          |
| Bromomethane                    | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Carbon Tetrachloride            | µg/L  | 0.2  | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        |
| Chlorobenzene                   | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Chloroform                      | µg/L  | 1    | <1          | <1          | <1          | <1          | <1          |
| Chloromethane (Methyl Chloride) | µg/L  | 2    | <2          | <2          | <2          | <2          | <2          |
| Dibromochloromethane            | µg/L  | 2    | <2          | <2          | <2          | <2          | <2          |
| Ethylene Dibromide              | µg/L  | 0.2  | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        |
| Dichlorobenzene,1,2-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichlorobenzene,1,3-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichlorobenzene,1,4-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloroethane,1,1-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloroethane,1,2-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloroethylene,1,1-           | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloroethylene,1,2-cis-       | µg/L  | 0.5  | 1.2         | 3.2         | 3.2         | <0.5        | <0.5        |
| Dichloroethylene,1,2-trans-     | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloropropane,1,2-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloropropene,1,3-cis-        | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |



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Data Specialist**

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| Client I.D.                          |       |      | MW26        | MW26-1      | MW26-2      | MW27-I      | MW27-II     |
|--------------------------------------|-------|------|-------------|-------------|-------------|-------------|-------------|
| Sample I.D.                          |       |      | 23-028626-1 | 23-028626-2 | 23-028626-3 | 23-028626-4 | 23-028626-5 |
| Date Collected                       |       |      | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                            | Units | R.L. | -           | -           | -           | -           | -           |
| Dichloropropene, 1,3-trans-          | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Ethylbenzene                         | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloromethane (Methylene Chloride) | µg/L  | 5    | <5          | <5          | <5          | <5          | <5          |
| Methyl Ethyl Ketone                  | µg/L  | 20   | <20         | <20         | <20         | <20         | <20         |
| Methyl Isobutyl Ketone               | µg/L  | 20   | <20         | <20         | <20         | <20         | <20         |
| Methyl tert-Butyl Ether (MTBE)       | µg/L  | 2    | <2          | <2          | <2          | <2          | <2          |
| Styrene                              | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Tetrachloroethane, 1,1,1,2-          | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Tetrachloroethane, 1,1,2,2-          | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Tetrachloroethylene                  | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Toluene                              | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Trichlorobenzene, 1,2,4-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Trichloroethane, 1,1,1-              | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Trichloroethane, 1,1,2-              | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Trichloroethylene                    | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Trichlorofluoromethane (Freon 11)    | µg/L  | 5    | <5          | <5          | <5          | <5          | <5          |
| Vinyl Chloride                       | µg/L  | 0.2  | <0.2        | 0.2         | 0.4         | <0.2        | <0.2        |
| Xylene, m,p-                         | µg/L  | 1    | <1          | <1          | <1          | <1          | <1          |
| Xylene, o-                           | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |



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| Client I.D.                     |       |      | MW27-III    | MW28-I      | MW28-II     | MW28-III    | WP1-10       |
|---------------------------------|-------|------|-------------|-------------|-------------|-------------|--------------|
| Sample I.D.                     |       |      | 23-028626-6 | 23-028626-7 | 23-028626-8 | 23-028626-9 | 23-028626-10 |
| Date Collected                  |       |      | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12   |
| Parameter                       | Units | R.L. | -           | -           | -           | -           | -            |
| Acetone                         | µg/L  | 30   | <30         | <30         | <30         | <30         | <30          |
| Benzene                         | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Bromodichloromethane            | µg/L  | 2    | <2          | <2          | <2          | <2          | <2           |
| Bromoform                       | µg/L  | 5    | <5          | <5          | <5          | <5          | <5           |
| Bromomethane                    | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Carbon Tetrachloride            | µg/L  | 0.2  | <0.2        | <0.2        | <0.2        | <0.2        | <0.2         |
| Chlorobenzene                   | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Chloroform                      | µg/L  | 1    | <1          | <1          | <1          | <1          | <1           |
| Chloromethane (Methyl Chloride) | µg/L  | 2    | <2          | <2          | <2          | <2          | <2           |
| Dibromochloromethane            | µg/L  | 2    | <2          | <2          | <2          | <2          | <2           |
| Ethylene Dibromide              | µg/L  | 0.2  | <0.2        | <0.2        | <0.2        | <0.2        | <0.2         |
| Dichlorobenzene,1,2-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Dichlorobenzene,1,3-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Dichlorobenzene,1,4-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Dichloroethane,1,1-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Dichloroethane,1,2-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Dichloroethylene,1,1-           | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Dichloroethylene,1,2-cis-       | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Dichloroethylene,1,2-trans-     | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Dichloropropane,1,2-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Dichloropropene,1,3-cis-        | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |



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| Client I.D.                          |       |      | MW27-III    | MW28-I      | MW28-II     | MW28-III    | WP1-10       |
|--------------------------------------|-------|------|-------------|-------------|-------------|-------------|--------------|
| Sample I.D.                          |       |      | 23-028626-6 | 23-028626-7 | 23-028626-8 | 23-028626-9 | 23-028626-10 |
| Date Collected                       |       |      | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12   |
| Parameter                            | Units | R.L. | -           | -           | -           | -           | -            |
| Dichloropropene, 1,3-trans-          | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Ethylbenzene                         | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Dichloromethane (Methylene Chloride) | µg/L  | 5    | <5          | <5          | <5          | <5          | <5           |
| Methyl Ethyl Ketone                  | µg/L  | 20   | <20         | <20         | <20         | <20         | <20          |
| Methyl Isobutyl Ketone               | µg/L  | 20   | <20         | <20         | <20         | <20         | <20          |
| Methyl tert-Butyl Ether (MTBE)       | µg/L  | 2    | <2          | <2          | <2          | <2          | <2           |
| Styrene                              | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Tetrachloroethane, 1,1,1,2-          | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Tetrachloroethane, 1,1,2,2-          | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Tetrachloroethylene                  | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Toluene                              | µg/L  | 0.5  | <0.5        | <0.5        | 0.6         | <0.5        | <0.5         |
| Trichlorobenzene, 1,2,4-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Trichloroethane, 1,1,1-              | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Trichloroethane, 1,1,2-              | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Trichloroethylene                    | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |
| Trichlorofluoromethane (Freon 11)    | µg/L  | 5    | <5          | <5          | <5          | <5          | <5           |
| Vinyl Chloride                       | µg/L  | 0.2  | <0.2        | <0.2        | <0.2        | <0.2        | <0.2         |
| Xylene, m,p-                         | µg/L  | 1    | <1          | <1          | <1          | <1          | <1           |
| Xylene, o-                           | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5         |



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| Client I.D.                     |       |      | WP2-10       | WP3-10       | WP4-10       | WP5-10       | WP6-13       |
|---------------------------------|-------|------|--------------|--------------|--------------|--------------|--------------|
| Sample I.D.                     |       |      | 23-028626-11 | 23-028626-12 | 23-028626-13 | 23-028626-14 | 23-028626-15 |
| Date Collected                  |       |      | 2023-10-12   | 2023-10-12   | 2023-10-12   | 2023-10-12   | 2023-10-12   |
| Parameter                       | Units | R.L. | -            | -            | -            | -            | -            |
| Acetone                         | µg/L  | 30   | <30          | 39           | <30          | <30          | <30          |
| Benzene                         | µg/L  | 0.5  | <0.5         | 3.6          | <0.5         | <0.5         | <0.5         |
| Bromodichloromethane            | µg/L  | 2    | <2           | <2           | <2           | <2           | <2           |
| Bromoform                       | µg/L  | 5    | <5           | <5           | <5           | <5           | <5           |
| Bromomethane                    | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Carbon Tetrachloride            | µg/L  | 0.2  | <0.2         | <0.2         | <0.2         | <0.2         | <0.2         |
| Chlorobenzene                   | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Chloroform                      | µg/L  | 1    | <1           | <1           | <1           | <1           | <1           |
| Chloromethane (Methyl Chloride) | µg/L  | 2    | <2           | <2           | <2           | <2           | <2           |
| Dibromochloromethane            | µg/L  | 2    | <2           | <2           | <2           | <2           | <2           |
| Ethylene Dibromide              | µg/L  | 0.2  | <0.2         | <0.2         | <0.2         | <0.2         | <0.2         |
| Dichlorobenzene,1,2-            | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Dichlorobenzene,1,3-            | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Dichlorobenzene,1,4-            | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Dichloroethane,1,1-             | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Dichloroethane,1,2-             | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Dichloroethylene,1,1-           | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Dichloroethylene,1,2-cis-       | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Dichloroethylene,1,2-trans-     | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Dichloropropane,1,2-            | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Dichloropropene,1,3-cis-        | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |



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Data Specialist**

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| Client I.D.                          |       |      | WP2-10       | WP3-10       | WP4-10       | WP5-10       | WP6-13       |
|--------------------------------------|-------|------|--------------|--------------|--------------|--------------|--------------|
| Sample I.D.                          |       |      | 23-028626-11 | 23-028626-12 | 23-028626-13 | 23-028626-14 | 23-028626-15 |
| Date Collected                       |       |      | 2023-10-12   | 2023-10-12   | 2023-10-12   | 2023-10-12   | 2023-10-12   |
| Parameter                            | Units | R.L. | -            | -            | -            | -            | -            |
| Dichloropropene, 1,3-trans-          | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Ethylbenzene                         | µg/L  | 0.5  | <0.5         | 0.6          | <0.5         | <0.5         | <0.5         |
| Dichloromethane (Methylene Chloride) | µg/L  | 5    | <5           | <5           | <5           | <5           | <5           |
| Methyl Ethyl Ketone                  | µg/L  | 20   | <20          | <20          | <20          | <20          | <20          |
| Methyl Isobutyl Ketone               | µg/L  | 20   | <20          | <20          | <20          | <20          | <20          |
| Methyl tert-Butyl Ether (MTBE)       | µg/L  | 2    | <2           | <2           | <2           | <2           | <2           |
| Styrene                              | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Tetrachloroethane, 1,1,1,2-          | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Tetrachloroethane, 1,1,2,2-          | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Tetrachloroethylene                  | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Toluene                              | µg/L  | 0.5  | <0.5         | 0.6          | <0.5         | <0.5         | <0.5         |
| Trichlorobenzene, 1,2,4-             | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Trichloroethane, 1,1,1-              | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Trichloroethane, 1,1,2-              | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Trichloroethylene                    | µg/L  | 0.5  | <0.5         | <0.5         | <0.5         | <0.5         | <0.5         |
| Trichlorofluoromethane (Freon 11)    | µg/L  | 5    | <5           | <5           | <5           | <5           | <5           |
| Vinyl Chloride                       | µg/L  | 0.2  | <0.2         | <0.2         | <0.2         | <0.2         | <0.2         |
| Xylene, m,p-                         | µg/L  | 1    | <1           | 2            | <1           | <1           | <1           |
| Xylene, o-                           | µg/L  | 0.5  | <0.5         | 0.7          | <0.5         | <0.5         | <0.5         |



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Data Specialist**

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|                                 |       | Client I.D.    | DUP-1        |
|---------------------------------|-------|----------------|--------------|
|                                 |       | Sample I.D.    | 23-028626-16 |
|                                 |       | Date Collected | 2023-10-12   |
| Parameter                       | Units | R.L.           | -            |
| Acetone                         | µg/L  | 30             | <30          |
| Benzene                         | µg/L  | 0.5            | <0.5         |
| Bromodichloromethane            | µg/L  | 2              | <2           |
| Bromoform                       | µg/L  | 5              | <5           |
| Bromomethane                    | µg/L  | 0.5            | <0.5         |
| Carbon Tetrachloride            | µg/L  | 0.2            | <0.2         |
| Chlorobenzene                   | µg/L  | 0.5            | <0.5         |
| Chloroform                      | µg/L  | 1              | <1           |
| Chloromethane (Methyl Chloride) | µg/L  | 2              | <2           |
| Dibromochloromethane            | µg/L  | 2              | <2           |
| Ethylene Dibromide              | µg/L  | 0.2            | <0.2         |
| Dichlorobenzene,1,2-            | µg/L  | 0.5            | <0.5         |
| Dichlorobenzene,1,3-            | µg/L  | 0.5            | <0.5         |
| Dichlorobenzene,1,4-            | µg/L  | 0.5            | <0.5         |
| Dichloroethane,1,1-             | µg/L  | 0.5            | <0.5         |
| Dichloroethane,1,2-             | µg/L  | 0.5            | <0.5         |
| Dichloroethylene,1,1-           | µg/L  | 0.5            | <0.5         |
| Dichloroethylene,1,2-cis-       | µg/L  | 0.5            | <0.5         |
| Dichloroethylene,1,2-trans-     | µg/L  | 0.5            | <0.5         |
| Dichloropropane,1,2-            | µg/L  | 0.5            | <0.5         |
| Dichloropropene,1,3-cis-        | µg/L  | 0.5            | <0.5         |



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|                                      |       | Client I.D.    | DUP-1        |
|--------------------------------------|-------|----------------|--------------|
|                                      |       | Sample I.D.    | 23-028626-16 |
|                                      |       | Date Collected | 2023-10-12   |
| Parameter                            | Units | R.L.           | -            |
| Dichloropropene, 1,3-trans-          | µg/L  | 0.5            | <0.5         |
| Ethylbenzene                         | µg/L  | 0.5            | <0.5         |
| Dichloromethane (Methylene Chloride) | µg/L  | 5              | <5           |
| Methyl Ethyl Ketone                  | µg/L  | 20             | <20          |
| Methyl Isobutyl Ketone               | µg/L  | 20             | <20          |
| Methyl tert-Butyl Ether (MTBE)       | µg/L  | 2              | <2           |
| Styrene                              | µg/L  | 0.5            | <0.5         |
| Tetrachloroethane, 1,1,1,2-          | µg/L  | 0.5            | <0.5         |
| Tetrachloroethane, 1,1,2,2-          | µg/L  | 0.5            | <0.5         |
| Tetrachloroethylene                  | µg/L  | 0.5            | <0.5         |
| Toluene                              | µg/L  | 0.5            | <0.5         |
| Trichlorobenzene, 1,2,4-             | µg/L  | 0.5            | <0.5         |
| Trichloroethane, 1,1,1-              | µg/L  | 0.5            | <0.5         |
| Trichloroethane, 1,1,2-              | µg/L  | 0.5            | <0.5         |
| Trichloroethylene                    | µg/L  | 0.5            | <0.5         |
| Trichlorofluoromethane (Freon 11)    | µg/L  | 5              | <5           |
| Vinyl Chloride                       | µg/L  | 0.2            | <0.2         |
| Xylene, m,p-                         | µg/L  | 1              | <1           |
| Xylene, o-                           | µg/L  | 0.5            | <0.5         |



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**Data Specialist**

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**Final Report**

**REPORT No: 23-028626 - Rev. 0**

| Client I.D.                        |       |      | MW26        | MW26-1      | MW26-2      | MW27-I      | MW27-II     |
|------------------------------------|-------|------|-------------|-------------|-------------|-------------|-------------|
| Sample I.D.                        |       |      | 23-028626-1 | 23-028626-2 | 23-028626-3 | 23-028626-4 | 23-028626-5 |
| Date Collected                     |       |      | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                          | Units | R.L. | -           | -           | -           | -           | -           |
| Poly-Chlorinated Biphenyls (PCB's) | µg/L  | 0.05 | <0.05       | <0.05       | <0.05       | <0.05       | <0.05       |
| Identification Comment             | -     | -    | -           | -           | -           | -           | -           |

| Client I.D.                        |       |      | MW27-III    | MW28-I      | MW28-II     | MW28-III    |
|------------------------------------|-------|------|-------------|-------------|-------------|-------------|
| Sample I.D.                        |       |      | 23-028626-6 | 23-028626-7 | 23-028626-8 | 23-028626-9 |
| Date Collected                     |       |      | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                          | Units | R.L. | -           | -           | -           | -           |
| Poly-Chlorinated Biphenyls (PCB's) | µg/L  | 0.05 | <0.05       | <0.05       | <0.05       | <0.05       |
| Identification Comment             | -     | -    | -           | -           | -           | -           |

**Comments:**

11. Digested



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**C.O.C.:** -

**REPORT No: 23-029027 - Rev. 0**

**Report To:**

City of Kawartha Lakes  
PO Box 9000  
322 Kent Street West  
Lindsay, ON K9V 4T7

**CADUCEON Environmental Laboratories**

112 Commerce Park Dr Unit L  
Barrie, ON L4N 8W8

**Attention: Bonnie Ferguson**

DATE RECEIVED: 2023-Oct-13  
DATE REPORTED: 2023-Nov-06  
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Fenelon Falls Landfill  
P.O. NUMBER:

| Analyses                   | Qty | Site Analyzed | Authorized  | Date Analyzed | Lab Method               | Reference Method         |
|----------------------------|-----|---------------|-------------|---------------|--------------------------|--------------------------|
| Anions (Liquid)            | 21  | OTTAWA        | VKASYAN     | 2023-Oct-25   | A-IC-01                  | SM 4110B                 |
| COD (Liquid)               | 21  | KINGSTON      | EHINCH      | 2023-Oct-23   | COD-001                  | SM 5220D                 |
| Cond/pH/Alk Auto (Liquid)  | 21  | OTTAWA        | SBOUDREAU   | 2023-Oct-23   | COND-02/PH-02/A<br>LK-02 | SM 2510B/4500H/<br>2320B |
| DOC/DIC (Liquid)           | 21  | OTTAWA        | VKASYAN     | 2023-Oct-26   | C-OC-01                  | EPA 415.2                |
| Ion Balance (Calc.)        | 21  | OTTAWA        | STAILLON    |               | CP-028                   | MECP E3196               |
| Chromium VI (Liquid)       | 21  | OTTAWA        | STAILLON    | 2023-Oct-25   | D-CRVI-01                | MECP E3056               |
| ICP/MS (Liquid)            | 21  | OTTAWA        | AOZKAYMAK   | 2023-Oct-24   | D-ICPMS-01               | EPA 200.8                |
| ICP/OES (Liquid)           | 21  | OTTAWA        | NHOGAN      | 2023-Oct-23   | D-ICP-01                 | SM 3120B                 |
| Mercury (Liquid)           | 21  | OTTAWA        | LMACGREGOR  | 2023-Oct-23   | D-HG-02                  | SM 3112B                 |
| Ammonia (Liquid)           | 21  | KINGSTON      | KDIBBITS    | 2023-Oct-27   | NH3-001                  | SM 4500NH3               |
| PCB's (Liquid)             | 4   | KINGSTON      | CSUMMERHAYS | 2023-Oct-25   | PCB-001                  | EPA 8081                 |
| Phenols (Liquid)           | 21  | KINGSTON      | JMACINNES   | 2023-Nov-01   | PHEN-01                  | MECP E3179               |
| TP & TKN (Liquid)          | 21  | KINGSTON      | KDIBBITS    | 2023-Nov-01   | TPTKN-001                | MECP E3516.2             |
| VOC-Volatiles Full (Water) | 6   | RICHMOND_HILL | JEVANS      | 2023-Oct-22   | C-VOC-02                 | EPA 8260                 |

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an \*



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**REPORT No: 23-029027 - Rev. 0**

| Client I.D.                 |          |       | MW10        | MW11A       | MW12        | MW13        | MW14        |
|-----------------------------|----------|-------|-------------|-------------|-------------|-------------|-------------|
| Sample I.D.                 |          |       | 23-029027-1 | 23-029027-2 | 23-029027-3 | 23-029027-4 | 23-029027-5 |
| Date Collected              |          |       | 2023-10-11  | 2023-10-12  | 2023-10-11  | 2023-10-11  | 2023-10-11  |
| Parameter                   | Units    | R.L.  | -           | -           | -           | -           | -           |
| Alkalinity(CaCO3) to pH4.5  | mg/L     | 5     | 1390        | 242         | 256         | 202         | 203         |
| TDS (Calc. from Cond.)      | mg/L     | 3     | 2040        | 438         | 244         | 190         | 204         |
| Conductivity @25°C          | uS/cm    | 1     | 3630        | 831         | 472         | 370         | 396         |
| pH @25°C                    | pH units | -     | 7.27        | 7.08        | 7.54        | 7.07        | 7.13        |
| Fluoride                    | mg/L     | 0.1   | <0.1        | <0.1        | <0.1        | <0.1        | <0.1        |
| Chloride                    | mg/L     | 0.5   | 248         | 124         | 2.6         | 3.5         | 7.9         |
| Nitrate (N)                 | mg/L     | 0.05  | <0.05       | <0.05       | 0.38        | 0.15        | 0.06        |
| Nitrite (N)                 | mg/L     | 0.05  | <0.05       | <0.05       | <0.05       | <0.05       | <0.05       |
| Sulphate                    | mg/L     | 1     | <2          | 5           | 9           | 4           | 7           |
| Phosphorus (Total)          | mg/L     | 0.01  | 0.29        | 0.08        | 0.04        | 0.02        | 0.63        |
| Total Kjeldahl Nitrogen     | mg/L     | 0.1   | 187         | 1.6         | 0.3         | 0.4         | 0.4         |
| Ammonia (N)-Total (NH3+NH4) | mg/L     | 0.05  | 175         | 1.52        | 0.07        | 0.30        | <0.05       |
| Dissolved Organic Carbon    | mg/L     | 0.2   | 25.7        | 7.7         | 4.4         | 3.8         | 3.2         |
| Phenolics                   | mg/L     | 0.001 | <0.001      | <0.001      | <0.001      | <0.001      | <0.001      |
| COD                         | mg/L     | 5     | 224         | 30          | 9           | 5           | 19          |
| Hardness (as CaCO3)         | mg/L     | 0.02  | 745         | 281         | 207         | 152         | 158         |
| Aluminum                    | mg/L     | 0.01  | 0.16        | 0.08        | 0.06        | 0.03        | 0.04        |
| Barium                      | mg/L     | 0.001 | 0.718       | 0.031       | 0.057       | 0.046       | 0.014       |
| Boron                       | mg/L     | 0.005 | 0.891       | 0.014       | 0.012       | 0.018       | <0.005      |
| Calcium                     | mg/L     | 0.02  | 236         | 106         | 73.8        | 55.0        | 60.6        |
| Iron                        | mg/L     | 0.005 | 7.83        | 1.35        | 0.014       | 0.351       | 0.008       |



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| Client I.D.    |       |              | MW10        | MW11A       | MW12        | MW13        | MW14        |
|----------------|-------|--------------|-------------|-------------|-------------|-------------|-------------|
| Sample I.D.    |       |              | 23-029027-1 | 23-029027-2 | 23-029027-3 | 23-029027-4 | 23-029027-5 |
| Date Collected |       |              | 2023-10-11  | 2023-10-12  | 2023-10-11  | 2023-10-11  | 2023-10-11  |
| Parameter      | Units | R.L.         | -           | -           | -           | -           | -           |
| Magnesium      | mg/L  | 0.02         | 37.7        | 3.84        | 5.39        | 3.61        | 1.68        |
| Manganese      | mg/L  | 0.001        | 0.726       | 0.086       | <0.001      | 0.040       | <0.001      |
| Phosphorus     | mg/L  | 0.1          | 0.3         | <0.1        | <0.1        | <0.1        | <0.1        |
| Potassium      | mg/L  | 0.1          | 145         | 1.5         | 1.0         | 2.3         | 0.2         |
| Sodium         | mg/L  | 0.2          | 171         | 36.5        | 2.1         | 3.6         | 3.3         |
| Strontium      | mg/L  | 0.001        | 0.850       | 0.380       | 0.146       | 0.124       | 0.132       |
| Tin            | mg/L  | 0.05         | <0.05       | <0.05       | <0.05       | <0.05       | <0.05       |
| Titanium       | mg/L  | 0.005        | 0.005       | <0.005      | <0.005      | <0.005      | <0.005      |
| Zinc           | mg/L  | 0.005        | <0.005      | <0.005      | <0.005      | <0.005      | <0.005      |
| Antimony       | mg/L  | 0.0001       | 0.0003      | <0.0001     | <0.0001     | <0.0001     | <0.0001     |
| Arsenic        | mg/L  | 0.0001       | 0.0007      | 0.0001      | <0.0001     | 0.0001      | 0.0001      |
| Beryllium      | mg/L  | 0.0001       | <0.0001     | <0.0001     | <0.0001     | <0.0001     | <0.0001     |
| Cadmium        | mg/L  | 0.00001<br>5 | <0.000030   | <0.000015   | <0.000015   | <0.000015   | <0.000015   |
| Chromium       | mg/L  | 0.001        | 0.003       | <0.001      | <0.001      | <0.001      | <0.001      |
| Cobalt         | mg/L  | 0.0001       | 0.0053      | 0.0002      | 0.0002      | 0.0002      | 0.0001      |
| Copper         | mg/L  | 0.0001       | 0.0020      | 0.0007      | 0.0012      | 0.0005      | 0.0008      |
| Lead           | mg/L  | 0.00002      | 0.00009     | 0.00003     | <0.00002    | 0.00002     | <0.00002    |
| Molybdenum     | mg/L  | 0.0001       | <0.0002     | 0.0002      | 0.0002      | 0.0002      | 0.0004      |
| Nickel         | mg/L  | 0.0002       | 0.0073      | <0.0002     | <0.0002     | <0.0002     | 0.0005      |
| Selenium       | mg/L  | 0.001        | <0.001      | <0.001      | <0.001      | <0.001      | <0.001      |
| Silver         | mg/L  | 0.0001       | <0.0001     | <0.0001     | <0.0001     | <0.0001     | <0.0001     |



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**REPORT No: 23-029027 - Rev. 0**

| Client I.D.                      |          |         | MW10        | MW11A       | MW12        | MW13        | MW14        |
|----------------------------------|----------|---------|-------------|-------------|-------------|-------------|-------------|
| Sample I.D.                      |          |         | 23-029027-1 | 23-029027-2 | 23-029027-3 | 23-029027-4 | 23-029027-5 |
| Date Collected                   |          |         | 2023-10-11  | 2023-10-12  | 2023-10-11  | 2023-10-11  | 2023-10-11  |
| Parameter                        | Units    | R.L.    | -           | -           | -           | -           | -           |
| Thallium                         | mg/L     | 0.00005 | <0.00005    | <0.00005    | <0.00005    | <0.00005    | <0.00005    |
| Uranium                          | mg/L     | 0.00005 | <0.00005    | 0.00009     | 0.00046     | 0.00029     | 0.00027     |
| Vanadium                         | mg/L     | 0.0001  | 0.0063      | 0.0016      | 0.0001      | 0.0001      | 0.0004      |
| Chromium (VI)                    | mg/L     | 0.01    | <0.01       | <0.01       | <0.01       | <0.01       | <0.01       |
| Mercury                          | mg/L     | 0.00002 | 0.00002     | <0.00002    | <0.00002    | <0.00002    | <0.00002    |
| Anion Sum                        | meq/L    | -       | 34.8        | 8.45        | 5.40        | 4.25        | 4.43        |
| Cation Sum                       | meq/L    | -       | 38.8        | 7.42        | 4.25        | 3.30        | 3.31        |
| % Difference                     | %        | -       | 5.36        | 6.46        | 11.9        | 12.5        | 14.4        |
| Ion Ratio                        | -        | -       | 0.898       | 1.14        | 1.27        | 1.29        | 1.34        |
| Sodium Adsorption Ratio          | -        | -       | 2.73        | 0.948       | 0.0633      | 0.127       | 0.113       |
| TDS (Ion Sum Calc)               | mg/L     | 1       | 1910        | 426         | 249         | 195         | 203         |
| TDS(calc.)/EC(actual)            | -        | -       | 0.526       | 0.512       | 0.528       | 0.528       | 0.512       |
| Conductivity Calc                | µmho/cm  | -       | 3260        | 800         | 442         | 350         | 363         |
| Conductivity Calc / Conductivity | -        | -       | 0.898       | 0.962       | 0.936       | 0.945       | 0.916       |
| Langelier Index(25°C)            | -        | -       | 1.27        | 0.0274      | 0.384       | -0.306      | -0.213      |
| Saturation pH (25°C)             | -        | -       | 6.00        | 7.05        | 7.16        | 7.38        | 7.34        |
| pH (Client Data)                 | pH units | -       | 7.14        | 7.18        | 7.42        | 7.56        | 7.64        |
| Temperature (Client Data)        | °C       | -       | 12.1        | 9.5         | 10          | 13.2        | 11.9        |



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**Data Specialist**

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**Final Report**

**REPORT No: 23-029027 - Rev. 0**

| Client I.D.                 |          |       | MW15        | MW15A       | MW15B       | MW16        | MW18         |
|-----------------------------|----------|-------|-------------|-------------|-------------|-------------|--------------|
| Sample I.D.                 |          |       | 23-029027-6 | 23-029027-7 | 23-029027-8 | 23-029027-9 | 23-029027-10 |
| Date Collected              |          |       | 2023-10-11  | 2023-10-11  | 2023-10-11  | 2023-10-11  | 2023-10-11   |
| Parameter                   | Units    | R.L.  | -           | -           | -           | -           | -            |
| Alkalinity(CaCO3) to pH4.5  | mg/L     | 5     | 204         | 444         | 405         | 240         | 283          |
| TDS (Calc. from Cond.)      | mg/L     | 3     | 193         | 533         | 493         | 232         | 316          |
| Conductivity @25°C          | uS/cm    | 1     | 375         | 999         | 929         | 449         | 608          |
| pH @25°C                    | pH units | -     | 7.10        | 7.31        | 7.38        | 7.29        | 7.30         |
| Fluoride                    | mg/L     | 0.1   | <0.1        | <0.1        | <0.1        | <0.1        | <0.1         |
| Chloride                    | mg/L     | 0.5   | 2.1         | 70.4        | 72.3        | 2.9         | 2.8          |
| Nitrate (N)                 | mg/L     | 0.05  | <0.05       | <0.05       | <0.05       | 0.37        | 1.21         |
| Nitrite (N)                 | mg/L     | 0.05  | <0.05       | <0.05       | <0.05       | <0.05       | <0.05        |
| Sulphate                    | mg/L     | 1     | 2           | 1           | <1          | 4           | 36           |
| Phosphorus (Total)          | mg/L     | 0.01  | 0.05        | 0.04        | 0.01        | 0.06        | 0.24         |
| Total Kjeldahl Nitrogen     | mg/L     | 0.1   | 0.2         | 1.0         | 0.7         | <0.1        | 1.1          |
| Ammonia (N)-Total (NH3+NH4) | mg/L     | 0.05  | <0.05       | 0.64        | 0.42        | <0.05       | <0.05        |
| Dissolved Organic Carbon    | mg/L     | 0.2   | 9.2         | 4.8         | 7.8         | 3.7         | 17.6         |
| Phenolics                   | mg/L     | 0.001 | <0.001      | <0.001      | <0.001      | <0.001      | <0.001       |
| COD                         | mg/L     | 5     | 15          | 28          | 19          | <5          | 39           |
| Hardness (as CaCO3)         | mg/L     | 0.02  | 168         | 386         | 368         | 195         | 226          |
| Aluminum                    | mg/L     | 0.01  | 0.04        | 0.09        | 0.08        | 0.06        | 0.06         |
| Barium                      | mg/L     | 0.001 | 0.007       | 0.292       | 0.124       | 0.045       | 0.071        |
| Boron                       | mg/L     | 0.005 | <0.005      | 0.076       | 0.107       | 0.013       | 0.021        |
| Calcium                     | mg/L     | 0.02  | 63.8        | 129         | 109         | 70.5        | 80.3         |
| Iron                        | mg/L     | 0.005 | 0.005       | 4.65        | 1.01        | 0.007       | 0.012        |



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| Client I.D.    |       |          | MW15        | MW15A       | MW15B       | MW16        | MW18         |
|----------------|-------|----------|-------------|-------------|-------------|-------------|--------------|
| Sample I.D.    |       |          | 23-029027-6 | 23-029027-7 | 23-029027-8 | 23-029027-9 | 23-029027-10 |
| Date Collected |       |          | 2023-10-11  | 2023-10-11  | 2023-10-11  | 2023-10-11  | 2023-10-11   |
| Parameter      | Units | R.L.     | -           | -           | -           | -           | -            |
| Magnesium      | mg/L  | 0.02     | 1.95        | 15.4        | 23.3        | 4.67        | 6.24         |
| Manganese      | mg/L  | 0.001    | <0.001      | 0.135       | 0.044       | <0.001      | 0.001        |
| Phosphorus     | mg/L  | 0.1      | <0.1        | <0.1        | <0.1        | <0.1        | <0.1         |
| Potassium      | mg/L  | 0.1      | <0.1        | 3.1         | 3.5         | 0.7         | 35.4         |
| Sodium         | mg/L  | 0.2      | 1.6         | 28.2        | 23.4        | 3.6         | 3.2          |
| Strontium      | mg/L  | 0.001    | 0.137       | 0.915       | 1.21        | 0.145       | 0.105        |
| Tin            | mg/L  | 0.05     | <0.05       | <0.05       | <0.05       | <0.05       | <0.05        |
| Titanium       | mg/L  | 0.005    | <0.005      | <0.005      | <0.005      | <0.005      | <0.005       |
| Zinc           | mg/L  | 0.005    | <0.005      | <0.005      | <0.005      | <0.005      | <0.005       |
| Antimony       | mg/L  | 0.0001   | <0.0001     | 0.0001      | 0.0001      | <0.0001     | 0.0002       |
| Arsenic        | mg/L  | 0.0001   | 0.0001      | <0.0001     | <0.0001     | <0.0001     | 0.0004       |
| Beryllium      | mg/L  | 0.0001   | <0.0001     | <0.0001     | <0.0001     | <0.0001     | <0.0001      |
| Cadmium        | mg/L  | 0.000015 | <0.000015   | <0.000015   | <0.000015   | <0.000015   | <0.000015    |
| Chromium       | mg/L  | 0.001    | <0.001      | <0.001      | <0.001      | <0.001      | <0.001       |
| Cobalt         | mg/L  | 0.0001   | 0.0002      | 0.0005      | 0.0004      | 0.0002      | 0.0004       |
| Copper         | mg/L  | 0.0001   | 0.0015      | 0.0006      | 0.0005      | 0.0010      | 0.0122       |
| Lead           | mg/L  | 0.00002  | <0.00002    | <0.00004    | <0.00002    | <0.00002    | <0.00002     |
| Molybdenum     | mg/L  | 0.0001   | 0.0002      | <0.0001     | <0.0001     | 0.0001      | 0.0016       |
| Nickel         | mg/L  | 0.0002   | <0.0002     | 0.0009      | 0.0006      | <0.0002     | 0.0010       |
| Selenium       | mg/L  | 0.001    | <0.001      | <0.001      | <0.001      | <0.001      | <0.001       |
| Silver         | mg/L  | 0.0001   | <0.0001     | <0.0001     | <0.0001     | <0.0001     | <0.0001      |



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**REPORT No: 23-029027 - Rev. 0**

|                                  |          |         | Client I.D.    | MW15        | MW15A       | MW15B       | MW16        | MW18         |
|----------------------------------|----------|---------|----------------|-------------|-------------|-------------|-------------|--------------|
|                                  |          |         | Sample I.D.    | 23-029027-6 | 23-029027-7 | 23-029027-8 | 23-029027-9 | 23-029027-10 |
|                                  |          |         | Date Collected | 2023-10-11  | 2023-10-11  | 2023-10-11  | 2023-10-11  | 2023-10-11   |
| Parameter                        | Units    | R.L.    |                | -           | -           | -           | -           | -            |
| Thallium                         | mg/L     | 0.00005 |                | <0.00005    | <0.00005    | <0.00005    | <0.00005    | <0.00005     |
| Uranium                          | mg/L     | 0.00005 |                | 0.00011     | <0.00005    | <0.00005    | 0.00039     | 0.00058      |
| Vanadium                         | mg/L     | 0.0001  |                | 0.0003      | 0.0005      | 0.0002      | 0.0002      | 0.0007       |
| Chromium (VI)                    | mg/L     | 0.01    |                | <0.01       | <0.01       | <0.01       | <0.01       | <0.01        |
| Mercury                          | mg/L     | 0.00002 |                | <0.00002    | <0.00002    | <0.00002    | <0.00002    | 0.00002      |
| Anion Sum                        | meq/L    | -       |                | 4.19        | 10.9        | 10.1        | 5.00        | 6.57         |
| Cation Sum                       | meq/L    | -       |                | 3.42        | 9.33        | 8.58        | 4.08        | 5.57         |
| % Difference                     | %        | -       |                | 10.1        | 7.64        | 8.32        | 10.1        | 8.24         |
| Ion Ratio                        | -        | -       |                | 1.22        | 1.17        | 1.18        | 1.22        | 1.18         |
| Sodium Adsorption Ratio          | -        | -       |                | 0.0555      | 0.625       | 0.531       | 0.111       | 0.0934       |
| TDS (Ion Sum Calc)               | mg/L     | 1       |                | 195         | 519         | 476         | 233         | 339          |
| TDS(calc.)/EC(actual)            | -        | -       |                | 0.519       | 0.519       | 0.513       | 0.518       | 0.558        |
| Conductivity Calc                | µmho/cm  | -       |                | 353         | 908         | 857         | 417         | 575          |
| Conductivity Calc / Conductivity | -        | -       |                | 0.940       | 0.909       | 0.923       | 0.928       | 0.946        |
| Langelier Index(25°C)            | -        | -       |                | -0.207      | 0.605       | 0.562       | 0.0858      | 0.204        |
| Saturation pH (25°C)             | -        | -       |                | 7.31        | 6.71        | 6.82        | 7.20        | 7.10         |
| pH (Client Data)                 | pH units | -       |                | 7.22        | 6.88        | 6.99        | 7.87        | 7.62         |
| Temperature (Client Data)        | °C       | -       |                | 11.4        | 11.3        | 10.7        | 11.7        | 10.8         |



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Data Specialist**

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REPORT No: 23-029027 - Rev. 0

| Client I.D.                 |          |       | MW18A        | MW18B        | MW19         | MW22         | MW22A        |
|-----------------------------|----------|-------|--------------|--------------|--------------|--------------|--------------|
| Sample I.D.                 |          |       | 23-029027-11 | 23-029027-12 | 23-029027-13 | 23-029027-14 | 23-029027-15 |
| Date Collected              |          |       | 2023-10-11   | 2023-10-11   | 2023-10-11   | 2023-10-11   | 2023-10-11   |
| Parameter                   | Units    | R.L.  | -            | -            | -            | -            | -            |
| Alkalinity(CaCO3) to pH4.5  | mg/L     | 5     | 458          | 474          | 462          | 290          | 364          |
| TDS (Calc. from Cond.)      | mg/L     | 3     | 584          | 564          | 500          | 356          | 909          |
| Conductivity @25°C          | uS/cm    | 1     | 1090         | 1050         | 940          | 685          | 1660         |
| pH @25°C                    | pH units | -     | 7.34         | 7.27         | 7.44         | 7.10         | 7.27         |
| Fluoride                    | mg/L     | 0.1   | <0.1         | <0.1         | <0.1         | <0.1         | <0.1         |
| Chloride                    | mg/L     | 0.5   | 92.6         | 70.9         | 32.3         | 53.4         | 336          |
| Nitrate (N)                 | mg/L     | 0.05  | <0.05        | <0.05        | <0.05        | <0.05        | <0.05        |
| Nitrite (N)                 | mg/L     | 0.05  | <0.05        | <0.05        | <0.05        | <0.05        | <0.05        |
| Sulphate                    | mg/L     | 1     | <1           | 2            | 21           | <1           | 6            |
| Phosphorus (Total)          | mg/L     | 0.01  | 0.04         | 0.06         | 0.12         | 0.02         | 0.08         |
| Total Kjeldahl Nitrogen     | mg/L     | 0.1   | 2.7          | 2.3          | 0.3          | 1.7          | 1.3          |
| Ammonia (N)-Total (NH3+NH4) | mg/L     | 0.05  | 1.58         | 2.37         | <0.05        | 1.60         | 0.89         |
| Dissolved Organic Carbon    | mg/L     | 0.2   | 9.5          | 10.8         | 8.8          | 11.5         | 6.2          |
| Phenolics                   | mg/L     | 0.001 | <0.001       | <0.001       | <0.001       | <0.001       | <0.001       |
| COD                         | mg/L     | 5     | 27           | 31           | 18           | 31           | 62           |
| Hardness (as CaCO3)         | mg/L     | 0.02  | 404          | 381          | 393          | 255          | 453          |
| Aluminum                    | mg/L     | 0.01  | 0.07         | 0.08         | 0.08         | 0.06         | 0.11         |
| Barium                      | mg/L     | 0.001 | 0.238        | 0.220        | 0.168        | 0.075        | 0.206        |
| Boron                       | mg/L     | 0.005 | 0.236        | 0.127        | 0.105        | 0.112        | 0.048        |
| Calcium                     | mg/L     | 0.02  | 119          | 134          | 130          | 73.2         | 161          |
| Iron                        | mg/L     | 0.005 | 3.85         | 8.31         | 0.292        | 1.68         | 0.290        |



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| Client I.D.    |       |          | MW18A        | MW18B        | MW19         | MW22         | MW22A        |
|----------------|-------|----------|--------------|--------------|--------------|--------------|--------------|
| Sample I.D.    |       |          | 23-029027-11 | 23-029027-12 | 23-029027-13 | 23-029027-14 | 23-029027-15 |
| Date Collected |       |          | 2023-10-11   | 2023-10-11   | 2023-10-11   | 2023-10-11   | 2023-10-11   |
| Parameter      | Units | R.L.     | -            | -            | -            | -            | -            |
| Magnesium      | mg/L  | 0.02     | 26.0         | 11.2         | 16.6         | 17.6         | 12.3         |
| Manganese      | mg/L  | 0.001    | 0.150        | 0.402        | 0.097        | 0.038        | 0.236        |
| Phosphorus     | mg/L  | 0.1      | <0.1         | <0.1         | <0.1         | <0.1         | <0.1         |
| Potassium      | mg/L  | 0.1      | 6.5          | 4.2          | 3.4          | 4.7          | 2.5          |
| Sodium         | mg/L  | 0.2      | 36.4         | 38.7         | 20.2         | 22.0         | 154          |
| Strontium      | mg/L  | 0.001    | 1.37         | 0.397        | 0.304        | 1.32         | 0.893        |
| Tin            | mg/L  | 0.05     | <0.05        | <0.05        | <0.05        | <0.05        | <0.05        |
| Titanium       | mg/L  | 0.005    | <0.005       | <0.005       | <0.005       | <0.005       | <0.005       |
| Zinc           | mg/L  | 0.005    | 0.006        | <0.005       | <0.005       | <0.005       | <0.005       |
| Antimony       | mg/L  | 0.0001   | 0.0001       | 0.0002       | 0.0001       | 0.0001       | 0.0001       |
| Arsenic        | mg/L  | 0.0001   | 0.0001       | 0.0002       | 0.0003       | 0.0005       | 0.0002       |
| Beryllium      | mg/L  | 0.0001   | <0.0001      | <0.0001      | <0.0001      | <0.0001      | <0.0001      |
| Cadmium        | mg/L  | 0.000015 | <0.000015    | <0.000015    | <0.000015    | <0.000015    | <0.000015    |
| Chromium       | mg/L  | 0.001    | <0.001       | <0.001       | <0.001       | <0.001       | 0.001        |
| Cobalt         | mg/L  | 0.0001   | 0.0005       | 0.0006       | 0.0010       | 0.0002       | 0.0003       |
| Copper         | mg/L  | 0.0001   | 0.0007       | 0.0007       | 0.0024       | 0.0005       | 0.0005       |
| Lead           | mg/L  | 0.00002  | <0.00002     | <0.00002     | <0.00002     | 0.00003      | 0.00009      |
| Molybdenum     | mg/L  | 0.0001   | <0.0001      | <0.0001      | 0.0004       | <0.0001      | <0.0001      |
| Nickel         | mg/L  | 0.0002   | 0.0015       | 0.0012       | 0.0024       | 0.0002       | 0.0008       |
| Selenium       | mg/L  | 0.001    | <0.001       | <0.001       | <0.001       | <0.001       | <0.001       |
| Silver         | mg/L  | 0.0001   | <0.0001      | <0.0001      | <0.0001      | <0.0001      | <0.0001      |



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| Client I.D.                      |          |         | MW18A        | MW18B        | MW19         | MW22         | MW22A        |
|----------------------------------|----------|---------|--------------|--------------|--------------|--------------|--------------|
| Sample I.D.                      |          |         | 23-029027-11 | 23-029027-12 | 23-029027-13 | 23-029027-14 | 23-029027-15 |
| Date Collected                   |          |         | 2023-10-11   | 2023-10-11   | 2023-10-11   | 2023-10-11   | 2023-10-11   |
| Parameter                        | Units    | R.L.    | -            | -            | -            | -            | -            |
| Thallium                         | mg/L     | 0.00005 | <0.00005     | <0.00005     | <0.00005     | <0.00005     | <0.00005     |
| Uranium                          | mg/L     | 0.00005 | <0.00005     | 0.00033      | 0.00294      | <0.00005     | 0.00006      |
| Vanadium                         | mg/L     | 0.0001  | 0.0005       | 0.0011       | <0.0001      | 0.0008       | 0.0013       |
| Chromium (VI)                    | mg/L     | 0.01    | <0.01        | <0.01        | <0.01        | <0.01        | <0.01        |
| Mercury                          | mg/L     | 0.00002 | 0.00002      | <0.00002     | <0.00002     | 0.00002      | <0.00002     |
| Anion Sum                        | meq/L    | -       | 11.8         | 11.5         | 10.6         | 7.31         | 16.9         |
| Cation Sum                       | meq/L    | -       | 10.2         | 10.0         | 8.85         | 6.41         | 15.9         |
| % Difference                     | %        | -       | 7.25         | 6.80         | 8.95         | 6.56         | 2.96         |
| Ion Ratio                        | -        | -       | 1.16         | 1.15         | 1.20         | 1.14         | 1.06         |
| Sodium Adsorption Ratio          | -        | -       | 0.788        | 0.863        | 0.443        | 0.599        | 3.15         |
| TDS (Ion Sum Calc)               | mg/L     | 1       | 562          | 557          | 501          | 349          | 892          |
| TDS(calc.)/EC(actual)            | -        | -       | 0.516        | 0.528        | 0.533        | 0.510        | 0.537        |
| Conductivity Calc                | µmho/cm  | -       | 994          | 955          | 861          | 644          | 1620         |
| Conductivity Calc / Conductivity | -        | -       | 0.914        | 0.906        | 0.916        | 0.940        | 0.979        |
| Langelier Index(25°C)            | -        | -       | 0.604        | 0.600        | 0.756        | -0.0252      | 0.546        |
| Saturation pH (25°C)             | -        | -       | 6.74         | 6.67         | 6.68         | 7.13         | 6.72         |
| pH (Client Data)                 | pH units | -       | 6.93         | 6.85         | 6.98         | 7.17         | 7.16         |
| Temperature (Client Data)        | °C       | -       | 11.4         | 10.8         | 10.1         | 12           | 12.2         |



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Data Specialist**

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| Client I.D.                 |          |       | MW22B        | MW23         | MW23A        | MW23B        | OFFICE       |
|-----------------------------|----------|-------|--------------|--------------|--------------|--------------|--------------|
| Sample I.D.                 |          |       | 23-029027-16 | 23-029027-17 | 23-029027-18 | 23-029027-19 | 23-029027-20 |
| Date Collected              |          |       | 2023-10-11   | 2023-10-11   | 2023-10-11   | 2023-10-11   | 2023-10-11   |
| Parameter                   | Units    | R.L.  | -            | -            | -            | -            | -            |
| Alkalinity(CaCO3) to pH4.5  | mg/L     | 5     | 2040         | 423          | 268          | 160          | 239          |
| TDS (Calc. from Cond.)      | mg/L     | 3     | 2610         | 505          | 271          | 152          | 244          |
| Conductivity @25°C          | uS/cm    | 1     | 4620         | 950          | 523          | 297          | 471          |
| pH @25°C                    | pH units | -     | 7.25         | 7.63         | 7.37         | 7.02         | 7.55         |
| Fluoride                    | mg/L     | 0.1   | <0.7         | <0.1         | <0.1         | <0.1         | <0.1         |
| Chloride                    | mg/L     | 0.5   | 323          | 65.9         | 12.0         | <0.5         | 32.3         |
| Nitrate (N)                 | mg/L     | 0.05  | <0.40        | <0.05        | 0.11         | 0.27         | <0.05        |
| Nitrite (N)                 | mg/L     | 0.05  | <0.40        | <0.05        | <0.05        | <0.05        | <0.05        |
| Sulphate                    | mg/L     | 1     | 14           | <1           | 6            | 1            | <1           |
| Phosphorus (Total)          | mg/L     | 0.01  | 3.29         | 0.02         | 0.03         | 0.28         | 0.02         |
| Total Kjeldahl Nitrogen     | mg/L     | 0.1   | 273          | 1.5          | 0.5          | 0.6          | 0.8          |
| Ammonia (N)-Total (NH3+NH4) | mg/L     | 0.05  | 257          | 0.91         | 0.32         | 0.18         | 0.58         |
| Dissolved Organic Carbon    | mg/L     | 0.2   | 29.4         | 12.6         | 5.3          | 5.2          | 8.4          |
| Phenolics                   | mg/L     | 0.001 | 0.012        | <0.001       | <0.001       | 0.004        | <0.001       |
| COD                         | mg/L     | 5     | 466          | 27           | <5           | 15           | 20           |
| Hardness (as CaCO3)         | mg/L     | 0.02  | 947          | 368          | 209          | 128          | 187          |
| Aluminum                    | mg/L     | 0.01  | 0.15         | 0.09         | 0.06         | 0.04         | 0.04         |
| Barium                      | mg/L     | 0.001 | 0.207        | 0.142        | 0.061        | 0.006        | 0.072        |
| Boron                       | mg/L     | 0.005 | 2.29         | 0.091        | 0.017        | <0.005       | 0.079        |
| Calcium                     | mg/L     | 0.02  | 281          | 126          | 75.3         | 49.3         | 52.5         |
| Iron                        | mg/L     | 0.005 | 25.9         | 4.65         | 0.125        | 0.031        | 2.44         |



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| Client I.D.    |       |          | MW22B        | MW23         | MW23A        | MW23B        | OFFICE       |
|----------------|-------|----------|--------------|--------------|--------------|--------------|--------------|
| Sample I.D.    |       |          | 23-029027-16 | 23-029027-17 | 23-029027-18 | 23-029027-19 | 23-029027-20 |
| Date Collected |       |          | 2023-10-11   | 2023-10-11   | 2023-10-11   | 2023-10-11   | 2023-10-11   |
| Parameter      | Units | R.L.     | -            | -            | -            | -            | -            |
| Magnesium      | mg/L  | 0.02     | 59.4         | 13.0         | 5.02         | 1.17         | 13.6         |
| Manganese      | mg/L  | 0.001    | 2.53         | 0.113        | 0.022        | 0.158        | 0.049        |
| Phosphorus     | mg/L  | 0.1      | 2.8          | <0.1         | <0.1         | <0.1         | <0.1         |
| Potassium      | mg/L  | 0.1      | 160          | 2.8          | 0.8          | 0.2          | 3.3          |
| Sodium         | mg/L  | 0.2      | 286          | 26.6         | 6.5          | 0.9          | 9.6          |
| Strontium      | mg/L  | 0.001    | 1.09         | 0.722        | 0.171        | 0.096        | 0.956        |
| Tin            | mg/L  | 0.05     | <0.05        | <0.05        | <0.05        | <0.05        | <0.05        |
| Titanium       | mg/L  | 0.005    | 0.018        | <0.005       | <0.005       | <0.005       | <0.005       |
| Zinc           | mg/L  | 0.005    | 0.010        | <0.005       | <0.005       | <0.005       | <0.005       |
| Antimony       | mg/L  | 0.0001   | 0.0009       | <0.0001      | <0.0001      | <0.0001      | 0.0002       |
| Arsenic        | mg/L  | 0.0001   | 0.0025       | <0.0001      | <0.0001      | 0.0001       | <0.0001      |
| Beryllium      | mg/L  | 0.0001   | <0.0001      | <0.0001      | <0.0001      | <0.0001      | <0.0001      |
| Cadmium        | mg/L  | 0.000015 | <0.000015    | <0.000015    | <0.000015    | <0.000015    | <0.000015    |
| Chromium       | mg/L  | 0.001    | 0.019        | <0.001       | <0.001       | <0.001       | <0.001       |
| Cobalt         | mg/L  | 0.0001   | 0.0083       | 0.0006       | 0.0003       | 0.0004       | 0.0001       |
| Copper         | mg/L  | 0.0001   | 0.0005       | 0.0006       | 0.0010       | 0.0007       | 0.0005       |
| Lead           | mg/L  | 0.00002  | 0.00012      | <0.00002     | <0.00002     | <0.00002     | <0.00002     |
| Molybdenum     | mg/L  | 0.0001   | 0.0005       | <0.0001      | 0.0001       | 0.0002       | <0.0001      |
| Nickel         | mg/L  | 0.0002   | 0.0241       | 0.0007       | 0.0004       | <0.0002      | 0.0007       |
| Selenium       | mg/L  | 0.001    | <0.001       | <0.001       | <0.001       | <0.001       | <0.001       |
| Silver         | mg/L  | 0.0001   | <0.0001      | <0.0001      | <0.0001      | <0.0001      | <0.0001      |



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| Client I.D.                      |          |         | MW22B        | MW23         | MW23A        | MW23B        | OFFICE       |
|----------------------------------|----------|---------|--------------|--------------|--------------|--------------|--------------|
| Sample I.D.                      |          |         | 23-029027-16 | 23-029027-17 | 23-029027-18 | 23-029027-19 | 23-029027-20 |
| Date Collected                   |          |         | 2023-10-11   | 2023-10-11   | 2023-10-11   | 2023-10-11   | 2023-10-11   |
| Parameter                        | Units    | R.L.    | -            | -            | -            | -            | -            |
| Thallium                         | mg/L     | 0.00005 | <0.00005     | <0.00005     | <0.00005     | <0.00005     | <0.00005     |
| Uranium                          | mg/L     | 0.00005 | 0.00006      | <0.00005     | 0.00046      | 0.00013      | <0.00005     |
| Vanadium                         | mg/L     | 0.0001  | 0.0066       | 0.0006       | 0.0002       | 0.0004       | 0.0001       |
| Chromium (VI)                    | mg/L     | 0.01    | <0.01        | <0.01        | <0.01        | <0.01        | <0.01        |
| Mercury                          | mg/L     | 0.00002 | <0.00002     | <0.00002     | <0.00002     | 0.00004      | 0.00004      |
| Anion Sum                        | meq/L    | -       | 50.1         | 10.3         | 5.82         | 3.25         | 5.70         |
| Cation Sum                       | meq/L    | -       | 54.9         | 8.92         | 4.51         | 2.62         | 4.44         |
| % Difference                     | %        | -       | 4.59         | 7.26         | 12.8         | 10.8         | 12.5         |
| Ion Ratio                        | -        | -       | 0.912        | 1.16         | 1.29         | 1.24         | 1.29         |
| Sodium Adsorption Ratio          | -        | -       | 4.05         | 0.603        | 0.195        | 0.0328       | 0.305        |
| TDS (Ion Sum Calc)               | mg/L     | 1       | 2700         | 494          | 267          | 151          | 259          |
| TDS(calc.)/EC(actual)            | -        | -       | 0.585        | 0.520        | 0.511        | 0.508        | 0.549        |
| Conductivity Calc                | µmho/cm  | -       | 4330         | 868          | 475          | 275          | 471          |
| Conductivity Calc / Conductivity | -        | -       | 0.936        | 0.914        | 0.909        | 0.925        | 1.00         |
| Langelier Index(25°C)            | -        | -       | 1.49         | 0.894        | 0.242        | -0.476       | 0.216        |
| Saturation pH (25°C)             | -        | -       | 5.76         | 6.74         | 7.13         | 7.50         | 7.33         |
| pH (Client Data)                 | pH units | -       | 6.72         | 7.05         | 7.41         | 7.68         | 8.03         |
| Temperature (Client Data)        | °C       | -       | 12.8         | 10.5         | 9.8          | 10.8         | 16           |



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Data Specialist**

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|                             |          | Client I.D.    | DUP          |
|-----------------------------|----------|----------------|--------------|
|                             |          | Sample I.D.    | 23-029027-21 |
|                             |          | Date Collected | 2023-10-12   |
| Parameter                   | Units    | R.L.           | -            |
| Alkalinity(CaCO3) to pH4.5  | mg/L     | 5              | 249          |
| TDS (Calc. from Cond.)      | mg/L     | 3              | 478          |
| Conductivity @25°C          | uS/cm    | 1              | 902          |
| pH @25°C                    | pH units | -              | 7.14         |
| Fluoride                    | mg/L     | 0.1            | <0.1         |
| Chloride                    | mg/L     | 0.5            | 52.8         |
| Nitrate (N)                 | mg/L     | 0.05           | <0.05        |
| Nitrite (N)                 | mg/L     | 0.05           | <0.05        |
| Sulphate                    | mg/L     | 1              | 6            |
| Phosphorus (Total)          | mg/L     | 0.01           | 0.12         |
| Total Kjeldahl Nitrogen     | mg/L     | 0.1            | 0.5          |
| Ammonia (N)-Total (NH3+NH4) | mg/L     | 0.05           | 0.50         |
| Dissolved Organic Carbon    | mg/L     | 0.2            | 7.3          |
| Phenolics                   | mg/L     | 0.001          | <0.001       |
| COD                         | mg/L     | 5              | 33           |
| Hardness (as CaCO3)         | mg/L     | 0.02           | 263          |
| Aluminum                    | mg/L     | 0.01           | 0.07         |
| Barium                      | mg/L     | 0.001          | 0.029        |
| Boron                       | mg/L     | 0.005          | 0.011        |
| Calcium                     | mg/L     | 0.02           | 99.1         |
| Iron                        | mg/L     | 0.005          | 1.21         |



**Michelle Dubien**  
**Data Specialist**

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**Final Report**  
**REPORT No: 23-029027 - Rev. 0**

|            |       | Client I.D.    | DUP          |
|------------|-------|----------------|--------------|
|            |       | Sample I.D.    | 23-029027-21 |
|            |       | Date Collected | 2023-10-12   |
| Parameter  | Units | R.L.           | -            |
| Magnesium  | mg/L  | 0.02           | 3.71         |
| Manganese  | mg/L  | 0.001          | 0.082        |
| Phosphorus | mg/L  | 0.1            | <0.1         |
| Potassium  | mg/L  | 0.1            | 1.2          |
| Sodium     | mg/L  | 0.2            | 35.3         |
| Strontium  | mg/L  | 0.001          | 0.366        |
| Tin        | mg/L  | 0.05           | <0.05        |
| Titanium   | mg/L  | 0.005          | <0.005       |
| Zinc       | mg/L  | 0.005          | <0.005       |
| Antimony   | mg/L  | 0.0001         | <0.0001      |
| Arsenic    | mg/L  | 0.0001         | 0.0001       |
| Beryllium  | mg/L  | 0.0001         | <0.0001      |
| Cadmium    | mg/L  | 0.00001<br>5   | <0.000015    |
| Chromium   | mg/L  | 0.001          | <0.001       |
| Cobalt     | mg/L  | 0.0001         | 0.0002       |
| Copper     | mg/L  | 0.0001         | 0.0005       |
| Lead       | mg/L  | 0.00002        | 0.00002      |
| Molybdenum | mg/L  | 0.0001         | 0.0001       |
| Nickel     | mg/L  | 0.0002         | <0.0002      |
| Selenium   | mg/L  | 0.001          | <0.001       |
| Silver     | mg/L  | 0.0001         | <0.0001      |



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REPORT No: 23-029027 - Rev. 0

|                                  |          | Client I.D.    | DUP          |
|----------------------------------|----------|----------------|--------------|
|                                  |          | Sample I.D.    | 23-029027-21 |
|                                  |          | Date Collected | 2023-10-12   |
| Parameter                        | Units    | R.L.           | -            |
| Thallium                         | mg/L     | 0.00005        | <0.00005     |
| Uranium                          | mg/L     | 0.00005        | 0.00010      |
| Vanadium                         | mg/L     | 0.0001         | 0.0016       |
| Chromium (VI)                    | mg/L     | 0.01           | <0.01        |
| Mercury                          | mg/L     | 0.00002        | 0.00003      |
| Anion Sum                        | meq/L    | -              | 6.57         |
| Cation Sum                       | meq/L    | -              | 6.93         |
| % Difference                     | %        | -              | 2.63         |
| Ion Ratio                        | -        | -              | 0.949        |
| Sodium Adsorption Ratio          | -        | -              | 0.948        |
| TDS (Ion Sum Calc)               | mg/L     | 1              | 349          |
| TDS(calc.)/EC(actual)            | -        | -              | 0.387        |
| Conductivity Calc                | µmho/cm  | -              | 648          |
| Conductivity Calc / Conductivity | -        | -              | 0.718        |
| Langelier Index(25°C)            | -        | -              | 0.0791       |
| Saturation pH (25°C)             | -        | -              | 7.06         |
| pH (Client Data)                 | pH units | -              | 7.18         |
| Temperature (Client Data)        | °C       | -              | 9.5          |



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| Client I.D.                     |       |      | MW12        | MW14        | MW15        | MW15A       | MW15B       |
|---------------------------------|-------|------|-------------|-------------|-------------|-------------|-------------|
| Sample I.D.                     |       |      | 23-029027-3 | 23-029027-5 | 23-029027-6 | 23-029027-7 | 23-029027-8 |
| Date Collected                  |       |      | 2023-10-11  | 2023-10-11  | 2023-10-11  | 2023-10-11  | 2023-10-11  |
| Parameter                       | Units | R.L. | -           | -           | -           | -           | -           |
| Acetone                         | µg/L  | 30   | <30         | <30         | <30         | <30         | <30         |
| Benzene                         | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Bromodichloromethane            | µg/L  | 2    | <2          | <2          | <2          | <2          | <2          |
| Bromoform                       | µg/L  | 5    | <5          | <5          | <5          | <5          | <5          |
| Bromomethane                    | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Carbon Tetrachloride            | µg/L  | 0.2  | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        |
| Chlorobenzene                   | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Chloroform                      | µg/L  | 1    | <1          | <1          | <1          | <1          | <1          |
| Chloromethane (Methyl Chloride) | µg/L  | 2    | <2          | <2          | <2          | <2          | <2          |
| Dibromochloromethane            | µg/L  | 2    | <2          | <2          | <2          | <2          | <2          |
| Ethylene Dibromide              | µg/L  | 0.2  | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        |
| Dichlorobenzene,1,2-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichlorobenzene,1,3-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichlorobenzene,1,4-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloroethane,1,1-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloroethane,1,2-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloroethylene,1,1-           | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloroethylene,1,2-cis-       | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | 0.8         | <0.5        |
| Dichloroethylene,1,2-trans-     | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloropropane,1,2-            | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloropropene,1,3-cis-        | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |



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| Client I.D.                          |       |      | MW12        | MW14        | MW15        | MW15A       | MW15B       |
|--------------------------------------|-------|------|-------------|-------------|-------------|-------------|-------------|
| Sample I.D.                          |       |      | 23-029027-3 | 23-029027-5 | 23-029027-6 | 23-029027-7 | 23-029027-8 |
| Date Collected                       |       |      | 2023-10-11  | 2023-10-11  | 2023-10-11  | 2023-10-11  | 2023-10-11  |
| Parameter                            | Units | R.L. | -           | -           | -           | -           | -           |
| Dichloropropene, 1,3-trans-          | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Ethylbenzene                         | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Dichloromethane (Methylene Chloride) | µg/L  | 5    | <5          | <5          | <5          | <5          | <5          |
| Methyl Ethyl Ketone                  | µg/L  | 20   | <20         | <20         | <20         | <20         | <20         |
| Methyl Isobutyl Ketone               | µg/L  | 20   | <20         | <20         | <20         | <20         | <20         |
| Methyl tert-Butyl Ether (MTBE)       | µg/L  | 2    | <2          | <2          | <2          | <2          | <2          |
| Styrene                              | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Tetrachloroethane, 1,1,1,2-          | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Tetrachloroethane, 1,1,2,2-          | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Tetrachloroethylene                  | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Toluene                              | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Trichlorobenzene, 1,2,4-             | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Trichloroethane, 1,1,1-              | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Trichloroethane, 1,1,2-              | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Trichloroethylene                    | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |
| Trichlorofluoromethane (Freon 11)    | µg/L  | 5    | <5          | <5          | <5          | <5          | <5          |
| Vinyl Chloride                       | µg/L  | 0.2  | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        |
| Xylene, m,p-                         | µg/L  | 1    | <1          | <1          | <1          | <1          | <1          |
| Xylene, o-                           | µg/L  | 0.5  | <0.5        | <0.5        | <0.5        | <0.5        | <0.5        |



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**REPORT No: 23-029027 - Rev. 0**

|                                 |       | Client I.D.    | MW16        |
|---------------------------------|-------|----------------|-------------|
|                                 |       | Sample I.D.    | 23-029027-9 |
|                                 |       | Date Collected | 2023-10-11  |
| Parameter                       | Units | R.L.           | -           |
| Acetone                         | µg/L  | 30             | <30         |
| Benzene                         | µg/L  | 0.5            | <0.5        |
| Bromodichloromethane            | µg/L  | 2              | <2          |
| Bromoform                       | µg/L  | 5              | <5          |
| Bromomethane                    | µg/L  | 0.5            | <0.5        |
| Carbon Tetrachloride            | µg/L  | 0.2            | <0.2        |
| Chlorobenzene                   | µg/L  | 0.5            | <0.5        |
| Chloroform                      | µg/L  | 1              | <1          |
| Chloromethane (Methyl Chloride) | µg/L  | 2              | <2          |
| Dibromochloromethane            | µg/L  | 2              | <2          |
| Ethylene Dibromide              | µg/L  | 0.2            | <0.2        |
| Dichlorobenzene,1,2-            | µg/L  | 0.5            | <0.5        |
| Dichlorobenzene,1,3-            | µg/L  | 0.5            | <0.5        |
| Dichlorobenzene,1,4-            | µg/L  | 0.5            | <0.5        |
| Dichloroethane,1,1-             | µg/L  | 0.5            | <0.5        |
| Dichloroethane,1,2-             | µg/L  | 0.5            | <0.5        |
| Dichloroethylene,1,1-           | µg/L  | 0.5            | <0.5        |
| Dichloroethylene,1,2-cis-       | µg/L  | 0.5            | <0.5        |
| Dichloroethylene,1,2-trans-     | µg/L  | 0.5            | <0.5        |
| Dichloropropane,1,2-            | µg/L  | 0.5            | <0.5        |
| Dichloropropene,1,3-cis-        | µg/L  | 0.5            | <0.5        |



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**REPORT No: 23-029027 - Rev. 0**

|                                      |              |                       |             |
|--------------------------------------|--------------|-----------------------|-------------|
|                                      |              | <b>Client I.D.</b>    | MW16        |
|                                      |              | <b>Sample I.D.</b>    | 23-029027-9 |
|                                      |              | <b>Date Collected</b> | 2023-10-11  |
| <b>Parameter</b>                     | <b>Units</b> | <b>R.L.</b>           | -           |
| Dichloropropene, 1,3-trans-          | µg/L         | 0.5                   | <0.5        |
| Ethylbenzene                         | µg/L         | 0.5                   | <0.5        |
| Dichloromethane (Methylene Chloride) | µg/L         | 5                     | <5          |
| Methyl Ethyl Ketone                  | µg/L         | 20                    | <20         |
| Methyl Isobutyl Ketone               | µg/L         | 20                    | <20         |
| Methyl tert-Butyl Ether (MTBE)       | µg/L         | 2                     | <2          |
| Styrene                              | µg/L         | 0.5                   | <0.5        |
| Tetrachloroethane, 1,1,1,2-          | µg/L         | 0.5                   | <0.5        |
| Tetrachloroethane, 1,1,2,2-          | µg/L         | 0.5                   | <0.5        |
| Tetrachloroethylene                  | µg/L         | 0.5                   | <0.5        |
| Toluene                              | µg/L         | 0.5                   | <0.5        |
| Trichlorobenzene, 1,2,4-             | µg/L         | 0.5                   | <0.5        |
| Trichloroethane, 1,1,1,-             | µg/L         | 0.5                   | <0.5        |
| Trichloroethane, 1,1,2,-             | µg/L         | 0.5                   | <0.5        |
| Trichloroethylene                    | µg/L         | 0.5                   | <0.5        |
| Trichlorofluoromethane (Freon 11)    | µg/L         | 5                     | <5          |
| Vinyl Chloride                       | µg/L         | 0.2                   | <0.2        |
| Xylene, m,p-                         | µg/L         | 1                     | <1          |
| Xylene, o-                           | µg/L         | 0.5                   | <0.5        |



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|                                    |       |      | Client I.D.    | MW15        | MW15A       | MW15B       | MW16        |
|------------------------------------|-------|------|----------------|-------------|-------------|-------------|-------------|
|                                    |       |      | Sample I.D.    | 23-029027-6 | 23-029027-7 | 23-029027-8 | 23-029027-9 |
|                                    |       |      | Date Collected | 2023-10-11  | 2023-10-11  | 2023-10-11  | 2023-10-11  |
| Parameter                          | Units | R.L. |                | -           | -           | -           | -           |
| Poly-Chlorinated Biphenyls (PCB's) | µg/L  | 0.05 |                | <0.05       | <0.05       | <0.05       | <0.05       |
| Identification Comment             | -     | -    |                | -           | -           | -           | -           |



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C.O.C.:

REPORT No: - Rev. 0

Attention: Kayla Pantaleo

Client I.D.

Sample I.D.

Date Collected

Parameter

Units

R.L.

**C.O.C.:** -

**REPORT No: 23-028557 - Rev. 0**

**Report To:**

City of Kawartha Lakes  
PO Box 9000  
322 Kent Street West  
Lindsay, ON K9V 4T7

**CADUCEON Environmental Laboratories**

112 Commerce Park Dr Unit L  
Barrie, ON L4N 8W8

**Attention: Deyonte Levene**

DATE RECEIVED: 2023-Oct-13  
DATE REPORTED: 2023-Nov-03  
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Fenelon Falls Landfill  
P.O. NUMBER:

| Analyses                       | Qty | Site Analyzed | Authorized  | Date Analyzed | Lab Method               | Reference Method         |
|--------------------------------|-----|---------------|-------------|---------------|--------------------------|--------------------------|
| Anions (Liquid)                | 8   | OTTAWA        | VKASYAN     | 2023-Oct-30   | A-IC-01                  | SM 4110B                 |
| BOD5 (Liquid)                  | 8   | KINGSTON      | JWOLFE2     | 2023-Oct-26   | BOD-001                  | SM 5210B                 |
| COD (Liquid)                   | 8   | KINGSTON      | EHINCH      | 2023-Oct-20   | COD-001                  | SM 5220D                 |
| Colour (Liquid)                | 8   | OTTAWA        | MDON        | 2023-Oct-19   | A-COL-01                 | SM 2120C                 |
| Cond/pH/Alk Auto (Liquid)      | 8   | OTTAWA        | SBOUDREAU   | 2023-Oct-19   | COND-02/PH-02/A<br>LK-02 | SM 2510B/4500H/<br>2320B |
| Cyanide WAD (Liquid)           | 8   | KINGSTON      | JMACINNES   | 2023-Oct-20   | CN-001                   | SM 4500-CN-E             |
| DOC/DIC (Liquid)               | 8   | OTTAWA        | VKASYAN     | 2023-Oct-24   | C-OC-01                  | EPA 415.2                |
| Ion Balance (Calc.)            | 8   | OTTAWA        | ASCHNEIDER  |               | CP-028                   | MECP E3196               |
| Chromium VI (Liquid)           | 8   | OTTAWA        | STAILLON    | 2023-Oct-23   | D-CRVI-01                | MECP E3056               |
| ICP/MS Total (Liquid)          | 8   | OTTAWA        | TPRICE      | 2023-Oct-20   | D-ICPMS-01               | EPA 6020                 |
| ICP/OES Total (Liquid)         | 8   | OTTAWA        | APRUDYVUS   | 2023-Oct-19   | D-ICP-01                 | SM 3120B                 |
| ICP/OES (Liquid)               | 8   | OTTAWA        | NHOGAN      | 2023-Oct-18   | D-ICP-01                 | SM 3120B                 |
| Mercury (Liquid)               | 8   | OTTAWA        | TBENNETT    | 2023-Oct-19   | D-HG-02                  | SM 3112B                 |
| Ammonia & o-Phosphate (Liquid) | 8   | KINGSTON      | KDIBBITS    | 2023-Oct-26   | NH3-001                  | SM 4500NH3               |
| PCB's (Liquid)                 | 1   | KINGSTON      | CSUMMERHAYS | 2023-Oct-20   | PCB-001                  | EPA 8081                 |
| Phenols (Liquid)               | 8   | KINGSTON      | JMACINNES   | 2023-Oct-30   | PHEN-01                  | MECP E3179               |
| TP & TKN (Liquid)              | 8   | KINGSTON      | KDIBBITS    | 2023-Nov-01   | TPTKN-001                | MECP E3516.2             |
| TSS (Liquid)                   | 8   | KINGSTON      | TSUNNY      | 2023-Oct-19   | TSS-001                  | SM 2540D                 |
| Turbidity (Liquid)             | 8   | OTTAWA        | MDON        | 2023-Oct-19   | A-TURB-01                | SM 2130B                 |

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an \*



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**Data Specialist**

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**Final Report**

**REPORT No: 23-028557 - Rev. 0**

| Client I.D.                 |          |       | SW2         | SW3         | SW4         | SW13-30 m   | SW16        |
|-----------------------------|----------|-------|-------------|-------------|-------------|-------------|-------------|
| Sample I.D.                 |          |       | 23-028557-1 | 23-028557-2 | 23-028557-3 | 23-028557-4 | 23-028557-5 |
| Date Collected              |          |       | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                   | Units    | R.L.  | -           | -           | -           | -           | -           |
| Alkalinity(CaCO3) to pH4.5  | mg/L     | 5     | 159         | 164         | 152         | 216         | 291         |
| Conductivity @25°C          | uS/cm    | 1     | 330         | 351         | 326         | 447         | 675         |
| pH @25°C                    | pH units | -     | 8.08        | 8.02        | 7.75        | 8.08        | 8.08        |
| Colour                      | TCU      | 2     | 67          | 68          | 79          | 92          | 19          |
| Turbidity                   | NTU      | 0.1   | 0.4         | 1.1         | 1.4         | 34.1        | 1.4         |
| Fluoride                    | mg/L     | 0.1   | <0.1        | <0.1        | <0.1        | <0.1        | <0.1        |
| Chloride                    | mg/L     | 0.5   | 9.5         | 12.9        | 11.5        | 15.7        | 23.8        |
| Nitrate (N)                 | mg/L     | 0.05  | 0.09        | <0.05       | <0.05       | 0.06        | 2.19        |
| Nitrite (N)                 | mg/L     | 0.05  | <0.05       | <0.05       | <0.05       | 0.06        | 0.05        |
| Sulphate                    | mg/L     | 1     | 4           | 4           | 1           | 2           | 33          |
| BOD5                        | mg/L     | 3     | <3          | <3          | <3          | 13          | <3          |
| Total Suspended Solids      | mg/L     | 3     | 7           | 7           | 6           | 360         | 8           |
| Phosphorus (Total)          | mg/L     | 0.01  | <0.01       | 0.01        | 0.01        | 1.16        | 0.04        |
| Total Kjeldahl Nitrogen     | mg/L     | 0.1   | 1.6         | 0.6         | 0.7         | 6.3         | 0.5         |
| Ammonia (N)-Total (NH3+NH4) | mg/L     | 0.05  | 1.31        | 0.09        | 0.06        | 0.29        | 0.06        |
| Ammonia (N)-unionized       | mg/L     | 0.01  | 0.01        | <0.01       | <0.01       | <0.01       | <0.01       |
| Dissolved Organic Carbon    | mg/L     | 0.2   | 22.9        | 23.1        | 25.5        | 50.2        | 8.9         |
| Cyanide (WAD)               | mg/L     | 0.005 | <0.005      | <0.005      | <0.005      | <0.005      | <0.005      |
| Phenolics                   | mg/L     | 0.001 | <0.001      | <0.001      | <0.001      | <0.001      | <0.001      |
| COD                         | mg/L     | 5     | 47          | 58          | 58          | 242         | 16          |
| Aluminum                    | mg/L     | 0.01  | 0.04        | 0.04        | 0.04        | 0.06        | 0.09        |



**Michelle Dubien**  
**Data Specialist**

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**Final Report**

**REPORT No: 23-028557 - Rev. 0**

|                     |       |          | Client I.D.    | SW2         | SW3         | SW4         | SW13-30 m   | SW16        |
|---------------------|-------|----------|----------------|-------------|-------------|-------------|-------------|-------------|
|                     |       |          | Sample I.D.    | 23-028557-1 | 23-028557-2 | 23-028557-3 | 23-028557-4 | 23-028557-5 |
|                     |       |          | Date Collected | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter           | Units | R.L.     |                | -           | -           | -           | -           | -           |
| Hardness (as CaCO3) | mg/L  | -        |                | 164         | 157         | 157         | 219         | 312         |
| Aluminum (Total)    | mg/L  | 0.01     |                | <0.01       | <0.01       | 0.01        | 0.37        | 0.06        |
| Barium (Total)      | mg/L  | 0.001    |                | 0.026       | 0.024       | 0.052       | 0.068       | 0.043       |
| Boron (Total)       | mg/L  | 0.005    |                | 0.007       | 0.008       | 0.008       | 0.026       | 0.014       |
| Calcium (Total)     | mg/L  | 0.02     |                | 57.7        | 55.5        | 55.7        | 79.2        | 112         |
| Iron (Total)        | mg/L  | 0.005    |                | 0.036       | 0.121       | 0.357       | 8.79        | 0.064       |
| Magnesium (Total)   | mg/L  | 0.02     |                | 4.75        | 4.39        | 4.38        | 5.15        | 8.08        |
| Manganese (Total)   | mg/L  | 0.001    |                | 0.012       | 0.019       | 0.105       | 0.349       | 0.021       |
| Phosphorus (Total)  | mg/L  | 0.1      |                | <0.1        | <0.1        | <0.1        | 1.1         | <0.1        |
| Potassium (Total)   | mg/L  | 0.1      |                | 1.6         | 1.8         | 1.3         | 6.4         | 2.8         |
| Sodium (Total)      | mg/L  | 0.2      |                | 4.6         | 6.0         | 5.8         | 7.0         | 13.4        |
| Strontium (Total)   | mg/L  | 0.001    |                | 0.141       | 0.142       | 0.145       | 0.191       | 0.305       |
| Tin (Total)         | mg/L  | 0.05     |                | <0.05       | <0.05       | <0.05       | <0.05       | <0.05       |
| Titanium (Total)    | mg/L  | 0.005    |                | <0.005      | <0.005      | <0.005      | 0.017       | <0.005      |
| Zinc (Total)        | mg/L  | 0.005    |                | <0.005      | 0.009       | 0.009       | 0.037       | 0.006       |
| Antimony (Total)    | mg/L  | 0.0001   |                | <0.0001     | <0.0001     | <0.0001     | 0.0001      | <0.0001     |
| Arsenic (Total)     | mg/L  | 0.0001   |                | 0.0002      | 0.0003      | 0.0002      | 0.0020      | 0.0002      |
| Beryllium (Total)   | mg/L  | 0.0001   |                | <0.0001     | <0.0001     | <0.0001     | <0.0001     | <0.0001     |
| Cadmium (Total)     | mg/L  | 0.000015 |                | <0.000015   | <0.000015   | <0.000015   | 0.000099    | <0.000015   |
| Chromium (Total)    | mg/L  | 0.001    |                | <0.001      | <0.001      | <0.001      | 0.001       | <0.001      |
| Cobalt (Total)      | mg/L  | 0.0001   |                | 0.0001      | 0.0002      | 0.0002      | 0.0010      | 0.0003      |



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**Final Report**

**REPORT No: 23-028557 - Rev. 0**

| Client I.D.                      |         |         | SW2         | SW3         | SW4         | SW13-30 m   | SW16        |
|----------------------------------|---------|---------|-------------|-------------|-------------|-------------|-------------|
| Sample I.D.                      |         |         | 23-028557-1 | 23-028557-2 | 23-028557-3 | 23-028557-4 | 23-028557-5 |
| Date Collected                   |         |         | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                        | Units   | R.L.    | -           | -           | -           | -           | -           |
| Copper (Total)                   | mg/L    | 0.0001  | 0.0004      | 0.0004      | 0.0003      | 0.0025      | 0.0014      |
| Lead (Total)                     | mg/L    | 0.00002 | 0.00005     | 0.00009     | 0.00005     | 0.00445     | 0.00008     |
| Molybdenum (Total)               | mg/L    | 0.0001  | 0.0001      | 0.0001      | <0.0001     | 0.0002      | 0.0001      |
| Nickel (Total)                   | mg/L    | 0.0002  | 0.0005      | 0.0009      | 0.0005      | 0.0020      | 0.0008      |
| Selenium (Total)                 | mg/L    | 0.001   | <0.001      | <0.001      | <0.001      | <0.001      | <0.001      |
| Silver (Total)                   | mg/L    | 0.0001  | <0.0001     | <0.0001     | <0.0001     | <0.0001     | <0.0001     |
| Thallium (Total)                 | mg/L    | 0.00005 | <0.00005    | <0.00005    | <0.00005    | <0.00005    | <0.00005    |
| Uranium (Total)                  | mg/L    | 0.00005 | 0.00015     | 0.00014     | <0.00005    | 0.00005     | 0.00094     |
| Vanadium (Total)                 | mg/L    | 0.0001  | 0.0001      | 0.0001      | <0.0001     | 0.0011      | 0.0005      |
| Chromium (VI)                    | mg/L    | 0.001   | <0.001      | <0.001      | <0.001      | <0.001      | <0.001      |
| Mercury                          | mg/L    | 0.00002 | <0.00002    | <0.00002    | <0.00002    | 0.00004     | <0.00002    |
| Anion Sum                        | meq/L   | -       | 3.55        | 3.71        | 3.40        | 4.80        | 7.33        |
| Cation Sum                       | meq/L   | -       | 3.61        | 3.45        | 3.46        | 5.35        | 6.90        |
| % Difference                     | %       | -       | 0.801       | 3.63        | 0.888       | 5.49        | 3.02        |
| Ion Ratio                        | -       | -       | 0.984       | 1.08        | 0.982       | 0.896       | 1.06        |
| Sodium Adsorption Ratio          | -       | -       | 0.155       | 0.209       | 0.201       | 0.207       | 0.331       |
| TDS (Ion Sum Calc)               | mg/L    | 1       | 180         | 183         | 172         | 254         | 377         |
| TDS(calc.)/EC(actual)            | -       | -       | 0.546       | 0.521       | 0.527       | 0.569       | 0.558       |
| Conductivity Calc                | µmho/cm | -       | 345         | 344         | 329         | 457         | 666         |
| Conductivity Calc / Conductivity | -       | -       | 1.05        | 0.981       | 1.01        | 1.02        | 0.986       |
| Langelier Index(25°C)            | -       | -       | 0.631       | 0.566       | 0.267       | 0.880       | 1.14        |



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**Final Report**

**REPORT No: 23-028557 - Rev. 0**

|                           |          |      | Client I.D.    | SW2         | SW3         | SW4         | SW13-30 m   | SW16        |
|---------------------------|----------|------|----------------|-------------|-------------|-------------|-------------|-------------|
|                           |          |      | Sample I.D.    | 23-028557-1 | 23-028557-2 | 23-028557-3 | 23-028557-4 | 23-028557-5 |
|                           |          |      | Date Collected | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                 | Units    | R.L. |                | -           | -           | -           | -           | -           |
| Saturation pH (25°C)      | -        | -    |                | 7.45        | 7.45        | 7.48        | 7.20        | 6.94        |
| pH (Client Data)          | pH units | -    |                | 7.68        | 7.7         | 7.23        | 7.53        | 8.1         |
| Temperature (Client Data) | °C       | -    |                | 11.6        | 10          | 13.6        | 8.7         | 9.6         |



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|                             |          |       | Client I.D.    | SW17        | DUP-2       | DUP-3       |
|-----------------------------|----------|-------|----------------|-------------|-------------|-------------|
|                             |          |       | Sample I.D.    | 23-028557-6 | 23-028557-7 | 23-028557-8 |
|                             |          |       | Date Collected | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                   | Units    | R.L.  |                | -           | -           | -           |
| Alkalinity(CaCO3) to pH4.5  | mg/L     | 5     |                | 209         | 164         | 161         |
| Conductivity @25°C          | uS/cm    | 1     |                | 433         | 352         | 331         |
| pH @25°C                    | pH units | -     |                | 7.91        | 8.00        | 8.11        |
| Colour                      | TCU      | 2     |                | 89          | 70          | 73          |
| Turbidity                   | NTU      | 0.1   |                | 11.2        | 1.2         | 0.6         |
| Fluoride                    | mg/L     | 0.1   |                | <0.1        | <0.1        | <0.1        |
| Chloride                    | mg/L     | 0.5   |                | 15.0        | 12.7        | 9.5         |
| Nitrate (N)                 | mg/L     | 0.05  |                | <0.05       | 0.09        | 0.21        |
| Nitrite (N)                 | mg/L     | 0.05  |                | <0.05       | <0.05       | <0.05       |
| Sulphate                    | mg/L     | 1     |                | 1           | 4           | 4           |
| BOD5                        | mg/L     | 3     |                | <3          | <3          | <3          |
| Total Suspended Solids      | mg/L     | 3     |                | 15          | 6           | 6           |
| Phosphorus (Total)          | mg/L     | 0.01  |                | 0.08        | 0.01        | <0.01       |
| Total Kjeldahl Nitrogen     | mg/L     | 0.1   |                | 1.3         | 0.6         | 0.5         |
| Ammonia (N)-Total (NH3+NH4) | mg/L     | 0.05  |                | 0.34        | 0.08        | 0.06        |
| Ammonia (N)-unionized       | mg/L     | 0.01  |                | <0.01       | <0.01       | <0.01       |
| Dissolved Organic Carbon    | mg/L     | 0.2   |                | 25.8        | 23.2        | 23.6        |
| Cyanide (WAD)               | mg/L     | 0.005 |                | <0.005      | <0.005      | <0.005      |
| Phenolics                   | mg/L     | 0.001 |                | <0.001      | <0.001      | <0.001      |
| COD                         | mg/L     | 5     |                | 71          | 46          | 46          |
| Aluminum                    | mg/L     | 0.01  |                | 0.06        | 0.04        | 0.02        |



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**Final Report**  
**REPORT No: 23-028557 - Rev. 0**

|                                  |       |          | Client I.D.    | SW17        | DUP-2       | DUP-3       |
|----------------------------------|-------|----------|----------------|-------------|-------------|-------------|
|                                  |       |          | Sample I.D.    | 23-028557-6 | 23-028557-7 | 23-028557-8 |
|                                  |       |          | Date Collected | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                        | Units | R.L.     |                | -           | -           | -           |
| Hardness (as CaCO <sub>3</sub> ) | mg/L  | -        |                | 207         | 166         | 159         |
| Aluminum (Total)                 | mg/L  | 0.01     |                | 0.14        | 0.01        | 0.01        |
| Barium (Total)                   | mg/L  | 0.001    |                | 0.026       | 0.026       | 0.025       |
| Boron (Total)                    | mg/L  | 0.005    |                | 0.008       | 0.007       | 0.006       |
| Calcium (Total)                  | mg/L  | 0.02     |                | 75.2        | 58.8        | 55.9        |
| Iron (Total)                     | mg/L  | 0.005    |                | 0.552       | 0.119       | 0.038       |
| Magnesium (Total)                | mg/L  | 0.02     |                | 4.58        | 4.70        | 4.64        |
| Manganese (Total)                | mg/L  | 0.001    |                | 0.120       | 0.028       | 0.023       |
| Phosphorus (Total)               | mg/L  | 0.1      |                | <0.1        | <0.1        | <0.1        |
| Potassium (Total)                | mg/L  | 0.1      |                | 5.5         | 2.0         | 1.9         |
| Sodium (Total)                   | mg/L  | 0.2      |                | 5.0         | 6.4         | 4.5         |
| Strontium (Total)                | mg/L  | 0.001    |                | 0.171       | 0.153       | 0.139       |
| Tin (Total)                      | mg/L  | 0.05     |                | <0.05       | <0.05       | <0.05       |
| Titanium (Total)                 | mg/L  | 0.005    |                | 0.008       | <0.005      | <0.005      |
| Zinc (Total)                     | mg/L  | 0.005    |                | 0.006       | 0.005       | 0.016       |
| Antimony (Total)                 | mg/L  | 0.0001   |                | 0.0001      | <0.0001     | 0.0001      |
| Arsenic (Total)                  | mg/L  | 0.0001   |                | 0.0007      | 0.0003      | 0.0002      |
| Beryllium (Total)                | mg/L  | 0.0001   |                | <0.0001     | <0.0001     | <0.0001     |
| Cadmium (Total)                  | mg/L  | 0.000015 |                | <0.000015   | <0.000015   | <0.000015   |
| Chromium (Total)                 | mg/L  | 0.001    |                | <0.001      | <0.001      | <0.001      |
| Cobalt (Total)                   | mg/L  | 0.0001   |                | 0.0004      | 0.0001      | 0.0001      |



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**Final Report**

**REPORT No: 23-028557 - Rev. 0**

|                                  |         |         | Client I.D.    | SW17        | DUP-2       | DUP-3       |
|----------------------------------|---------|---------|----------------|-------------|-------------|-------------|
|                                  |         |         | Sample I.D.    | 23-028557-6 | 23-028557-7 | 23-028557-8 |
|                                  |         |         | Date Collected | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                        | Units   | R.L.    |                | -           | -           | -           |
| Copper (Total)                   | mg/L    | 0.0001  |                | 0.0012      | 0.0006      | 0.0013      |
| Lead (Total)                     | mg/L    | 0.00002 |                | 0.00034     | 0.00010     | 0.00034     |
| Molybdenum (Total)               | mg/L    | 0.0001  |                | 0.0001      | 0.0001      | <0.0001     |
| Nickel (Total)                   | mg/L    | 0.0002  |                | 0.0012      | 0.0007      | 0.0025      |
| Selenium (Total)                 | mg/L    | 0.001   |                | <0.001      | <0.001      | <0.001      |
| Silver (Total)                   | mg/L    | 0.0001  |                | <0.0001     | <0.0001     | <0.0001     |
| Thallium (Total)                 | mg/L    | 0.00005 |                | <0.00005    | <0.00005    | <0.00005    |
| Uranium (Total)                  | mg/L    | 0.00005 |                | <0.00005    | 0.00013     | 0.00013     |
| Vanadium (Total)                 | mg/L    | 0.0001  |                | 0.0004      | 0.0001      | 0.0001      |
| Chromium (VI)                    | mg/L    | 0.001   |                | <0.001      | <0.001      | <0.001      |
| Mercury                          | mg/L    | 0.00002 |                | <0.00002    | <0.00002    | <0.00002    |
| Anion Sum                        | meq/L   | -       |                | 4.62        | 3.72        | 3.59        |
| Cation Sum                       | meq/L   | -       |                | 4.55        | 3.67        | 3.43        |
| % Difference                     | %       | -       |                | 0.807       | 0.701       | 2.26        |
| Ion Ratio                        | -       | -       |                | 1.02        | 1.01        | 1.05        |
| Sodium Adsorption Ratio          | -       | -       |                | 0.150       | 0.214       | 0.157       |
| TDS (Ion Sum Calc)               | mg/L    | 1       |                | 233         | 187         | 178         |
| TDS(calc.)/EC(actual)            | -       | -       |                | 0.538       | 0.532       | 0.538       |
| Conductivity Calc                | µmho/cm | -       |                | 435         | 356         | 336         |
| Conductivity Calc / Conductivity | -       | -       |                | 1.01        | 1.01        | 1.02        |
| Langelier Index(25°C)            | -       | -       |                | 0.673       | 0.562       | 0.651       |



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**Final Report**

**REPORT No: 23-028557 - Rev. 0**

|                           |          |      | Client I.D.    | SW17        | DUP-2       | DUP-3       |
|---------------------------|----------|------|----------------|-------------|-------------|-------------|
|                           |          |      | Sample I.D.    | 23-028557-6 | 23-028557-7 | 23-028557-8 |
|                           |          |      | Date Collected | 2023-10-12  | 2023-10-12  | 2023-10-12  |
| Parameter                 | Units    | R.L. |                | -           | -           | -           |
| Saturation pH (25°C)      | -        | -    |                | 7.24        | 7.44        | 7.46        |
| pH (Client Data)          | pH units | -    |                | 7.39        | 7.7         | 7.68        |
| Temperature (Client Data) | °C       | -    |                | 7.9         | 10          | 11.6        |

|                                    |       |      | Client I.D.    | SW3         |
|------------------------------------|-------|------|----------------|-------------|
|                                    |       |      | Sample I.D.    | 23-028557-2 |
|                                    |       |      | Date Collected | 2023-10-12  |
| Parameter                          | Units | R.L. |                | -           |
| Poly-Chlorinated Biphenyls (PCB's) | µg/L  | 0.05 |                | <0.05       |
| Identification Comment             | -     | -    |                | -           |



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## CERTIFICATE OF ANALYSIS

---

**Work Order** : **WT2335916**  
**Client** : **Caduceon Environmental Laboratories**  
**Contact** : Christine Burke  
**Address** : 2378 Holly Lane  
Ottawa ON Canada K1V 7P1  
**Telephone** : 28-475-5442  
**Project** : 23-030755  
**PO** : ----  
**C-O-C number** : ----  
**Sampler** : ----  
**Site** : ----  
**Quote number** : PFAS Testing - Soil and Water  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 4  
**Laboratory** : ALS Environmental - Waterloo  
**Account Manager** : Costas Farassoglou  
**Address** : 60 Northland Road, Unit 1  
Waterloo ON Canada N2V 2B8  
**Telephone** : 613 225 8279  
**Date Samples Received** : 03-Nov-2023 10:00  
**Date Analysis Commenced** : 07-Nov-2023  
**Issue Date** : 08-Nov-2023 21:39

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

---

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| <i>Signatories</i> | <i>Position</i>           | <i>Laboratory Department</i> |
|--------------------|---------------------------|------------------------------|
| Sanja Risticvic    | Department Manager - LCMS | LCMS, Waterloo, Ontario      |





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

| Unit | Description          |
|------|----------------------|
| µg/L | micrograms per litre |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

| Sub-Matrix: Water                                                    |             |            |       |      | Client sample ID     | WP-2 (30755-1)       | WP-3 (30755-2) | ----  | ----  | ---- |
|----------------------------------------------------------------------|-------------|------------|-------|------|----------------------|----------------------|----------------|-------|-------|------|
| (Matrix: Water)                                                      |             |            |       |      |                      |                      |                |       |       |      |
| Client sampling date / time                                          |             |            |       |      | 25-Oct-2023<br>00:00 | 25-Oct-2023<br>00:00 | ----           | ----  | ----  |      |
| Analyte                                                              | CAS Number  | Method/Lab | LOR   | Unit | WT2335916-001        | WT2335916-002        | -----          | ----- | ----- |      |
|                                                                      |             |            |       |      | Result               | Result               | ----           | ----  | ----  |      |
| Perfluoroalkyl Substances (PFAS)                                     |             |            |       |      |                      |                      |                |       |       |      |
| Eicosafuoro-3-oxaundecane-1-sulfonic acid, 11-chloro- [11Cl-PF3OUdS] | 763051-92-9 | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Ethyl perfluorooctanesulfonamide, n- [NEtFOSA]                       | 4151-50-2   | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Ethyl perfluorooctanesulfonamidoacetic acid, n- [NEtFOSAA]           | 2991-50-6   | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Ethyl perfluorooctanesulfonamidoethanol, n- [NEtFOSE]                | 1691-99-2   | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Fluorotelomer carboxylic acid, 3:3 [3:3 FTCA]                        | 356-02-5    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Fluorotelomer carboxylic acid, 5:3 [5:3 FTCA]                        | 914637-49-3 | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Fluorotelomer carboxylic acid, 7:3 [7:3 FTCA]                        | 812-70-4    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Fluorotelomer sulfonic acid, 4:2 [4:2 FTS]                           | 757124-72-4 | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Fluorotelomer sulfonic acid, 6:2 [6:2 FTS]                           | 27619-97-2  | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Fluorotelomer sulfonic acid, 8:2 [8:2 FTS]                           | 39108-34-4  | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Hexadecafluoro-3-oxanonane-1-sulfonic acid, 9-chloro- [9Cl-PF3ONS]   | 756426-58-1 | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Hexafluoropropylene oxide dimer acid [HFPO-DA]                       | 13252-13-6  | E745/WT    | 1.0   | µg/L | <1.0                 | <1.0                 | ----           | ----  | ----  |      |
| Methyl perfluorooctanesulfonamide, N- [NMeFOSA]                      | 31506-32-8  | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Methyl perfluorooctanesulfonamidoacetic acid, n- [NMeFOSAA]          | 2355-31-9   | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Methyl perfluorooctanesulfonamidoethanol, n- [NMeFOSE]               | 24448-09-7  | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Nonafluoro-3,6-dioxaheptanoic acid [NFDHA]                           | 151772-58-6 | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| perfluoro(2-ethoxyethane)sulfonic acid [PFEEA]                       | 113507-82-7 | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluoro-3-methoxypropanoic acid [PFMPA]                            | 377-73-1    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluoro-4-methoxybutanoic acid [PFMBA]                             | 863090-89-5 | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorobutanesulfonic acid [PFBS]                                  | 375-73-5    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorobutanoic acid [PFBA]                                        | 375-22-4    | E745/WT    | 0.10  | µg/L | <0.10                | <0.10                | ----           | ----  | ----  |      |
| Perfluorodecane sulfonic acid [PFDS]                                 | 335-77-3    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |



## Analytical Results

|                                               |             |            |       |      |                      |                      |                |       |       |      |
|-----------------------------------------------|-------------|------------|-------|------|----------------------|----------------------|----------------|-------|-------|------|
| Sub-Matrix: Water<br>(Matrix: Water)          |             |            |       |      | Client sample ID     | WP-2 (30755-1)       | WP-3 (30755-2) | ----  | ----  | ---- |
| Client sampling date / time                   |             |            |       |      | 25-Oct-2023<br>00:00 | 25-Oct-2023<br>00:00 | ----           | ----  | ----  |      |
| Analyte                                       | CAS Number  | Method/Lab | LOR   | Unit | WT2335916-001        | WT2335916-002        | -----          | ----- | ----- |      |
|                                               |             |            |       |      | Result               | Result               | ----           | ----  | ----  |      |
| Perfluoroalkyl Substances (PFAS)              |             |            |       |      |                      |                      |                |       |       |      |
| Perfluorodecanoic acid [PFDA]                 | 335-76-2    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorododecanesulfonic acid [PFDoS]        | 79780-39-5  | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorododecanoic acid [PFDoA]              | 307-55-1    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluoroheptanesulfonic acid [PFHpS]         | 375-92-8    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluoroheptanoic acid [PFHpA]               | 375-85-9    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorohexanesulfonic acid [PFHxS]          | 355-46-4    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorohexanoic acid [PFHxA]                | 307-24-4    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorononanesulfonic acid [PFNS]           | 68259-12-1  | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorononanoic acid [PFNA]                 | 375-95-1    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorononanoic acid, 4,8-dioxa-3H- [ADONA] | 919005-14-4 | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorooctanesulfonamide [PFOSA]            | 754-91-6    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorooctanesulfonic acid [PFOS]           | 1763-23-1   | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorooctanoic acid [PFOA]                 | 335-67-1    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluoropentanesulfonic acid [PFPeS]         | 2706-91-4   | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluoropentanoic acid [PFPeA]               | 2706-90-3   | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorotetradecanoic acid [PFTeDA]          | 376-06-7    | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluorotridecanoic acid [PFTTrDA]           | 72629-94-8  | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| Perfluoroundecanoic acid [PFUnA]              | 2058-94-8   | E745/WT    | 0.020 | µg/L | <0.020               | <0.020               | ----           | ----  | ----  |      |
| PFAS, total (EPA 1633)                        | n/a         | E745/WT    | 1.1   | µg/L | <1.1                 | <1.1                 | ----           | ----  | ----  |      |
| Perfluoroalkyl Substances (PFAS) Surrogates   |             |            |       |      |                      |                      |                |       |       |      |
| Perfluorooctanesulfonic acid [13C8-PFOS]      | 265893-05-6 | E745/WT    | 0.01  | %    | 112                  | 115                  | ----           | ----  | ----  |      |

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

## QUALITY CONTROL INTERPRETIVE REPORT

|                         |                                               |                       |                                                                 |
|-------------------------|-----------------------------------------------|-----------------------|-----------------------------------------------------------------|
| Work Order              | : WT2335916                                   | Page                  | : 1 of 5                                                        |
| Client                  | : Caduceon Environmental Laboratories         | Laboratory            | : ALS Environmental - Waterloo                                  |
| Contact                 | : Christine Burke                             | Account Manager       | : Costas Farassoglou                                            |
| Address                 | : 2378 Holly Lane<br>Ottawa ON Canada K1V 7P1 | Address               | : 60 Northland Road, Unit 1<br>Waterloo, Ontario Canada N2V 2B8 |
| Telephone               | : 28-475-5442                                 | Telephone             | : 613 225 8279                                                  |
| Project                 | : 23-030755                                   | Date Samples Received | : 03-Nov-2023 10:00                                             |
| PO                      | : ----                                        | Issue Date            | : 08-Nov-2023 21:39                                             |
| C-O-C number            | : ----                                        |                       |                                                                 |
| Sampler                 | : ----                                        |                       |                                                                 |
| Site                    | : ----                                        |                       |                                                                 |
| Quote number            | : PFAS Testing - Soil and Water               |                       |                                                                 |
| No. of samples received | : 2                                           |                       |                                                                 |
| No. of samples analysed | : 2                                           |                       |                                                                 |

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

### Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

### Summary of Outliers

#### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### ***Outliers : Analysis Holding Time Compliance (Breaches)***

- No Analysis Holding Time Outliers exist.

### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

| Analyte Group : Analytical Method<br>Container / Client Sample ID(s)         | Method | Sampling Date | Extraction / Preparation |               |         |      | Analysis      |               |        |      |
|------------------------------------------------------------------------------|--------|---------------|--------------------------|---------------|---------|------|---------------|---------------|--------|------|
|                                                                              |        |               | Preparation Date         | Holding Times |         | Eval | Analysis Date | Holding Times |        | Eval |
|                                                                              |        |               |                          | Rec           | Actual  |      |               | Rec           | Actual |      |
| Perfluoroalkyl Substances (PFAS) : PFAS (Extended List) in Water by LC-MS-MS |        |               |                          |               |         |      |               |               |        |      |
| HDPE (teflon free)<br>WP-2 (30755-1)                                         | E745   | 25-Oct-2023   | 07-Nov-2023              | 28 days       | 14 days | ✓    | 07-Nov-2023   | 28 days       | 0 days | ✓    |
| Perfluoroalkyl Substances (PFAS) : PFAS (Extended List) in Water by LC-MS-MS |        |               |                          |               |         |      |               |               |        |      |
| HDPE (teflon free)<br>WP-3 (30755-2)                                         | E745   | 25-Oct-2023   | 07-Nov-2023              | 28 days       | 14 days | ✓    | 07-Nov-2023   | 28 days       | 0 days | ✓    |

### Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

| Quality Control Sample Type               |        |          | Count |         | Frequency (%) |          |            |
|-------------------------------------------|--------|----------|-------|---------|---------------|----------|------------|
| Analytical Methods                        | Method | QC Lot # | QC    | Regular | Actual        | Expected | Evaluation |
| Laboratory Duplicates (DUP)               |        |          |       |         |               |          |            |
| PFAS (Extended List) in Water by LC-MS-MS | E745   | 1225922  | 1     | 11      | 9.0           | 5.0      | ✓          |
| Laboratory Control Samples (LCS)          |        |          |       |         |               |          |            |
| PFAS (Extended List) in Water by LC-MS-MS | E745   | 1225922  | 1     | 11      | 9.0           | 5.0      | ✓          |
| Method Blanks (MB)                        |        |          |       |         |               |          |            |
| PFAS (Extended List) in Water by LC-MS-MS | E745   | 1225922  | 1     | 11      | 9.0           | 5.0      | ✓          |
| Matrix Spikes (MS)                        |        |          |       |         |               |          |            |
| PFAS (Extended List) in Water by LC-MS-MS | E745   | 1225922  | 1     | 11      | 9.0           | 5.0      | ✓          |



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

| Analytical Methods                        | Method / Lab                                | Matrix | Method Reference | Method Descriptions                                                   |
|-------------------------------------------|---------------------------------------------|--------|------------------|-----------------------------------------------------------------------|
| PFAS (Extended List) in Water by LC-MS-MS | E745<br><br>ALS Environmental -<br>Waterloo | Water  | MECP E3533       | An aliquot of water is analyzed for PFAs by direct injection LC/MS/MS |

| Preparation Methods                              | Method / Lab                                 | Matrix | Method Reference | Method Descriptions                                                   |
|--------------------------------------------------|----------------------------------------------|--------|------------------|-----------------------------------------------------------------------|
| Preparation of PFAS in Water by Direct Injection | EP745<br><br>ALS Environmental -<br>Waterloo | Water  | MECP E3533       | An aliquot of water is analyzed for PFAs by direct injection LC/MS/MS |



## QUALITY CONTROL REPORT

|                         |                                               |                         |                                                                 |
|-------------------------|-----------------------------------------------|-------------------------|-----------------------------------------------------------------|
| Work Order              | : <b>WT2335916</b>                            | Page                    | : 1 of 10                                                       |
| Client                  | : Caduceon Environmental Laboratories         | Laboratory              | : ALS Environmental - Waterloo                                  |
| Contact                 | : Christine Burke                             | Account Manager         | : Costas Farassoglou                                            |
| Address                 | : 2378 Holly Lane<br>Ottawa ON Canada K1V 7P1 | Address                 | : 60 Northland Road, Unit 1<br>Waterloo, Ontario Canada N2V 2B8 |
| Telephone               | :                                             | Telephone               | : 613 225 8279                                                  |
| Project                 | : 23-030755                                   | Date Samples Received   | : 03-Nov-2023 10:00                                             |
| PO                      | : ----                                        | Date Analysis Commenced | : 07-Nov-2023                                                   |
| C-O-C number            | : ----                                        | Issue Date              | : 08-Nov-2023 21:39                                             |
| Sampler                 | : ----<br>28-475-5442                         |                         |                                                                 |
| Site                    | : ----                                        |                         |                                                                 |
| Quote number            | : PFAS Testing - Soil and Water               |                         |                                                                 |
| No. of samples received | : 2                                           |                         |                                                                 |
| No. of samples analysed | : 2                                           |                         |                                                                 |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| Signatories     | Position                  | Laboratory Department            |
|-----------------|---------------------------|----------------------------------|
| Sanja Risticvic | Department Manager - LCMS | Waterloo LCMS, Waterloo, Ontario |



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## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

### Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

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Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

| Sub-Matrix: Water                                  |                  |                                                                     |             |        | Laboratory Duplicate (DUP) Report |      |                 |                  |                      |                  |           |
|----------------------------------------------------|------------------|---------------------------------------------------------------------|-------------|--------|-----------------------------------|------|-----------------|------------------|----------------------|------------------|-----------|
| Laboratory sample ID                               | Client sample ID | Analyte                                                             | CAS Number  | Method | LOR                               | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| Perfluoroalkyl Substances (PFAS) (QC Lot: 1225922) |                  |                                                                     |             |        |                                   |      |                 |                  |                      |                  |           |
| WT2335914-001                                      | Anonymous        | Eicosafuoro-3-oxaundecane-1-sulfonic acid, 11-chloro-[11Cl-PF3OUdS] | 763051-92-9 | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Ethyl perfluorooctanesulfonamide, n-[NEtFOSA]                       | 4151-50-2   | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Ethyl perfluorooctanesulfonamido acetic acid, n-[NEtFOSAA]          | 2991-50-6   | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Ethyl perfluorooctanesulfonamido ethanol, n-[NEtFOSE]               | 1691-99-2   | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Fluorotelomer carboxylic acid, 3:3 [3:3 FTCA]                       | 356-02-5    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Fluorotelomer carboxylic acid, 5:3 [5:3 FTCA]                       | 914637-49-3 | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Fluorotelomer carboxylic acid, 7:3 [7:3 FTCA]                       | 812-70-4    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Fluorotelomer sulfonic acid, 4:2 [4:2 FTS]                          | 757124-72-4 | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Fluorotelomer sulfonic acid, 6:2 [6:2 FTS]                          | 27619-97-2  | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Fluorotelomer sulfonic acid, 8:2 [8:2 FTS]                          | 39108-34-4  | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Hexadecafluoro-3-oxanonane-1-sulfonic acid, 9-chloro-[9Cl-PF3ONS]   | 756426-58-1 | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Hexafluoropropylene oxide dimer acid [HFPO-DA]                      | 13252-13-6  | E745   | 1.0                               | µg/L | <1.0            | <1.0             | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Methyl perfluorooctanesulfonamide, N-[NMeFOSA]                      | 31506-32-8  | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Methyl perfluorooctanesulfonamido acetic acid, n-[NMeFOSAA]         | 2355-31-9   | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Methyl perfluorooctanesulfonamido ethanol, n-[NMeFOSE]              | 24448-09-7  | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Nonafluoro-3,6-dioxaheptanoic acid [NFDHA]                          | 151772-58-6 | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | perfluoro(2-ethoxyethane)sulfonic acid [PFEESA]                     | 113507-82-7 | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                    |                  | Perfluoro-3-methoxypropanoic acid [PFMPA]                           | 377-73-1    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |



| Sub-Matrix: <b>Water</b>                                              |                  |                                               |             |        | Laboratory Duplicate (DUP) Report |      |                 |                  |                      |                  |           |
|-----------------------------------------------------------------------|------------------|-----------------------------------------------|-------------|--------|-----------------------------------|------|-----------------|------------------|----------------------|------------------|-----------|
| Laboratory sample ID                                                  | Client sample ID | Analyte                                       | CAS Number  | Method | LOR                               | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| <b>Perfluoroalkyl Substances (PFAS) (QC Lot: 1225922) - continued</b> |                  |                                               |             |        |                                   |      |                 |                  |                      |                  |           |
| WT2335914-001                                                         | Anonymous        | Perfluoro-4-methoxybutanoic acid [PFMBA]      | 863090-89-5 | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorobutanesulfonic acid [PFBS]           | 375-73-5    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorobutanoic acid [PFBA]                 | 375-22-4    | E745   | 0.10                              | µg/L | <0.10           | <0.10            | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorodecane sulfonic acid [PFDS]          | 335-77-3    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorodecanoic acid [PFDA]                 | 335-76-2    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorododecanesulfonic acid [PFDoS]        | 79780-39-5  | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorododecanoic acid [PFDoA]              | 307-55-1    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluoroheptanesulfonic acid [PFHpS]         | 375-92-8    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluoroheptanoic acid [PFHpA]               | 375-85-9    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorohexanesulfonic acid [PFHxS]          | 355-46-4    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorohexanoic acid [PFHxA]                | 307-24-4    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorononanesulfonic acid [PFNS]           | 68259-12-1  | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorononanoic acid [PFNA]                 | 375-95-1    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorononanoic acid, 4,8-dioxa-3H- [ADONA] | 919005-14-4 | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorooctanesulfonamide [PFOSA]            | 754-91-6    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorooctanesulfonic acid [PFOS]           | 1763-23-1   | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorooctanoic acid [PFOA]                 | 335-67-1    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluoropentanesulfonic acid [PFPeS]         | 2706-91-4   | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluoropentanoic acid [PFPeA]               | 2706-90-3   | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorotetradecanoic acid [PFTeDA]          | 376-06-7    | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluorotridecanoic acid [PFTrDA]            | 72629-94-8  | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |
|                                                                       |                  | Perfluoroundecanoic acid [PFUnA]              | 2058-94-8   | E745   | 0.020                             | µg/L | <0.020          | <0.020           | 0                    | Diff <2x LOR     | ----      |



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

| Analyte                                                              | CAS Number  | Method | LOR  | Unit | Result | Qualifier |
|----------------------------------------------------------------------|-------------|--------|------|------|--------|-----------|
| <b>Perfluoroalkyl Substances (PFAS) (QCLot: 1225922)</b>             |             |        |      |      |        |           |
| Eicosafluoro-3-oxaundecane-1-sulfonic acid, 11-chloro-[11Cl-PF3OUdS] | 763051-92-9 | E745   | 0.02 | µg/L | <0.020 | ----      |
| Ethyl perfluorooctanesulfonamide, n- [NEtFOSA]                       | 4151-50-2   | E745   | 0.02 | µg/L | <0.020 | ----      |
| Ethyl perfluorooctanesulfonamidoacetic acid, n- [NEtFOSAA]           | 2991-50-6   | E745   | 0.02 | µg/L | <0.020 | ----      |
| Ethyl perfluorooctanesulfonamidoethanol, n- [NEtFOSE]                | 1691-99-2   | E745   | 0.02 | µg/L | <0.020 | ----      |
| Fluorotelomer carboxylic acid, 3:3 [3:3 FTCA]                        | 356-02-5    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Fluorotelomer carboxylic acid, 5:3 [5:3 FTCA]                        | 914637-49-3 | E745   | 0.02 | µg/L | <0.020 | ----      |
| Fluorotelomer carboxylic acid, 7:3 [7:3 FTCA]                        | 812-70-4    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Fluorotelomer sulfonic acid, 4:2 [4:2 FTS]                           | 757124-72-4 | E745   | 0.02 | µg/L | <0.020 | ----      |
| Fluorotelomer sulfonic acid, 6:2 [6:2 FTS]                           | 27619-97-2  | E745   | 0.02 | µg/L | <0.020 | ----      |
| Fluorotelomer sulfonic acid, 8:2 [8:2 FTS]                           | 39108-34-4  | E745   | 0.02 | µg/L | <0.020 | ----      |
| Hexadecafluoro-3-oxanonane-1-sulfonic acid, 9-chloro-[9Cl-PF3ONS]    | 756426-58-1 | E745   | 0.02 | µg/L | <0.020 | ----      |
| Hexafluoropropylene oxide dimer acid [HFPO-DA]                       | 13252-13-6  | E745   | 1    | µg/L | <1.0   | ----      |
| Methyl perfluorooctanesulfonamide, N- [NMeFOSA]                      | 31506-32-8  | E745   | 0.02 | µg/L | <0.020 | ----      |
| Methyl perfluorooctanesulfonamidoacetic acid, n- [NMeFOSAA]          | 2355-31-9   | E745   | 0.02 | µg/L | <0.020 | ----      |
| Methyl perfluorooctanesulfonamidoethanol, n- [NMeFOSE]               | 24448-09-7  | E745   | 0.02 | µg/L | <0.020 | ----      |
| Nonafluoro-3,6-dioxaheptanoic acid [NFDHA]                           | 151772-58-6 | E745   | 0.02 | µg/L | <0.020 | ----      |
| perfluoro(2-ethoxyethane)sulfonic acid [PFEEESA]                     | 113507-82-7 | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluoro-3-methoxypropanoic acid [PFMPA]                            | 377-73-1    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluoro-4-methoxybutanoic acid [PFMBA]                             | 863090-89-5 | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorobutanesulfonic acid [PFBS]                                  | 375-73-5    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorobutanoic acid [PFBA]                                        | 375-22-4    | E745   | 0.1  | µg/L | <0.10  | ----      |
| Perfluorodecane sulfonic acid [PFDS]                                 | 335-77-3    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorodecanoic acid [PFDA]                                        | 335-76-2    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorododecanesulfonic acid [PFDoS]                               | 79780-39-5  | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorododecanoic acid [PFDoA]                                     | 307-55-1    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluoroheptanesulfonic acid [PFHpS]                                | 375-92-8    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluoroheptanoic acid [PFHpA]                                      | 375-85-9    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorohexanesulfonic acid [PFHxS]                                 | 355-46-4    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorohexanoic acid [PFHxA]                                       | 307-24-4    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorononanesulfonic acid [PFNS]                                  | 68259-12-1  | E745   | 0.02 | µg/L | <0.020 | ----      |



Sub-Matrix: Water

| Analyte                                                       | CAS Number  | Method | LOR  | Unit | Result | Qualifier |
|---------------------------------------------------------------|-------------|--------|------|------|--------|-----------|
| Perfluoroalkyl Substances (PFAS) (QCLot: 1225922) - continued |             |        |      |      |        |           |
| Perfluorononanoic acid [PFNA]                                 | 375-95-1    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorononanoic acid, 4,8-dioxa-3H- [ADONA]                 | 919005-14-4 | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorooctanesulfonamide [PFOSA]                            | 754-91-6    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorooctanesulfonic acid [PFOS]                           | 1763-23-1   | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorooctanoic acid [PFOA]                                 | 335-67-1    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluoropentanesulfonic acid [PFPeS]                         | 2706-91-4   | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluoropentanoic acid [PFPeA]                               | 2706-90-3   | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorotetradecanoic acid [PFTeDA]                          | 376-06-7    | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluorotridecanoic acid [PFTrDA]                            | 72629-94-8  | E745   | 0.02 | µg/L | <0.020 | ----      |
| Perfluoroundecanoic acid [PFUnA]                              | 2058-94-8   | E745   | 0.02 | µg/L | <0.020 | ----      |



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

|                                                                          |             |        |      |      | Laboratory Control Sample (LCS) Report |              |                     |      |           |
|--------------------------------------------------------------------------|-------------|--------|------|------|----------------------------------------|--------------|---------------------|------|-----------|
|                                                                          |             |        |      |      | Spike                                  | Recovery (%) | Recovery Limits (%) |      |           |
| Analyte                                                                  | CAS Number  | Method | LOR  | Unit | Concentration                          | LCS          | Low                 | High | Qualifier |
| Perfluoroalkyl Substances (PFAS) (QCLot: 1225922)                        |             |        |      |      |                                        |              |                     |      |           |
| Eicosafiuoro-3-oxaundecane-1-sulfonic acid, 11-chloro-<br>[11CI-PF3OUdS] | 763051-92-9 | E745   | 0.02 | µg/L | 0.3 µg/L                               | 98.0         | 50.0                | 150  | ----      |
| Ethyl perfluorooctanesulfonamide, n- [NEtFOSA]                           | 4151-50-2   | E745   | 0.02 | µg/L | 0.3 µg/L                               | 92.7         | 50.0                | 150  | ----      |
| Ethyl perfluorooctanesulfonamidoacetic acid, n-<br>[NEtFOSAA]            | 2991-50-6   | E745   | 0.02 | µg/L | 0.3 µg/L                               | 102          | 50.0                | 150  | ----      |
| Ethyl perfluorooctanesulfonamidoethanol, n-<br>[NEtFOSE]                 | 1691-99-2   | E745   | 0.02 | µg/L | 0.3 µg/L                               | 101          | 50.0                | 150  | ----      |
| Fluorotelomer carboxylic acid, 3:3 [3:3 FTCA]                            | 356-02-5    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 86.0         | 50.0                | 150  | ----      |
| Fluorotelomer carboxylic acid, 5:3 [5:3 FTCA]                            | 914637-49-3 | E745   | 0.02 | µg/L | 0.3 µg/L                               | 113          | 50.0                | 150  | ----      |
| Fluorotelomer carboxylic acid, 7:3 [7:3 FTCA]                            | 812-70-4    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 93.3         | 50.0                | 150  | ----      |
| Fluorotelomer sulfonic acid, 4:2 [4:2 FTS]                               | 757124-72-4 | E745   | 0.02 | µg/L | 0.3 µg/L                               | 107          | 50.0                | 150  | ----      |
| Fluorotelomer sulfonic acid, 6:2 [6:2 FTS]                               | 27619-97-2  | E745   | 0.02 | µg/L | 0.3 µg/L                               | 93.3         | 50.0                | 150  | ----      |
| Fluorotelomer sulfonic acid, 8:2 [8:2 FTS]                               | 39108-34-4  | E745   | 0.02 | µg/L | 0.3 µg/L                               | 137          | 50.0                | 150  | ----      |
| Hexadecafluoro-3-oxanonane-1-sulfonic acid, 9-chloro-<br>[9CI-PF3ONS]    | 756426-58-1 | E745   | 0.02 | µg/L | 0.3 µg/L                               | 108          | 50.0                | 150  | ----      |
| Hexafluoropropylene oxide dimer acid [HFPO-DA]                           | 13252-13-6  | E745   | 1    | µg/L | 3 µg/L                                 | 120          | 50.0                | 150  | ----      |
| Methyl perfluorooctanesulfonamide, N- [NMeFOSA]                          | 31506-32-8  | E745   | 0.02 | µg/L | 0.3 µg/L                               | 79.3         | 50.0                | 150  | ----      |
| Methyl perfluorooctanesulfonamidoacetic acid, n-<br>[NMeFOSAA]           | 2355-31-9   | E745   | 0.02 | µg/L | 0.3 µg/L                               | 94.7         | 50.0                | 150  | ----      |
| Methyl perfluorooctanesulfonamidoethanol, n-<br>[NMeFOSE]                | 24448-09-7  | E745   | 0.02 | µg/L | 0.3 µg/L                               | 114          | 50.0                | 150  | ----      |
| Nonafluoro-3,6-dioxaheptanoic acid [NFDHA]                               | 151772-58-6 | E745   | 0.02 | µg/L | 0.3 µg/L                               | 94.0         | 50.0                | 150  | ----      |
| perfluoro(2-ethoxyethane)sulfonic acid [PFEEESA]                         | 113507-82-7 | E745   | 0.02 | µg/L | 0.3 µg/L                               | 106          | 50.0                | 150  | ----      |
| Perfluoro-3-methoxypropanoic acid [PFMPA]                                | 377-73-1    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 74.7         | 50.0                | 150  | ----      |
| Perfluoro-4-methoxybutanoic acid [PFMBA]                                 | 863090-89-5 | E745   | 0.02 | µg/L | 0.3 µg/L                               | 94.7         | 50.0                | 150  | ----      |
| Perfluorobutanesulfonic acid [PFBS]                                      | 375-73-5    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 92.7         | 50.0                | 150  | ----      |
| Perfluorobutanoic acid [PFBA]                                            | 375-22-4    | E745   | 0.1  | µg/L | 1 µg/L                                 | 117          | 50.0                | 150  | ----      |
| Perfluorodecane sulfonic acid [PFDS]                                     | 335-77-3    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 103          | 50.0                | 150  | ----      |
| Perfluorodecanoic acid [PFDA]                                            | 335-76-2    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 119          | 50.0                | 150  | ----      |
| Perfluorododecanesulfonic acid [PFDoS]                                   | 79780-39-5  | E745   | 0.02 | µg/L | 0.3 µg/L                               | 107          | 50.0                | 150  | ----      |
| Perfluorododecanoic acid [PFDoA]                                         | 307-55-1    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 100          | 50.0                | 150  | ----      |
| Perfluoroheptanesulfonic acid [PFHpS]                                    | 375-92-8    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 96.7         | 50.0                | 150  | ----      |
| Perfluoroheptanoic acid [PFHpA]                                          | 375-85-9    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 94.7         | 50.0                | 150  | ----      |
| Perfluorohexanesulfonic acid [PFHxS]                                     | 355-46-4    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 95.3         | 50.0                | 150  | ----      |
| Perfluorohexanoic acid [PFHxA]                                           | 307-24-4    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 103          | 50.0                | 150  | ----      |



| Sub-Matrix: Water                                             |             |        |      |      | Laboratory Control Sample (LCS) Report |              |                     |      |           |
|---------------------------------------------------------------|-------------|--------|------|------|----------------------------------------|--------------|---------------------|------|-----------|
|                                                               |             |        |      |      | Spike                                  | Recovery (%) | Recovery Limits (%) |      |           |
|                                                               |             |        |      |      | Concentration                          | LCS          | Low                 | High | Qualifier |
| Analyte                                                       | CAS Number  | Method | LOR  | Unit |                                        |              |                     |      |           |
| Perfluoroalkyl Substances (PFAS) (QCLot: 1225922) - continued |             |        |      |      |                                        |              |                     |      |           |
| Perfluorononanesulfonic acid [PFNS]                           | 68259-12-1  | E745   | 0.02 | µg/L | 0.3 µg/L                               | 111          | 50.0                | 150  | ----      |
| Perfluorononanoic acid [PFNA]                                 | 375-95-1    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 102          | 50.0                | 150  | ----      |
| Perfluorononanoic acid, 4,8-dioxa-3H- [ADONA]                 | 919005-14-4 | E745   | 0.02 | µg/L | 0.3 µg/L                               | 83.3         | 50.0                | 150  | ----      |
| Perfluorooctanesulfonamide [PFOSA]                            | 754-91-6    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 92.7         | 50.0                | 150  | ----      |
| Perfluorooctanesulfonic acid [PFOS]                           | 1763-23-1   | E745   | 0.02 | µg/L | 0.3 µg/L                               | 84.7         | 50.0                | 150  | ----      |
| Perfluorooctanoic acid [PFOA]                                 | 335-67-1    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 109          | 50.0                | 150  | ----      |
| Perfluoropentanesulfonic acid [PFPeS]                         | 2706-91-4   | E745   | 0.02 | µg/L | 0.3 µg/L                               | 107          | 50.0                | 150  | ----      |
| Perfluoropentanoic acid [PFPeA]                               | 2706-90-3   | E745   | 0.02 | µg/L | 0.3 µg/L                               | 114          | 50.0                | 150  | ----      |
| Perfluorotetradecanoic acid [PFTeDA]                          | 376-06-7    | E745   | 0.02 | µg/L | 0.3 µg/L                               | 142          | 50.0                | 150  | ----      |
| Perfluorotridecanoic acid [PFTrDA]                            | 72629-94-8  | E745   | 0.02 | µg/L | 0.3 µg/L                               | 102          | 50.0                | 150  | ----      |
| Perfluoroundecanoic acid [PFUnA]                              | 2058-94-8   | E745   | 0.02 | µg/L | 0.3 µg/L                               | 103          | 50.0                | 150  | ----      |





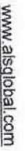
Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

|                                                   |                  |                                                                      |             |        | Matrix Spike (MS) Report |          |              |                     |      |           |
|---------------------------------------------------|------------------|----------------------------------------------------------------------|-------------|--------|--------------------------|----------|--------------|---------------------|------|-----------|
|                                                   |                  |                                                                      |             |        | Spike                    |          | Recovery (%) | Recovery Limits (%) |      |           |
| Laboratory sample ID                              | Client sample ID | Analyte                                                              | CAS Number  | Method | Concentration            | Target   | MS           | Low                 | High | Qualifier |
| Perfluoroalkyl Substances (PFAS) (QCLot: 1225922) |                  |                                                                      |             |        |                          |          |              |                     |      |           |
| WT2335914-001                                     | Anonymous        | Eicosafuoro-3-oxaundecane-1-sulfonic acid, 11-chloro- [11Cl-PF3OUdS] | 763051-92-9 | E745   | 0.320 µg/L               | 0.3 µg/L | 107          | 50.0                | 150  | ----      |
|                                                   |                  | Ethyl perfluorooctanesulfonamide, n- [NEtFOSA]                       | 4151-50-2   | E745   | 0.270 µg/L               | 0.3 µg/L | 90.0         | 50.0                | 150  | ----      |
|                                                   |                  | Ethyl perfluorooctanesulfonamidoacetic acid, n- [NEtFOSAA]           | 2991-50-6   | E745   | 0.330 µg/L               | 0.3 µg/L | 110          | 50.0                | 150  | ----      |
|                                                   |                  | Ethyl perfluorooctanesulfonamidoethanol, n- [NEtFOSE]                | 1691-99-2   | E745   | 0.232 µg/L               | 0.3 µg/L | 77.3         | 50.0                | 150  | ----      |
|                                                   |                  | Fluorotelomer carboxylic acid, 3:3 [3:3 FTCA]                        | 356-02-5    | E745   | 0.290 µg/L               | 0.3 µg/L | 96.7         | 50.0                | 150  | ----      |
|                                                   |                  | Fluorotelomer carboxylic acid, 5:3 [5:3 FTCA]                        | 914637-49-3 | E745   | 0.272 µg/L               | 0.3 µg/L | 90.7         | 50.0                | 150  | ----      |
|                                                   |                  | Fluorotelomer carboxylic acid, 7:3 [7:3 FTCA]                        | 812-70-4    | E745   | 0.260 µg/L               | 0.3 µg/L | 86.7         | 50.0                | 150  | ----      |
|                                                   |                  | Fluorotelomer sulfonic acid, 4:2 [4:2 FTS]                           | 757124-72-4 | E745   | 0.322 µg/L               | 0.3 µg/L | 107          | 50.0                | 150  | ----      |
|                                                   |                  | Fluorotelomer sulfonic acid, 6:2 [6:2 FTS]                           | 27619-97-2  | E745   | 0.330 µg/L               | 0.3 µg/L | 110          | 50.0                | 150  | ----      |
|                                                   |                  | Fluorotelomer sulfonic acid, 8:2 [8:2 FTS]                           | 39108-34-4  | E745   | 0.300 µg/L               | 0.3 µg/L | 100          | 50.0                | 150  | ----      |
|                                                   |                  | Hexadecafluoro-3-oxanonane-1-sulfonic acid, 9-chloro- [9Cl-PF3ONS]   | 756426-58-1 | E745   | 0.352 µg/L               | 0.3 µg/L | 117          | 50.0                | 150  | ----      |
|                                                   |                  | Hexafluoropropylene oxide dimer acid [HFPO-DA]                       | 13252-13-6  | E745   | 3.8 µg/L                 | 3 µg/L   | 125          | 50.0                | 150  | ----      |
|                                                   |                  | Methyl perfluorooctanesulfonamide, N- [NMeFOSA]                      | 31506-32-8  | E745   | 0.256 µg/L               | 0.3 µg/L | 85.3         | 50.0                | 150  | ----      |
|                                                   |                  | Methyl perfluorooctanesulfonamidoacetic acid, n- [NMeFOSAA]          | 2355-31-9   | E745   | 0.270 µg/L               | 0.3 µg/L | 90.0         | 50.0                | 150  | ----      |
|                                                   |                  | Methyl perfluorooctanesulfonamidoethanol, n- [NMeFOSE]               | 24448-09-7  | E745   | 0.318 µg/L               | 0.3 µg/L | 106          | 50.0                | 150  | ----      |
|                                                   |                  | Nonafluoro-3,6-dioxaheptanoic acid [NFDHA]                           | 151772-58-6 | E745   | 0.316 µg/L               | 0.3 µg/L | 105          | 50.0                | 150  | ----      |
|                                                   |                  | perfluoro(2-ethoxyethane)sulfonic acid [PFEEESA]                     | 113507-82-7 | E745   | 0.304 µg/L               | 0.3 µg/L | 101          | 50.0                | 150  | ----      |
|                                                   |                  | Perfluoro-3-methoxypropanoic acid [PFMPA]                            | 377-73-1    | E745   | 0.240 µg/L               | 0.3 µg/L | 80.0         | 50.0                | 150  | ----      |
|                                                   |                  | Perfluoro-4-methoxybutanoic acid [PFMBA]                             | 863090-89-5 | E745   | 0.294 µg/L               | 0.3 µg/L | 98.0         | 50.0                | 150  | ----      |



| Sub-Matrix: Water                                             |                  |                                              |             |        | Matrix Spike (MS) Report |          |              |                     |      |           |
|---------------------------------------------------------------|------------------|----------------------------------------------|-------------|--------|--------------------------|----------|--------------|---------------------|------|-----------|
|                                                               |                  |                                              |             |        | Spike                    |          | Recovery (%) | Recovery Limits (%) |      | Qualifier |
| Laboratory sample ID                                          | Client sample ID | Analyte                                      | CAS Number  | Method | Concentration            | Target   | MS           | Low                 | High |           |
| Perfluoroalkyl Substances (PFAS) (QCLot: 1225922) - continued |                  |                                              |             |        |                          |          |              |                     |      |           |
| WT2335914-001                                                 | Anonymous        | Perfluorobutanesulfonic acid [PFBS]          | 375-73-5    | E745   | 0.262 µg/L               | 0.3 µg/L | 87.3         | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorobutanoic acid [PFBA]                | 375-22-4    | E745   | 1.13 µg/L                | 1 µg/L   | 113          | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorodecane sulfonic acid [PFDS]         | 335-77-3    | E745   | 0.346 µg/L               | 0.3 µg/L | 115          | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorodecanoic acid [PFDA]                | 335-76-2    | E745   | 0.368 µg/L               | 0.3 µg/L | 123          | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorododecanesulfonic acid [PFDoS]       | 79780-39-5  | E745   | 0.322 µg/L               | 0.3 µg/L | 107          | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorododecanoic acid [PFDoA]             | 307-55-1    | E745   | 0.306 µg/L               | 0.3 µg/L | 102          | 50.0                | 150  | ----      |
|                                                               |                  | Perfluoroheptanesulfonic acid [PFHpS]        | 375-92-8    | E745   | 0.282 µg/L               | 0.3 µg/L | 94.0         | 50.0                | 150  | ----      |
|                                                               |                  | Perfluoroheptanoic acid [PFHpA]              | 375-85-9    | E745   | 0.296 µg/L               | 0.3 µg/L | 98.7         | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorohexanesulfonic acid [PFHxS]         | 355-46-4    | E745   | 0.356 µg/L               | 0.3 µg/L | 119          | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorohexanoic acid [PFHxA]               | 307-24-4    | E745   | 0.306 µg/L               | 0.3 µg/L | 102          | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorononanesulfonic acid [PFNS]          | 68259-12-1  | E745   | 0.320 µg/L               | 0.3 µg/L | 107          | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorononanoic acid [PFNA]                | 375-95-1    | E745   | 0.316 µg/L               | 0.3 µg/L | 105          | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorononanoic acid, 4,8-dioxa-3H-[ADONA] | 919005-14-4 | E745   | 0.260 µg/L               | 0.3 µg/L | 86.7         | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorooctanesulfonamide [PFOSA]           | 754-91-6    | E745   | 0.280 µg/L               | 0.3 µg/L | 93.3         | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorooctanesulfonic acid [PFOS]          | 1763-23-1   | E745   | 0.294 µg/L               | 0.3 µg/L | 98.0         | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorooctanoic acid [PFOA]                | 335-67-1    | E745   | 0.262 µg/L               | 0.3 µg/L | 87.3         | 50.0                | 150  | ----      |
|                                                               |                  | Perfluoropentanesulfonic acid [PFPeS]        | 2706-91-4   | E745   | 0.340 µg/L               | 0.3 µg/L | 113          | 50.0                | 150  | ----      |
|                                                               |                  | Perfluoropentanoic acid [PFPeA]              | 2706-90-3   | E745   | 0.338 µg/L               | 0.3 µg/L | 113          | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorotetradecanoic acid [PFTeDA]         | 376-06-7    | E745   | 0.410 µg/L               | 0.3 µg/L | 137          | 50.0                | 150  | ----      |
|                                                               |                  | Perfluorotridecanoic acid [PFTrDA]           | 72629-94-8  | E745   | 0.322 µg/L               | 0.3 µg/L | 107          | 50.0                | 150  | ----      |
|                                                               |                  | Perfluoroundecanoic acid [PFUnA]             | 2058-94-8   | E745   | 0.286 µg/L               | 0.3 µg/L | 95.3         | 50.0                | 150  | ----      |



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## **APPENDIX J**

### **MECP Submission Forms**

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## Appendix D-Monitoring and Screening Checklist

### General Information and Instructions

**General Information: The checklist is to be completed, and submitted with the Monitoring Report.**

**Instructions:** A complete checklist consists of:

- (a) a completed and signed checklist, including any additional pages of information which can be attached as needed to provide further details where indicated.
- (b) completed contact information for the Competent Environmental Practitioner (CEP)
- (c) self-declaration that CEP(s) meet(s) the qualifications as set out below and in Section 1.2 of the Technical Guidance Document.

**Definition of Groundwater CEP:**

For groundwater, the CEP must have expertise in hydrogeology and meet one of the following:

- (a) the person holds a licence, limited licence or temporary licence under the *Professional Engineers Act*; or
- (b) the person holds a certificate of registration under the *Professional Geoscientists Act, 2000* and is a practicing member, temporary, member or limited member of the Association of Professional Geoscientists of Ontario. O. Reg. 66/08, s. 2..

**Definition of Surface water CEP:**

A CEP for surface water assessments is a scientist, professional engineer or professional geoscientist as described in (a) and (b) above with demonstrated experience and post-secondary education, either a diploma or degree, in hydrology, aquatic ecology, limnology, aquatic biology, physical geography with specialization in surface water, and/or water resource management.

The type of scientific work that a CEP performs must be consistent with that person's education and experience. If an individual has appropriate training and credentials in both groundwater and surface water and is responsible for both areas of expertise, the CEP may then complete and validate both sections of the checklist.

| <b>Monitoring Report and Site Information</b>                                       |                        |
|-------------------------------------------------------------------------------------|------------------------|
| <b>Waste Disposal Site Name</b>                                                     | Fenelon Landfill Site  |
| <b>Location (e.g. street address, lot, concession)</b>                              | 341 Mark Road          |
| <b>GPS Location (taken within the property boundary at front gate/ front entry)</b> | 674086 / 4927110       |
| <b>Municipality</b>                                                                 | City of Kawartha Lakes |
| <b>Client and/or Site Owner</b>                                                     | City of Kawartha Lakes |
| <b>Monitoring Period (Year)</b>                                                     | 2023                   |
| This Monitoring Report is being submitted under the following:                      |                        |
| <b>Certificate of Approval No.:</b>                                                 | Landfill - A321206     |
| <b>Director's Order No.:</b>                                                        | Type Here              |
| <b>Provincial Officer's Order No.:</b>                                              | Type Here              |
| <b>Other:</b>                                                                       | Type Here              |

|                                                                                                                                                                                                             |                                                                                                           |                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------|
| Report Submission Frequency                                                                                                                                                                                 | <input checked="" type="radio"/> Annual<br><input type="radio"/> Other                                    | Specify (Type Here): |
| The site is:                                                                                                                                                                                                | <input checked="" type="radio"/> Active<br><input type="radio"/> Inactive<br><input type="radio"/> Closed |                      |
| If closed, specify C of A, control or authorizing document closure date:                                                                                                                                    |                                                                                                           |                      |
| Has the nature of the operations at the site changed during this monitoring period?                                                                                                                         | <input type="radio"/> Yes<br><input checked="" type="radio"/> No                                          |                      |
| If yes, provide details:                                                                                                                                                                                    |                                                                                                           |                      |
| Have any measurements been taken since the last reporting period that indicate landfill gas volumes have exceeded the MOE limits for subsurface or adjacent buildings? (i. e. exceeded the LEL for methane) | <input type="radio"/> Yes<br><input checked="" type="radio"/> No                                          |                      |



## Groundwater WDS Verification:

Based on all available information about the site and site knowledge, it is my opinion that:

### Sampling and Monitoring Program Status:

| 1) The monitoring program continues to effectively characterize site conditions and any groundwater discharges from the site. All monitoring wells are confirmed to be in good condition and are secure:                             | <input checked="" type="radio"/> Yes<br><input type="radio"/> No                                         |                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| 2) All groundwater, leachate and WDS gas sampling and monitoring for the monitoring period being reported on was successfully completed as required by Certificate(s) of Approval or other relevant authorizing/control document(s): | <input checked="" type="radio"/> Yes<br><input type="radio"/> No<br><input type="radio"/> Not Applicable | If no, list exceptions below or attach information. |
| Groundwater Sampling Location                                                                                                                                                                                                        | Description/Explanation for change<br>(change in name or location, additions, deletions)                 | Date                                                |
|                                                                                                                                                                                                                                      |                                                                                                          | Select Date                                         |
|                                                                                                                                                                                                                                      |                                                                                                          | Select Date                                         |
| Type Here                                                                                                                                                                                                                            | Type Here                                                                                                | Select Date                                         |
| Type Here                                                                                                                                                                                                                            | Type Here                                                                                                | Select Date                                         |

|                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                                                                                                                     |                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| 3) a) Some or all groundwater, leachate and WDS gas sampling and monitoring requirements have been established or defined outside of a ministry C of A, authorizing, or control document.                                                                                                                                                                                           |                                                                                       | <div><input type="radio"/> Yes</div> <div><input checked="" type="radio"/> No</div> <div><input type="radio"/> Not Applicable</div> |                                                                |
| b) If yes, the sampling and monitoring identified under 3(a) for the monitoring period being reported on was successfully completed in accordance with established protocols, frequencies, locations, and parameters developed as per the Technical Guidance Document:                                                                                                              |                                                                                       | <div><input checked="" type="radio"/> Yes</div> <div><input type="radio"/> No</div> <div><input type="radio"/> Not Applicable</div> | If no, list exceptions below or attach additional information. |
| Groundwater Sampling Location                                                                                                                                                                                                                                                                                                                                                       | Description/Explanation for change (change in name or location, additions, deletions) | Date                                                                                                                                |                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                     | Type Here                                                                             | Select Date                                                                                                                         |                                                                |
| Type Here                                                                                                                                                                                                                                                                                                                                                                           | Type Here                                                                             | Select Date                                                                                                                         |                                                                |
| Type Here                                                                                                                                                                                                                                                                                                                                                                           | Type Here                                                                             | Select Date                                                                                                                         |                                                                |
| Type Here                                                                                                                                                                                                                                                                                                                                                                           | Type Here                                                                             | Select Date                                                                                                                         |                                                                |
| 4) All field work for groundwater investigations was done in accordance with standard operating procedures as established/outlined per the Technical Guidance Document (including internal/external QA/ QC requirements) (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization): |                                                                                       |                                                                                                                                     |                                                                |
| <div><input checked="" type="radio"/> Yes</div> <div><input type="radio"/> No</div>                                                                                                                                                                                                                                                                                                 |                                                                                       | If no, specify (Type Here):                                                                                                         |                                                                |



## Sampling and Monitoring Program Results/WDS Conditions and Assessment:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                         |                                                                                                    |                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <p>5) The site has an adequate buffer, Contaminant Attenuation Zone (CAZ) and/or contingency plan in place. Design and operational measures, including the size and configuration of any CAZ, are adequate to prevent potential human health impacts and impairment of the environment.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>                                             | <p>If no, the potential design and operational concerns/exceptions are as follows (Type Here):</p> |                                                                                                                                   |
| <p>6) The site meets compliance and assessment criteria.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p><input type="radio"/> Yes</p> <p><input checked="" type="radio"/> No</p>                                             | <p>See Section 5.7.1 of report for RUP exceedances</p>                                             |                                                                                                                                   |
| <p>7) The site continues to perform as anticipated. There have been no unusual trends/ changes in measured leachate and groundwater levels or concentrations.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>                                             | <p>If no, list exceptions and explain reason for increase/change (Type Here):</p>                  |                                                                                                                                   |
| <p>1) Is one or more of the following risk reduction practices in place at the site:</p> <p>(a) There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/treatment; or</p> <p>(b) There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or</p> <p>(c) The site meets the following two conditions (typically achieved after 15 years or longer of site operation):</p> <p><i>i.</i> The site has developed stable leachate mound(s) and stable leachate plume geometry/concentrations; and</p> <p><i>ii.</i> Seasonal and annual water levels and water quality fluctuations are well understood.</p> | <p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>                                             | <p>Note which practice(s):</p>                                                                     | <p><input type="checkbox"/> (a)</p> <p><input checked="" type="checkbox"/> (b)</p> <p><input checked="" type="checkbox"/> (c)</p> |
| <p>9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input type="radio"/> Not Applicable</p> | <p>yes, but as noted in text, it is unrelated to landfill</p>                                      |                                                                                                                                   |

Groundwater CEP Declaration:

I am a licensed professional Engineer or a registered professional geoscientist in Ontario with expertise in hydrogeology, as defined in Appendix D under Instructions. Where additional expertise was needed to evaluate the site monitoring data, I have relied on individuals who I believe to be experts in the relevant discipline, who have co-signed the compliance monitoring report or monitoring program status report, and who have provided evidence to me of their credentials.

I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended), and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories, or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature and will be rectified for the next monitoring/reporting period. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

2024-05-21

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

|                                                                                                                                                                                                                   |                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div><input type="radio"/> No changes to the monitoring program are recommended</div> <div><input checked="" type="radio"/> The following change(s) to the monitoring program is/are recommended:</div>           | <div>Monitoring Well reductions are recommended as part of the 2024 monitoring program. Details of this revised program are listed in Section 8.0 of the 2023 Annual Monitoring Report for the Landfill Site.</div> |
| <div><input checked="" type="radio"/> No Changes to site design and operation are recommended</div> <div><input type="radio"/> The following change(s) to the site design and operation is/are recommended:</div> | <div>Type Here</div>                                                                                                                                                                                                |

|                                               |                                                                                                 |           |              |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------|-----------|--------------|
| Name:                                         | Colin Ross, B.Sc., P.Geo.                                                                       |           |              |
| Seal:                                         | Add Image<br> |           |              |
| Signature:                                    | <div></div>                                                                                     | Date:     | 2024-05-21   |
| CEP Contact Information:                      | Colin Ross                                                                                      |           |              |
| Company:                                      | Azimuth Environmental Consulting Inc.                                                           |           |              |
| Address:                                      | 642 Welham Road, Barrie, ON<br>L4N 9A1                                                          |           |              |
| Telephone No.:                                | 705-721-8451                                                                                    | Fax No. : | 705-721-8926 |
| E-mail Address:                               | colin@azimuthenvironmental.com                                                                  |           |              |
| Co-signers for additional expertise provided: |                                                                                                 |           |              |
| Signature:                                    | <div></div>                                                                                     | Date:     | Select Date  |
| Signature:                                    | <div></div>                                                                                     | Date:     | Select Date  |

| Surface Water WDS Verification:                                                                                                                                                                                   |                                                                                                                                                                  |                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| Provide the name of surface water body/bodies potentially receiving the WDS effluent and the approximate distance to the waterbody (including the nearest surface water body/bodies to the site):                 |                                                                                                                                                                  |                                                           |
| Name (s)                                                                                                                                                                                                          | Martin Creek Wetland / Martin Creek                                                                                                                              |                                                           |
| Distance(s)                                                                                                                                                                                                       | immediately adjacent / 800m                                                                                                                                      |                                                           |
| Based on all available information and site knowledge, it is my opinion that:                                                                                                                                     |                                                                                                                                                                  |                                                           |
| Sampling and Monitoring Program Status:                                                                                                                                                                           |                                                                                                                                                                  |                                                           |
| 1) The current surface water monitoring program continues to effectively characterize the surface water conditions, and includes data that relates upstream/background and downstream receiving water conditions: | <input checked="" type="radio"/> Yes<br><input type="radio"/> No                                                                                                 |                                                           |
| 2) All surface water sampling for the monitoring period being reported was successfully completed in accordance with the Certificate(s) of Approval or relevant authorizing/control document(s) (if applicable):  | <input type="radio"/> Yes<br><input checked="" type="radio"/> No<br><br><input type="radio"/> Not applicable (No C of A, authorizing / control document applies) | If no, specify below or provide details in an attachment. |
| Surface Water Sampling Location                                                                                                                                                                                   | Description/Explanation for change<br>(change in name or location, additions, deletions)                                                                         | Date                                                      |
| all surface water locations                                                                                                                                                                                       | locations were dry and not sampled in summer and fall monitoring events                                                                                          | Select Date                                               |
| Type Here                                                                                                                                                                                                         | Type Here                                                                                                                                                        | Select Date                                               |
| Type Here                                                                                                                                                                                                         | Type Here                                                                                                                                                        | Select Date                                               |
| Type Here                                                                                                                                                                                                         | Type Here                                                                                                                                                        | Select Date                                               |

| 3) a) Some or all surface water sampling and monitoring program requirements for the monitoring period have been established outside of a ministry C of A or authorizing/control document.                                                                                                                                                                                                                         |                                                                                          | <input type="radio"/> Yes<br><input checked="" type="radio"/> No<br><input type="radio"/> Not Applicable |                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| b) If yes, all surface water sampling and monitoring identified under 3 (a) was successfully completed in accordance with the established program from the site, including sampling protocols, frequencies, locations and parameters) as developed per the Technical Guidance Document:                                                                                                                            |                                                                                          | <input type="radio"/> Yes<br><input type="radio"/> No<br><input type="radio"/> Not Applicable            | If no, specify below or provide details in an attachment. |
| Surface Water Sampling Location                                                                                                                                                                                                                                                                                                                                                                                    | Description/Explanation for change<br>(change in name or location, additions, deletions) | Date                                                                                                     |                                                           |
| Type Here                                                                                                                                                                                                                                                                                                                                                                                                          | Type Here                                                                                | Select Date                                                                                              |                                                           |
| Type Here                                                                                                                                                                                                                                                                                                                                                                                                          | Type Here                                                                                | Select Date                                                                                              |                                                           |
| Type Here                                                                                                                                                                                                                                                                                                                                                                                                          | Type Here                                                                                | Select Date                                                                                              |                                                           |
| Type Here                                                                                                                                                                                                                                                                                                                                                                                                          | Type Here                                                                                | Select Date                                                                                              |                                                           |
| 4) All field work for surface water investigations was done in accordance with standard operating procedures, including internal/external QA/QC requirements, as established/ outlined as per the Technical Guidance Document, MOE 2010, or as amended. (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization): | <input checked="" type="radio"/> Yes<br><input type="radio"/> No                         | If no, specify (Type Here):                                                                              |                                                           |

## Sampling and Monitoring Program Results/WDS Conditions and Assessment:

5) The receiving water body meets surface water-related compliance criteria and assessment criteria: i.e., there are no exceedances of criteria, based on MOE legislation, regulations, Water Management Policies, Guidelines and Provincial Water Quality Objectives and other assessment criteria (e.g., CWQGs, APVs), as noted in Table A or Table B in the Technical Guidance Document (Section 4.6):

☐ Yes  
☒ No

If no, list parameters that exceed criteria outlined above and the amount/percentage of the exceedance as per the table below or provide details in an attachment:

| Parameter                                                                                                                                                         | Compliance or Assessment Criteria or Background                               | Amount by which Compliance or Assessment Criteria or Background Exceeded |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| e.g. Nickel                                                                                                                                                       | e.g. C of A limit, PWQO, background                                           | e.g. X% above PWQO                                                       |
| Iron<br>Zinc<br>Total Phosphorus<br>Cobalt<br>Chromium<br>Aluminum                                                                                                | 0.3 mg/L<br>0.02 mg/L<br>0.03 mg/L<br>0.0009 mg/L<br>0.001 mg/L<br>0.075 mg/L | >100%<br>>100%<br>>100%<br>>100%<br>>100%<br>>100%                       |
|                                                                                                                                                                   |                                                                               |                                                                          |
|                                                                                                                                                                   |                                                                               |                                                                          |
| Type Here                                                                                                                                                         | Type Here                                                                     | Type Here                                                                |
| 6) In my opinion, any exceedances listed in Question 5 are the result of non-WDS related influences (such as background, road salting, sampling site conditions)? | <input checked="" type="radio"/> Yes<br><input type="radio"/> No              | some are landfill some are natural see section 5.4 of report             |

|                                                                                                                                                                                                                                                  |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>7) All monitoring program surface water parameter concentrations fall within a stable or decreasing trend. The site is not characterized by historical ranges of concentrations above assessment and compliance criteria.</p>                 | <p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>                                                                                    | <p>Some variability exists over time with respect to parameter concentrations however, there are no upward trends</p>                                                                                                                                                                                                                                                                                                                                   |
| <p>8) For the monitoring program parameters, does the water quality in the groundwater zones adjacent to surface water receivers exceed assessment or compliance criteria (e.g., PWQOs, CWQGs, or toxicity values for aquatic biota (APVs)):</p> | <p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input type="radio"/> Not Known</p> <p><input type="radio"/> Not Applicable</p> | <p>If yes, provide details and whether remedial measures are necessary (Type Here)</p> <p>attenuation is adequate to limit exceedances noted in GW monitors to be found in SW locations. as well, the site was designed as a natural attenuation facility such that there is an expectation that impacts will be observed in the adjacent wetland but are noted not to extend much beyond the perimeter area. A such, no remedial measures proposed</p> |
| <p>9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):</p>                                                                                                                                   | <p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input type="radio"/> Not Applicable</p>                                        | <p>boron at WP4 has exceeded single parameter criteria, but subsequent october sampling event the location was dry so compliance will need to be evaluated in April 2022 as two consecutive exceedances represent action items</p>                                                                                                                                                                                                                      |

## Surface Water CEP Declaration:

I, the undersigned hereby declare that I am a Competent Environmental Practitioner as defined in Appendix D under Instructions, holding the necessary level of experience and education to design surface water monitoring and sampling programs, conduct appropriate surface water investigations and interpret the related data as it pertains to the site for this monitoring period.

I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended) and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories*, or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature or will be rectified for future monitoring events. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

2023-05-21

## Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

|                                                                                                                                                                                                               |                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <p><input type="radio"/> No Changes to the monitoring program are recommended</p> <p><input checked="" type="radio"/> The following change(s) to the monitoring program is/are recommended:</p>               | <p>see section 8 of monitoring report</p> |
| <p><input checked="" type="radio"/> No changes to the site design and operation are recommended</p> <p><input type="radio"/> The following change(s) to the site design and operation is/are recommended:</p> | <p>Type Here</p>                          |



|                          |                                        |            |
|--------------------------|----------------------------------------|------------|
| CEP Signature            |                                        |            |
| Relevant Discipline      | Hydrogeology                           |            |
| Date:                    | 2024-05-21                             |            |
| CEP Contact Information: | Colin Ross                             |            |
| Company:                 | Azimuth Environmental Consulting Inc.  |            |
| Address:                 | 642 Welham Road, Barrie, ON<br>L4N 9A1 |            |
| Telephone No.:           | 705-721-8451 x 205                     |            |
| Fax No. :                | 705-721-8926                           |            |
| E-mail Address:          | colin@azimuthenvironmental.com         |            |
| Save As                  |                                        | Print Form |



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## **APPENDIX K**

### **Site Inspections**

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CITY OF KAWARTHA LAKES  
OPERATING LANDFILL INSPECTION FORM

LANDFILL: Ferelon

Inspected by: Drew West

Date: April 20, 2023

Time: 1:30 pm

Weather Conditions: Sunny 10°C

**A. GENERAL OBSERVATIONS**

A.1 Landfill Site: Landfill closed until May 2023.  
No changes since Fall 2022.

A.2 Status of Landfill Development/Construction Activities: Closed

A.3 Tipping Face: Good, no erosion

A.4 Residential Container Station: Closed

A.5 Maintenance and Administration Building: Closed

A.6 Weigh Scale Inspection Building: Closed

A.7 Reuse Centre: Closed

A.8 HHW Facility: Closed

A.9 Leaf & Yard Waste Composting Facility: N/A

**B. STAFFING:**

B.1 Is staffing for the landfill operations and ancillary landfill operations (i.e., HHW Facility, Reuse Centre Leaf & Yard Waste Composting Facility) adequate? Closed

B.2 Are staff wearing adequate safety equipment? N/A

**C. LANDFILL COVER:**

C.1 Any evidence of leachate seeps or erosion of landfill cover on waste disposal fill area? \_\_\_\_\_

No

C.2 Condition of North Slope? All slopes stable

C.3 Condition of vegetation? dormant

**D. STORM WATER MANAGEMENT SYSTEM:**

D.1 Is the surface water management system in good operating order? (e.g. any erosion, litter, debris of the perimeter stormwater ditches or stormwater sedimentation ponds? Are culverts free from debris? \_\_\_\_\_

N/A

**E. LEACHATE COLLECTION SYSTEM**

E.1 Are manholes free of litter and debris? \_\_\_\_\_

N/A

E.2 Condition of manholes/need repairs? \_\_\_\_\_

N/A

**F. MAIN ENTRANCE AND INTERNAL ROADS:**

F.1 Is the main entrance or internal roads in need of repair or maintenance work? \_\_\_\_\_

Some erosion at low lying portion of access  
road to tipping face, where runoff enters  
forest/wetland

**G. DUST CONTROL:**

G.1 Any dust problems because of the internal roads, working face or fill stockpiles? \_\_\_\_\_

No

G.2 Condition of Roads: some erosion (see above)

**H. ODOURS:**

H.1 Any odour problems? No

**I. LITTER CONTROL:**

I.1 Any evidence of litter on the landfill buffer area site fencing, along Wilson Road, on adjacent properties or around the residential container station? No

**J. LANDSCAPING:**

J.1 Does the landscaping (trees, shrubs, and ground cover) require maintenance work (e.g. grass cutting, replacement or vegetation)?

No

**K. SITE PERIMETER FENCING AND SIGNING:**

K.1 Is the site perimeter fencing in good condition?

Yes

K.2 Are the traffic and information signs in good condition?

Yes

**L. LANDFILL OPERATIONS:**

L.1 Is there sufficient material for daily and interim cover?

Unknown

L.2 Is the landfill operations equipment in good working order?

Unknown

L.3 Is the waste being spread, compacted and covered in accordance with the Maintenance & Operations Report?

Unknown



**M. SITE SECURITY AND SAFETY PROTOCOLS**

M.1 Are waste loads being adequately inspected (weigh scale/inspection building, residential container station, tipping face)? \_\_\_\_\_

Closed

M.2 Are there sufficient fire extinguishers (fully loaded and operable) at tipping face, weigh scale/inspection building, maintenance and administration building, HHW Facility, Reuse Centre? \_\_\_\_\_

Unknown

M.3 Location and condition of medical emergency kits (eye wash stations and first aid kits): \_\_\_\_\_

Unknown

M.4 Staff knowledge of emergency procedures/numbers? \_\_\_\_\_

Unknown

**N. OTHER COMMENTS:**

Please have site operator create fill  
at base of wells 22 and 5A to create  
a higher platform to sample wells.  
Currently it is very difficult to sample  
these wells (22 & 5A)

**O. RECOMMENDATIONS:**



CITY OF KAWARTHA LAKES  
OPERATING LANDFILL INSPECTION FORM

LANDFILL: FENELON LANDFILL

Inspected by: B. Petras

Date: October 12, 2023

Time: 09:00

Weather Conditions: Sunny, Clear, Fog in AM, ~18°C

**A. GENERAL OBSERVATIONS**

A.1 Landfill Site: LANDFILL CLOSED DURING TIME OF INSPECTION

A.2 Status of Landfill Development/Construction Activities: CLOSED

A.3 Tipping Face: Good

A.4 Residential Container Station: Closed

A.5 Maintenance and Administration Building: Closed

A.6 Weigh Scale Inspection Building: Closed

A.7 Reuse Centre: Closed

A.8 HHW Facility: Closed

A.9 Leaf & Yard Waste Composting Facility: N/A.

**B. STAFFING:**

B.1 Is staffing for the landfill operations and ancillary landfill operations (i.e., HHW Facility, Reuse Centre Leaf & Yard Waste Composting Facility) adequate? Closed

B.2 Are staff wearing adequate safety equipment? N/A

**C. LANDFILL COVER:**

C.1 Any evidence of leachate seeps or erosion of landfill cover on waste disposal fill area? \_\_\_\_\_

NO - ALL GOOD

C.2 Condition of North Slope? ALL SLOPES APPEAR STABLE

C.3 Condition of vegetation? LUSH, END OF SEASON COVERAGE.

**D. STORM WATER MANAGEMENT SYSTEM:**

D.1 Is the surface water management system in good operating order? (e.g. any erosion, litter, debris of the perimeter stormwater ditches or stormwater sedimentation ponds? Are culverts free from debris? \_\_\_\_\_

N/A

**E. LEACHATE COLLECTION SYSTEM**

E.1 Are manholes free of litter and debris? N/A

E.2 Condition of manholes/need repairs? N/A.

**F. MAIN ENTRANCE AND INTERNAL ROADS:**

F.1 Is the main entrance or internal roads in need of repair or maintenance work? \_\_\_\_\_

NO - APPEARS VERY WELL MAINTAINED

**G. DUST CONTROL:**

G.1 Any dust problems because of the internal roads, working face or fill stockpiles? \_\_\_\_\_

NO

G.2 Condition of Roads: POT HOLES, POSSIBLE GRADING IN HEAVY TRAFFIC

AREAS

**H. ODOURS:**

H.1 Any odour problems? MAJOR ODOURS NOTED NEAR WASTE AREA - TERMINAL FACE

WHERE THE TRUCKS ARE LOADING

AND UNLOADING

**I. LITTER CONTROL:**

I.1 Any evidence of litter on the landfill buffer area site fencing, along Wilson Road, on adjacent properties or around the residential container station? NO, MAJOR WASTE BLIND TO SOUTHERN TREED EDGE (UNPAVED)

**J. LANDSCAPING:**

- J.1 Does the landscaping (trees, shrubs, and ground cover) require maintenance work (e.g. grass cutting, replacement or vegetation)?

NO

**K. SITE PERIMETER FENCING AND SIGNING:**

- K.1 Is the site perimeter fencing in good condition? YES

- K.2 Are the traffic and information signs in good condition? YES

**L. LANDFILL OPERATIONS:**

- L.1 Is there sufficient material for daily and interim cover? UNKNOWN

- L.2 Is the landfill operations equipment in good working order? UNKNOWN

- L.3 Is the waste being spread, compacted and covered in accordance with the Maintenance & Operations Report?

UNKNOWN



**M. SITE SECURITY AND SAFETY PROTOCOLS**

**M.1** Are waste loads being adequately inspected (weigh scale/inspection building, residential container station, tipping face)?

Yes

**M.2** Are there sufficient fire extinguishers (fully loaded and operable) at tipping face, weigh scale/inspection building, maintenance and administration building, HHW Facility, Reuse Centre?

UNKNOWN

**M.3** Location and condition of medical emergency kits (eye wash stations and first aid kits):

UNKNOWN

**M.4** Staff knowledge of emergency procedures/numbers?

UNKNOWN

**N. OTHER COMMENTS:**

ADDITIONAL FILL/WOOD CHIPS NEEDED @ MW STA 5.22 TO  
CREATE STABLE BASE/FOOTING TO SAMPLE WELLS.

**O. RECOMMENDATIONS:**



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## **APPENDIX L**

### **Surface Water Photos**

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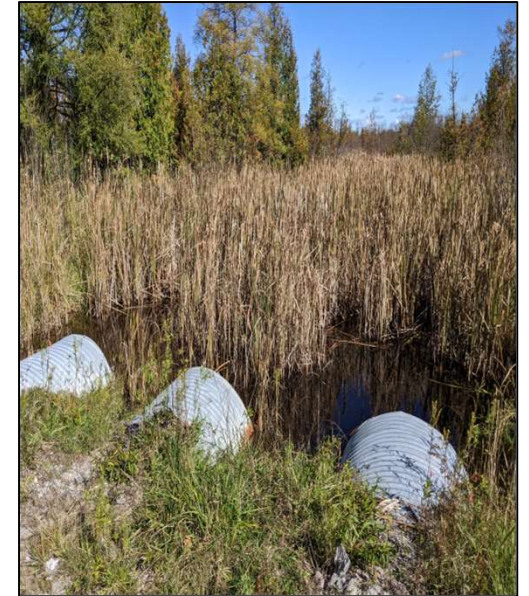
## 24-010 - 2023 Fenelon Landfill Monitoring Report



**SW-2:** April 2023



**SW-2:** August 2023



**SW-2:** October 2023



**SW-3:** April 2023



**SW-3:** August 2023



**SW-3:** October 2023





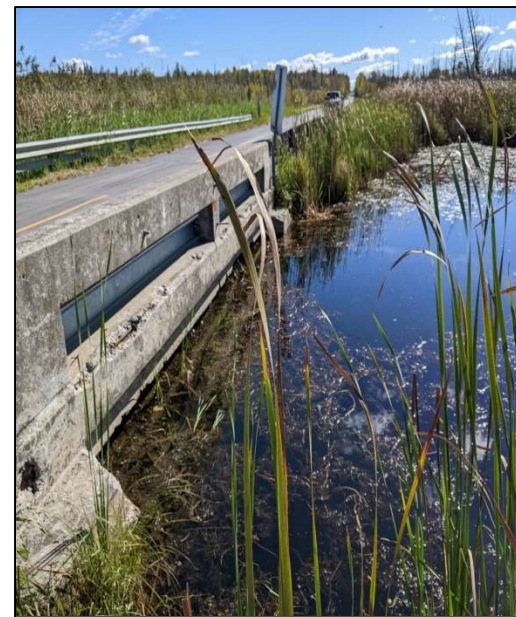
## 24-010 - 2023 Fenelon Landfill Monitoring Report



**SW-4:** April 2023



**SW-4:** August 2023



**SW-4:** October 2023



**SW-12:** April 2023



**SW-12:** August 2023



**SW-12:** October 2023





## 24-010 - 2023 Fenelon Landfill Monitoring Report



**SW-13:** April 2023



**SW-13:** August 2023



**SW-13:** October 2023



**SW-14:** April 2023



**SW-14:** August 2023



**SW-14:** October 2023





## 24-010 - 2023 Fenelon Landfill Monitoring Report



**SW-15:** April 2023



**SW-15:** October 2023



**SW-16:** April 2023



**SW-16:** August 2023



**SW-16:** October 2023





## 24-010 - 2023 Fenelon Landfill Monitoring Report



**SW-17:** April 2023



**SW-17:** August 2023



**SW-17:** October 2023



**WP4 (30m):** April 2023



**WP4 (30m):** October 2023