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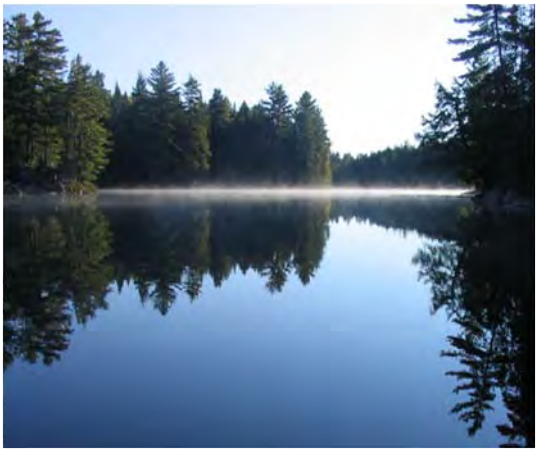

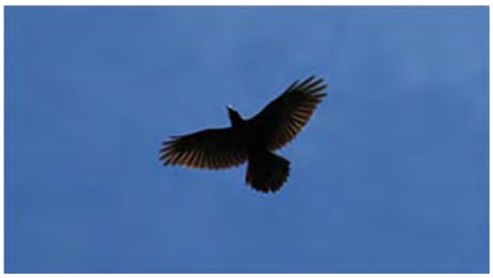

Eldon Waste Disposal Site

311 Rockview Road

City of Kawartha Lakes

Prepared for City of Kawartha Lakes

AEC Project No. 26-010 | March 2026

AZIMUTH ENVIRONMENTAL CONSULTING, INC.
Environmental Assessments & Approvals

March 27, 2026 AEC 26-010

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

Attention: Ms. Kayla Pantaleo -Regulatory Compliance Officer

Re: 2025 Annual Monitoring Report - Eldon Waste Disposal Site

Dear Kayla:

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to provide the 2025 Annual Monitoring Report (AMR) for the Eldon Waste Disposal Site (Site). The data and interpretation included provides a summary of the 2025 monitoring data with comparison to the historical data and accurate assessment of the current state of the landfill Site. This report has been prepared incompliance 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 Site is well understood based on over 25 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 2025 data with the historic data set for the majority of monitoring locations.

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

Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Colin Ross, B.Sc., P.Geo.
Senior Hydrogeologist

Kiefer Galliford, B.A.Sc (Chem Eng)
Engineering Trainee

c.c. MECP – Peterborough District Office

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EXECUTIVE SUMMARY

The City of Kawartha Lakes (City) is responsible for the operation and maintenance of the Eldon Waste Disposal Site (Site) in accordance with the Environmental Compliance Approval (ECA) (No. A321004) issued by the Ministry of the Environment, Conservation & Parks (MECP) on February 21, 1980 and last amended June 13, 2016. The Site consists of an operating landfill, transfer station, and composting site with a total area of 59.8 hectares.

The ground water flow patterns at the Site generally follow the orientation of the esker / bedrock trough feature such that an overall western migration pathway exists. Given the Site hydrogeology and geochemistry, it has been determined that leachate impacted ground water flows within the granular overburden materials in a western direction which ultimately discharges into the Butternut Creek Wetland Complex west of the Site following the downward dip in topography. Despite the westerly flow path and permeable overburden materials, there is a significant reduction in leachate indicator parameter concentrations with distance from the waste mound indicating that the attenuative capacity of the Site is sufficient.

The data trends over this monitoring period have yielded a relatively consistent geochemical signature, although some subtle long term trends are present at select locations owing to the fact that the Site is still active. More localized trending is present in closer proximity to the waste mound, although these are determined to represent changes in the operations within waste mound over time. Despite these trends, the relative consistency would indicate that conditions are at a near steady state condition. This finding is in keeping with the conductive granular environment present beneath the landfill Site. The underflow is considerable and dilutes / disperses the leachate percolating from the landfill. The permeability contrast between the emplaced waste and esker sediments allows for attenuation and dispersion to background levels within the downgradient wetland complex.

Results from monitoring wells to the west could be inferred to represent a dilute leachate influence; but other parameters including the organic nitrogen concentration suggest a natural signature associated with the wetland complex. Regardless, wetland monitoring results have much lower concentrations than those observed in closer proximity wells to the Site, which are attributed to the landfill. Attenuative processes at this Site are significant and have abated the influence of the contaminant plume from the landfill.

Elevated parameter concentrations relative to Reasonable Use Policy (RUP) B-7-1 continued in 2025, to the north, south and west. The majority of these were related to the naturally occurring anoxic wetland conditions where a number of the compliance monitoring wells are

located, which cause natural elevations in dissolved organic carbon (DOC), iron and manganese. It is noted that a large Contaminant Attenuation Zone (CAZ) exists to the northwest, west and south such that any RUP exceedances in the current monitoring network would be more than adequately attenuated with the additional downgradient lands present. Despite this, a location for a more southwesterly RUP compliance monitor has been proposed to address recent MECP Site inspection comments.

As in previous years, downstream surface water quality results did not indicate any leachate influence suggesting that the Site is providing adequate attenuation of leachate within the property boundaries. A trigger exceedance was noted for iron at SW6 during the April and July sampling events, which required confirmatory samples to be collected within a month from July. However, these were unable to be collected as that location was dry for the remainder of the summer and fall monitoring event. As such, these concentrations will be confirmed, but the water quality during the April and July sampling events would indicate the elevated iron concentrations are more reflective of natural variability opposed to leachate influence based on the overall water quality at that location.

Revisions to the monitoring program identified in the 2024 annual monitoring report continue to be proposed, and will be implemented upon Ministry approval. Revisions include a reduction in the background monitoring wells due to redundancy, as well as some other proposed reductions for consideration following the formal closure of the Phase I/II area of the landfill.

The operations at the Site progressed into the Phase III filling area in 2019. The waste cell is a lined waste cell with a leachate collection system designed to collect all leachate generated within the Phase III area such that it can be hauled off-Site to the Lindsay Sewage Treatment Facility. Phase I/II stopped receiving waste in 2019 and final grading and capping of Phase I/II took place in 2021, which will help to reduce the leachate generation within this historically unlined, natural attenuation area of the Site. Continued monitoring will be utilized to assess the effectiveness of these activities.

1.0 INTRODUCTION

The City of Kawartha Lakes (City) is responsible for the operation and maintenance of the Eldon Landfill Site (Site) in accordance with the Environmental Compliance Approval (ECA) (No. A321004) originally issued by the Ministry of the Environment, Conservation & Parks (MECP) on February 21, 1980 and last amended June 13, 2016 (Appendix A).

The following report provides a summary of the 2025 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 311 Rockview Road within the City of Kawartha Lakes (Figure 1). Waste deposition began at this 100.5 hectare (ha) Site sometime before 1980, prior to which the Site operated as a sand borrow pit.

The current Site boundaries reflect the original 19.2 ha Site area as well as the additional 81.3 ha which are Contaminant Attenuation Zone (CAZ) encompassing lands to the west, south and southwest. These lands have been acquired to ensure compliance with Reasonable Use Policy (RUP) as they represent the downgradient area for the landfill.

The Site currently operates under the Design and Operations Plan prepared as part of the June 2016 ECA amendment (Golder, 2016) for the expansion of the waste footprint into the Phase III area, which has incorporated a landfill liner and leachate collection system. During late 2019, the active landfill area shifted to the Phase III area as Phase I/II areas reached capacity and final grades. It is noted that the Phase I & II areas represent a total approved waste footprint area of 3.7 ha, while the Phase III area has an approved waste footprint area of 5 ha. The Site layout including current and future waste areas are illustrated on Figure 2. In 2021, the Phase I/II area underwent grading and capping activities to formally close this section of the Site. Vegetation across this area has become well established with no notable erosion evident in 2025.

In addition to the landfilling operations at the Site, the Site is also approved for composting of leaf, yard waste, tree trunks, stumps, branches, leaves and brush with limitations of 150 tonnes daily and 500 tonnes annually.

2.0 SITE CONCEPTUAL MODEL

Physiographically, the Site is situated within a region known collectively as the Carden Plain (Chapman and Putnam, 1984). This region encompasses an area of approximately 583 km^2 (225 mi^2) and is characterized by a "…flat-to-undulating limestone plain from which a glacier stripped off most of the overburden". To the south and east of the Site, the Ontario Geological Survey (Barnett *et al.*, 1991) note the presence of several drumlins scattered throughout the local area, which represent a northward extension of the Peterborough Drumlin Field.

Being formerly situated beneath the shoreline of glacial Lake Algonquin, discrete pockets of both nearshore and lacustrine deposits can be found throughout the Carden Plain. The dominant overburden material of this region; however, consists of an undifferentiated sand till that is typically high in clasts and total matrix carbonate content (Barnett *et al.*, 1991).

More specifically, the Eldon Landfill Site is located along an esker feature that extends along a northeast / southwest axis within a buried bedrock trough that extends along the same axis. These conditions have been documented in previous reports (Cambium, 2011) and are evident through the borehole logs which indicate bedrock contact elevations with distinct ridges noted to the south and north of the buried trough. It is also noted that some of the surrounding areas are made up of wetland features residing in areas of lower elevation that have been interpreted to be supported by ground water discharge from the upland areas.

The soils underlying the Site vary from coarse sands and gravel along the centre line of the esker at surface, while a more extensive sand unit and underlying till deposit are located beneath. Surficial peat deposits are present in the wetland areas that surround the landfill.

At this Site, there is the potential for a certain level of hydrogeologic complexity given the multiple aquifer units present. The Site geochemistry has been used to differentiate the individual flow regimes. 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. The result is that there are two distinctive ground water signatures present in the environs of the Site.

The first hydrogeologic zone is identified by the overburden water quality, which is represented in the background water quality data collected from several wells including MW9-I, MW11-II, MW12-I & MW33-II (Figure 2). At these locations, the water quality has shown to be consistent over time and geochemically similar between locations. As such, it would be suggested that the overburden aquifer in these areas is not influenced by the landfill.

The second identified hydrogeologic zone / geochemical signature is that from the bedrock unit. Although this unit has been represented by one aquifer unit, it should be noted that there is some variability within the bedrock water quality noted between monitoring locations that would indicate that natural brine waters are present in the area (*i.e.,* MW10-I & MW27-I). However, the level of mineralization varies across the Site and becomes more prevalent in deeper conductive bedding plane fractures present in the vertical bedrock profile for the wells screened at these depths. Review of potable well records in the Eldon area indicates that saline, mineralized and sulfurous water are present within the general proximity of the Site.

In addition to the ground water signatures described above, the surface water quality was also evaluated in comparison to these ground water quality signatures. The surface water from the channel that flows north of the Site and is part of the Butternut Creek Wetland Complex (SW1, SW2B and SW4), as well as the background stations within a wetland east of the waste mound along Rockview Road (SW5) and south of the entrance road (SW6) was noted to have a similar signature to that of the ground water aquifers. The expectation is that ground waters from the esker complex are flowing toward and discharging to this channel and associated wetland complex to the west. However, there does not appear to be any strong similarities to that of the leachate geochemical signature and there does not appear to be any significant difference in water quality between the upstream and downstream sampling locations. These data suggest that there is no significant leachate influence at the downstream sampling location. If ground water originating from the landfill is discharging to the adjacent wetland area (as expected), any potential leachate is sufficiently diluted and attenuated such that there is no significant leachate influence in the wetland area and adjacent creek.

In summary, this facility has been present at this location for over 40 years. The facility is founded on permeable sediments associated with an esker complex that is situated in a bedrock trough. The conceptualization is that the bedrock has been eroded through glaciofluvial processes. This would also account for the granular deposition within the trough. The trough orientation is expected to define the primary ground water flow direction that occurs in the conductive sands.

The conceptualization could also suggest that it would be reasonable to assume that the landfill leachate production has likely achieved a steady-state condition in Phase I/II. Given the granular nature of the underlying sediments; this situation would result in the development and maintenance of a steady-state dissolved-phase contaminant plume associated with the leachate release from the unlined portion of the landfill (*i.e.*, Phase I/II). Long-term monitoring would be used to confirm this assumption and demonstrates the geochemical consistency of the Site's influence on the surrounding environment.

While ground water movement within the bedrock trough (overburden) is considered to be the primary contaminant transport pathway; it may also be possible to disperse and attenuate contaminants within the layered limestone bedrock formation. Thus, this potential is also evaluated through the monitoring data to assess whether there is any validity to this possible contaminant transport pathway. The layered structure of the limestone formations within the Carden Plain would suggest that lateral migration along exposed conductive bedding plane fractures is far more likely than any vertical percolation between conductive lateral bedding plane fractures.

3.0 GEOLOGY

As noted above, ground water flow and contaminant transport is controlled by the geological setting. A sound understanding of the geologic environment facilitates a more insightful interpretation of the Site hydrogeology. The Site Conceptual Model (SCM) is based on an understanding of the functional aspects of the regional and local geological setting.

The Eldon Landfill Site is located above a glaciofluvial bedrock trough that extends generally in a southwest direction and has been cut into the bedrock profile about eight metres. This trough has been infilled with a substantial thickness of glaciofluvial sand and gravel deposits (~10 m). A discontinuous glacial till unit of limited extent and thickness (*i.e.*, Peterborough Drumlin Till Plain) lies immediately over the underlying Ordovician limestone of the Verulam Formation (Cambium, 2011). A wetland complex has developed to the north and west of the Site which has a surficial peat unit reportedly 1 m in depth.

Outside the immediate area of the Site, local MECP water well record data suggest that the overburden thickness is variable with thicknesses ranging from <1 m to approximately 28 m which would indicate that the bedrock surface might be scoured or plucked in the area through glacial processes.

A description of the monitoring wells and the associated screened interval for each location is provided in Table 1 to Table 3.

Table 1: Shallow Overburden Ground Water Monitors

Monitoring Well	Well Depth (mbgs)	Screened Interval
7-I	7.08	Fine Sand
8-I	6.12	Fine Sand w Silt / Med. to Coarse Sand w Silt & Gravel
9-I	2.30	Sand to Sandy Silt / Shale Limestone
13-II	4.65	Silty Medium Sand/ Silt
14-III	12.98	Waste, Silt and Sand
16-II	7.62	Sand
17-II	7.32	Fine Sand
19-I	7.47	Fine to Coarse Sand with some Silt / Sandy Silt
26-III	5.41	Sand / Silt Till
27-II	4.00	Medium Sand
29-III	4.00	Silty Sand
30-I	3.72	Silty Sand
31-I	3.69	Silty Sand
32-I	2.55	Sandy Silt
33-II	4.88	Fine Sand and Silt
35	2.40	Clayey Sand with some Silt
36	2.60	Clayey Sand with some Silt
37	2.30	Clayey Sand with some Silt

Notes: mbgs - metres below ground surface

Table 2: Deep Overburden Ground Water Monitors

Monitoring Well	Well Depth (mbgs)	Screened Interval
11-II	6.83	Sand and Gravel
12-I	2.22	Sand and Gravel
14-II	17.77	Fine to Coarse Sand with some Silt and Gravel
15-II	12.93	Fine to Medium Sand with some Gravel
17-I	13.10	Fine to Coarse Sand with some Gravel
25-I	10.62	Fine Sand
25-II	5.57	Fine to Medium Sand
26-II	7.32	Fine Sand / Silt
29-II	7.42	Sand
201	3.26	Sand and Gravel

Table 3: Bedrock Ground Water Monitors

Monitoring Well	Well Depth (mbgs)	Screened Interval
10-I	8.90	Limestone
11-I	11.68	Limestone
13-I	14.53	Limestone
14-I	22.30	Limestone
16-I	12.23	Limestone
26-I	14.60	Limestone
27-I	16.30	Limestone
29-I	12.51	Limestone
33-I	15.42	Limestone
34-I	5.18	Limestone

For reference, all available borehole logs for the Site have been included in Appendix B.

4.0 HYDROGEOLOGIC INTERPRETATION

The ground water flow system underlying the Eldon Landfill Site is controlled by the Site geology described above. Ground water flows principally through the underlying sand and gravel unit from the esker along the buried bedrock trough present beneath the Site towards the west and southwest. The preferred migration pathway would be within this sand unit (given the high permeability) instead of the low permeability underlying bedrock based on the hydraulic testing completed by Cambium as part of their 2010 annual monitoring report (Cambium, 2011). The results are summarized in Table 4 below.

Table 4: Ground Water Flow Velocities

Hydrogeologic Unit	Hydraulic Conductivity (m/s)*	Lateral Gradient (m/m)**	Porosity	Ground Water Velocity
Overburden	1.0×10^{-3}	0.002	0.25	250 m/yr
Bedrock	1.0×10^{-5} to 1.0×10^{-10}	0.004		5 m/yr to 0.05 mm/yr

* - Based on recovery test data presented in Cambium, 2010

** - Gradient calculated based on September 2025 GW elevations

As the Phase I and II portions of the Site have been historically operated as a natural attenuation facility, the wastes are deposited atop the native overburden materials. As such,

there is an expectation of a hydraulic connection between the waste mound and underlying overburden aquifer system. At the very least, the underlying overburden should be able to assimilate any volume of leachate flow generated in the overlying waste and discharged through the bottom of the landfill given a likely limited relative permeability in the waste owing to compaction. It is noted that the expanded footprint Phase III area is located atop a lined waste cell with associated leachate collection system; however, the previous historically filled areas (Phase I & II) of the landfill are proposed to remain in their original design and function as natural attenuation waste areas.

Ground water elevation data since 2008 has been reviewed (Appendix C) and the data indicates that the ground water table shows minimal seasonal variation (*i.e.*, <1 m) in both the overburden and bedrock monitors. The vertical gradients at the Site are relatively minimal for most locations; however, some variability is observed over time. The horizontal gradient is more apparent. Finally, a small but measurable and consistent upward gradient (~0.3 m) is observed at MW29 between the bedrock and overburden aquifer units which would suggest that there is potential for discharge of deeper ground water into the shallow overburden and overlying wetland west of the Site.

Given the complex geologic deposition created by the bedrock trough and esker complex, delineation of ground water flow direction is somewhat complicated. As such, the ground water elevations, as well as the presence of the bedrock ridges were utilized to present an inferred ground water flow direction. As in previous reports, the overburden has been divided into two separate units; however, given the lack of significant confining unit within the overburden present horizontally or vertically, the overburden aquifer was treated as a single unit and the shallow intervals (where nested) were not included in the interpretation. The flow direction in the overburden unit (Figures 3 to 6) has been inferred to flow from the centre of the esker feature east and southeast towards the road and west towards the Butternut Creek wetland complex. These flow paths coincide with the orientation of both the esker and bedrock trough.

5.0 SUMMARY OF 2025 MONITORING PROGRAM

The 2025 monitoring program for the Site was undertaken by Azimuth Environmental Consulting (Azimuth) and City staff. Azimuth completed the spring, summer and fall ground and surface water monitoring which occurred in April, July and September 2025.

The program currently includes 37 ground water monitoring wells and five surface water locations. The program has evolved over time with additional downgradient monitoring wells being incorporated and redundant leachate / perimeter wells being removed from the program

over time. Most recently (2019), the program was revised with the decommissioning of MW15-I, 15-II, 15-III, 18-I & 25-III and installation of a new well adjacent to the new Phase III waste area (MW201), additional downgradient locations (MW36 & MW37,) and new background locations east of Phase III (MW33-I & MW33-II). These revisions were outlined in the 2016 ECA amendment. For reference, the locations are summarized in Section 3.0 and illustrated on Figure 2.

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 inorganic analysis were also field-filtered for metals and dissolved organic carbon (DOC) using disposable 0.45 μm filters.

Surface water samples were collected at a depth about equal to half of the surface water features total depth, while minimizing the potential for sediment entrainment and were not filtered. It is noted that surface water features at this Site are seasonal, with most locations being dry or very limited water depth during the summer and fall monitoring events.

Field parameters are collected for ground and surface water samples for pH, electrical conductivity and temperature, with dissolved oxygen collected only for surface water samples.

In 2025, the analytical testing was completed by Caduceon Environmental Laboratories (Caduceon) of Kingston or Richmond Hill, Ontario. Caduceon is accredited by the Canadian Association for Environmental Analytical Laboratories. Unabbreviated Laboratory Certificates of Analyses for all testing are presented in Appendix D, while the data has also been summarized with the historical data in Appendix E.

Table 5: 2025 Monitoring Program

Monitoring Station	Frequency	Parameters
Ground Water MW7-I*, MW8-I*, MW9-I, MW10, MW11-I, MW11-II, MW12, MW13-I, MW13-II, MW14-I***, MW14-II***, MW14-III***, MW16-I, MW16-II, MW17-I, MW17-II, MW19-I, MW25-I, MW25-II, MW26-I, MW26-II, MW26-III MW27-I, MW27-II, MW27-III, MW29-I, MW29-II, MW29-III, MW30-I, MW31-I, MW32-I, MW33-I, MW33-II, MW35, MW36, MW37, MW201	Semi-Annual (April / May & September / October)	Total Kjeldahl Nitrogen (TKN), Nitrate, Nitrite, Ammonia, Alkalinity, Hardness, Chloride, Calcium, Magnesium, Total Phosphorus, Sulfate, Phenols, Dissolved Organic Carbon (DOC), Aluminum, Arsenic, Barium, Boron, Cadmium, Chromium, Cobalt, Copper, Fluoride, Iron, Lead, Manganese, Mercury, Nickel, Potassium, Sodium, Zinc, pH, Conductivity, Total Dissolved Solids (TDS), Chemical Oxygen Demand (COD). * - Total Cyanide ** - Unionized Ammonia *** VOCs & Unionized Ammonia
Surface Water SW1, SW2B, SW4, SW5 & SW6	Seasonal (April / May, July & September / October)	Total Kjeldahl Nitrogen (TKN), Nitrate, Nitrite, Ammonia, Alkalinity, Hardness, Chloride, Calcium, Magnesium, Total Phosphorus, Sulfate, Phenols, Dissolved Organic Carbon (DOC), Aluminum, Arsenic, Barium, Boron, Cadmium, Chromium, Cobalt, Copper, Fluoride, Iron, Lead, Manganese, Mercury, Nickel, Potassium, Sodium, Zinc, pH, Conductivity, Total Dissolved Solids (TDS), Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD), Free Cyanide, Colour, Turbidity, Total Suspended Solids (TSS)

The 2025 program was completed as required with the exception of ground water sample collection from MW14-I (April), MW14-III (both events) & MW32 (both events) and surface water locations SW2B & SW5 during the September monitoring event. The ground water samples were not collected at monitoring wells MW32 and MW14-III, as MW32 did not contain enough water and MW14-III was blocked, likely due to shifting ground conditions in the waste mound. MW14-I has not been repaired, and is currently being affected by changing ground conditions in the waste mound, but would be recommended to be decommissioned rather than

replaced given the potential for this monitor to create a conduit for leachate migration into bedrock and the remaining monitoring network being sufficient to track leachate migration in the shallow bedrock unit.

5.1 2025 QA/QC Samples

As part of the routine sampling program for the Site, duplicate samples were collected and analyzed for quality assurance purposes. In 2025, seven QA/QC samples were collected out of 85 samples collected. The laboratory was not advised of the sample duplication prior to analysis of these samples. Laboratory duplicate precision was assessed using Percent Difference, which is the difference between two concentrations divided by the average of the two concentrations. Results are provided in Appendix E and were found to be within acceptable limits (*i.e.,* <20% variation), with the exceptions summarized in the following table (Table 6). It should be noted that as the analytical results approach the detection limit, the precision of the analysis tends to decline, while these differences are also exaggerated with the lower detection limits and may account for some of the variation observed. The other parameters, which had higher concentrations with variance were COD, TKN and ammonia. Despite the variance in these parameters, the concentrations both fell within the historical range in each instance such that it could be a function of sediment load in the samples collected. Although these variances create some degree of uncertainty in the results, they are not seen as a concern at this time as all of the parameters listed had concentrations within the historical range for the corresponding parameter and location. As such, the laboratory quality is considered sufficient for 2025, but should be considered when evaluating any potential trends relating to these parameters.

Table 6: QA/QC Analysis

April (MW7-I)			
Parameter	**Results (mg/L)**		**Difference (%)**
COD	12	5	82%
Phenols	0.002	<0.001	67%
TKN	0.6	0.4	40%
Cobalt	0.0002	0.0001	67%
Molybdenum	0.0004	0.0003	29%
September (MW7-I)			
Parameter	**Results (mg/L)**		**Difference (%)**
COD	14	<5	95%
Manganese	0.002	0.003	40%
April (MW12-I)			
Parameter	**Results (mg/L)**		**Difference (%)**
Phenols	0.002	<0.001	67%
Mercury	<0.00002	0.00004	67%
September (MW12-I)			
Parameter	**Results**		**Difference (%)**
COD	35	9	118
Ammonia, total	<0.05	0.52	165
TKN	2	0.7	96
Cobalt	0.0002	0.0001	67
September (MW16-I)			
Parameter	**Results**		**Difference (%)**
COD	29	46	45
Ammonia, total	0.15	0.11	31
TKN	0.5	0.9	57
Iron	0.009	0.014	43
September (MW17-I)			
Parameter	**Results**		**Difference (%)**
Copper	0.0046	0.0037	22
Lead	0.00004	0.0003	29
Zinc	0.007	0.005	33
April (MW36)			
Parameter	**Results**		**Difference (%)**
Chromium	0.002	<0.001	67
Mercury	0.00002	0.0004	67
Nickel	0.0019	0.0014	30

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 +/-0.2 cm). The water level data collected during monitoring events in 2025 was generally consistent with the historical data set, with low horizontal gradients and subtle influence of local topographic conditions across the Site. The 2025 ground water elevations have been included in Appendix C and illustrated on Figures 3 to 6.

5.2.2 Background Ground Water Quality

The background ground water chemistry is currently and has historically been monitored at four upgradient overburden locations (MW9-I, MW11-II, MW12-I & MW33-II) and four bedrock locations (MW10-I, MW11-I, MW33-I & MW34). These monitoring wells are located east of the active waste area and provide a good representation of background conditions (Figure 2).

The overburden water quality can be characterized by a low to moderate level of mineralization, which results in only a few and sporadic exceedances to Ontario Drinking Water Quality Standards (ODWQS), including iron, aluminum, manganese and more consistently elevated hardness concentrations. Furthermore, during the 2025 monitoring program, only TDS, chloride, sodium and iron parameters exceeded the ODWQS within the overburden background locations. These exceedances may be attributed to road salt or naturally elevated mineralization in the area which correlates with historical data. The bedrock water quality indicates a much more mineralized signature likely due to a longer travel time through the host environment. In some instances, the geochemical signature is representative of natural brines with elevated sodium, chloride, silver, hardness, boron, selenium and TDS concentrations. The bedrock water quality also indicates significantly more variability than the overburden water quality owing to the different laterally conductive bedding plane fractures that are being monitored. ODWQS exceedances in 2025 were similar to previous years, including TDS, sodium, selenium, chloride, DOC, hardness, iron and manganese.

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 contains increased 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.

For the Site, the leachate strength is moderate given it's an active Site. An elevated ammonia / total kjeldhal nitrogen (TKN) concentration is noted which attests to the chemically reduced conditions in the landfill. This reduced condition has also affected the valence of iron and manganese species in the landfill as denoted by the elevated concentration of these parameters causing them to be in a reduced dissolved form (see Tables 7 to 10 – Section 5.2.4). Other parameters are slightly elevated (ex., chloride); but to a much lesser extent.

Presently, the best available estimate of leachate quality at the Site is the analytical data obtained from MW14-III. MW14-III is screened within the centre of the waste within Phase I/II, such that it represents the historical leachate signature. The first dedicated leachate sample from the new Phase III cell leachate collection system was collected in 2021, however no sample was collected in 2023, 2024, and 2025 (Figure 2). Leachate sampling is completed by City staff for disposal purposes and on an as needed basis and not a formal requirement within the ECA. Overall, there is some variance in chemistry between the two locations resulting from the differential waste areas, but generally indicate similar leachate conditions. The time series chemistry graphs provided in Appendix G illustrate the concentration of selective leachate parameters at MW14-III for all samples collected between 2008 and 2022. No samples were collected during past three years due to MW14-III having been damaged and in need of repair. MW14-III was repaired in 2024 but was has been noted to be blocked at approximately 1 mbgs such that the previous repairs were not effective.

MW14-II is nested below the waste and has shown elevations in leachate parameter concentrations owing to the connection between the waste and underlying overburden aquifer, albeit at largely reduced concentrations owing to the permeability differential between the compacted wastes and underlying sand unit. Concentrations at this location have been relatively stable over the period or record, although increasing ammonia, DOC, TKN and boron

trends over the past five years, albeit more stable the past two years. As similar trending is not observed within the waste at MW14-III, these trends could be indicative of a compromised annual seal at MW14-II which is creating a conduit for leachate migration. Although surficial repairs have been made to this well nest over the past several years owing to damage cause by the closure activities in the area, it is likely that the monitor may still be compromised at depth. As such, it is recommended that this monitor along with the bedrock interval (MW14-I) be decommissioned to remove the potential connection between the leachate mound and underlying bedrock and overburden aquifers. With the remaining downgradient monitoring network, there is little value in the data collected from the monitoring wells installed immediately below the waste mound.

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 geochemically reducing environment, as is typical of ground water conditions in the immediate vicinity of any landfill Site. This is primarily due to the exhaustion of oxygen supplies 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 [NO_3 to NH_4] and [SO_4 to SO_2 / H_2S] 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 metal ions. This is evident at this Site with the significantly elevated dissolved iron and manganese concentrations.

A final characteristic of the leachate quality is the concentrations over time. The parameter concentrations appear to be relatively consistent, albeit a slight decreasing trend is noted for iron, manganese and sulphate. The reduced sulphate is likely correlated to a subtle increase in the anoxic state of the landfill, while the overall consistency in data would support the landfill being in a quasi steady state condition. The fact ammonia concentrations have remained relatively consistent support the overall limitations in the anoxic conditions. The overall stability in leachate quality is somewhat expected given the age of the facility, limited waste acceptance rate and permeable hydrogeological setting. Eventually, the carbon-rich source present in the landfill will be depleted and will result in geochemical changes that will shift water quality towards natural conditions. These trends are expected to begin to be noted following the shift of the active waste area into the lined waste cell and capping of the remainder of the historic waste mound.

Given these consistent leachate conditions, it also suggests that the level of influence the leachate condition at the 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.

Based on the leachate quality derived at MW14-III, the leachate indicator parameters (LIPs) identified for this Site in 2025 are listed below and have been included in the chemistry graphs (Appendix G) and average concentration tables in subsequent sections of the report. It is noted that these are the same as last year:

-Alkalinity
-Chloride
-Iron
-Sodium
-Total Dissolved Solids (TDS)
-Ammonia
-Boron
-Dissolved Organic Carbon (DOC)
-Manganese
-Sulphate
-Total Kjeldahl Nitrogen (TKN)

5.2.4 Downgradient Ground Water Quality

In 2025, the ground water quality downgradient of the Eldon Landfill Site is monitored via 10 locations (MW7, 8, 17, 19, 27, 29, 30, 31, 32, 36 & 37). Additionally, seven perimeter locations are present only a short distance from the waste area (MW13, 16, 25, 26, 35 & 201). Many of these locations have nested locations that target bedrock as well as the shallow and deep overburden.

A review of the geochemical database has indicated that in general the water quality of the shallow and deeper overburden unit does not show any significant variation from each other aside from some subtle shifts owing to leachate influence in some monitors. Some downgradient bedrock monitors indicate a much different water quality to that of both that of the overburden and leachate and has previously been attributed to naturally saline waters and brines known to be present in the area. As such, leachate influence has not been interpreted to be impacting the bedrock aquifer.

As discussed previously, the overburden materials from the esker complex (sands and gravels) have been established as the primary migration pathway for leachate impacted ground water.

A summary of the average concentrations for leachate indicator parameters in the perimeter wells at the Site is provided in Table 7. Averages from the past five years are used since in

general the geochemical signature is relatively consistent over time. As can be observed, leachate influence is present to the north, west and south in the vicinity of the toe of the landfill. These results support the previously interpreted ground water flow directions to west and radially to the north, while the southern influence has been stated in previous reports to be residual leachate influence from a former waste ash pile that was located in close proximity to MW16 or some limited radial flow from the waste mound. Based on the values shown in Table 7, the southern influence is very limited relative to the north and west although the elevated ammonia concentration at MW17-II may be the result of the combination of the western and radial flow paths.

Despite the above interpretation that the water quality between the shallow and deep overburden locations are similar, Tables 8 & 9 provide summaries of average concentrations for each due to the number of locations. The concentrations provided clearly indicate that although elevated LIPs are noted in the downgradient monitors, it is apparent that attenuative processes are active downgradient of the landfill as concentrations are greatly reduced from those observed in both the leachate and perimeter monitors only a short distance downgradient of the landfill.

As shown, elevated concentrations of LIPs are noted at MW8, 17, 29, 30 & 31 while other locations appear to be similar to background conditions (*i.e.*, MW19, MW27 & MW 201). This distribution would indicate that a leachate plume does extend in the overburden from the Site to the west and northwest. The degree of leachate impacts to the north are marginal and are inconsequential to the south (*i.e.,* MW7, MW19 & MW27). Despite the above noted monitors where impacts are observed, it is noted that the degree of impact varies. MW17 has a much stronger influence than MW29, likely owing to relative proximity, while MW31 is elevated above MW30, which is likely reflective of relative positions from the downgradient leachate plume. MW31 is situated immediately northwest of the waste mound such that it is interpreted to be situated closer to the centre line of the plume, while MW30 is located north of the waste, such that its influence likely represents the outer limits of radial flow from the mound versus a defined northern flow path.

Within the shallow monitors at the western extent of the monitoring network (MW29-III, MW36 & MW37), more significantly elevated DOC, iron and manganese concentrations are observed. Although it is interpreted that the remaining LIP parameter concentrations may indicate a dilute leachate influence, these parameters are elevated above those within the deeper and more proximal locations such that they are interpreted to be sourced to the surficial wetland conditions in which they are located. These anoxic conditions can contribute to elevated iron, manganese and DOC through natural sources.

Based on this interpretation, as well as the previously discussed westerly ground water flow direction, it is interpreted that the centre line of the leachate plume extends in a westerly direction.

The final downgradient aquifer of note is the bedrock unit. Similar to the previous tables, average concentrations for all bedrock monitors are provided in Table 10.

As discussed previously, the bedrock aquifer unit at this Site has a natural saline water quality which has resulted in numerous parameters being elevated, including several typical leachate indicator parameters (*i.e.,* chloride, sodium, etc.). However, as some locations have concentrations above those observed in the leachate, including background locations MW33-I & MW34-I, it is evident that they are natural in source. MW16-I continues to see increased sulphate concentrations exceeding that of the leachate. These naturally elevated parameters, as well as the limited hydraulic conductivity of the bedrock unit at some locations / elevations support that leachate is not impacting this unit. The geochemical uniqueness of the bedrock unit is also illustrated further in Section 5.7.

As there appears to be a measurable leachate influence in the downgradient overburden wells, it was important to look at any potential trending over time with respect to leachate parameter concentrations such that it could be determined how the leachate plume originating from the Site has evolved and will continue to evolve over time. This trending is very important in being able to determine an effective monitoring program for the Site.

These trends are illustrated for several time-trend graphs for LIPs provided in Appendix G. For reference purposes, the entire geochemical database has been appended in Appendix E.

As can be observed in these graphs, trends are evident relating to leachate influence at a number of locations, while there is limited to no seasonal variation noted throughout the monitoring well network.

The leachate trends that are noted are relatively subtle; but are evident for a number of LIPs supporting leachate as the source of the trends. The longer term trends are present at MW13-II and MW25-I with trends extending back as far as 10+ years, although some parameters have begun to show stability the past few years. MW26-II, MW26-III, MW29-II and MW31-I historically indicated similar trending but most parameters have become more stable in the last two to five years. More recent trends were also noted at MW7-I, MW8-I, MW16-II and MW17-I

which began around 2014 - 2017, although have stabilized or begun to decline the last four to five years. In previous reports, subtle trends are also noted at MW35 and MW201, which are newer monitors such that the dataset is not as extensive as the remaining monitoring network, however, has shown more stable concentrations the past two years.

In addition to the above assessment, all 2025 values were compared to ODWQS in the chemistry summary tables (Appendix E) and indicated relatively similar results to previous years. Numerous LIPs are elevated along the perimeter of the landfill, albeit reduced concentrations from those found at MW14. Further downgradient, LIP exceedances included alkalinity, hardness, iron, manganese, nitrate, DOC, and TDS, with the most elevated concentrations and number of exceeded parameters found in the lower lying wetland areas (*i.e.,* MW29, 30, 31, 32, 35, 36 & 37). In these areas, natural anoxic conditions associated with the wetland and decaying seasonal vegetation will contribute to elevated LIPs such as iron, manganese, aluminum and DOC. Therefore, the overall water quality should be considered when establishing which exceedances are attributable to the leachate and which are natural or agricultural related.

Table 7: Average Leachate Indicator Parameter Concentrations – Perimeter Overburden Locations

Parameters	ODWQS	Background		Leachate	South			West		North
		12-I	11-II	14-III	8-I	16-II	17-II	25-II	26-III	13-II
Alkalinity	500	208	203	**1,470**	416	302	446	**812**	**657**	**1,390**
Boron	5	0.01	0.01	3	1	0.2	1	1	0.3	2
Chloride	250	6	6	**327**	35	14	24	111	96	186
Fluoride	1.5	0.1	0.1	1	0.1	0.1	0.1	0.3	0.3	1
DOC	5	2	2	**21**	**6**	3	**12**	**15**	**13**	**32**
Iron	0.3	0.01	0.01	**16**	0.01	0.02	**8**	0.2	**4**	**9**
Manganese	0.05	0.003	0.002	**1**	**0.1**	**0.2**	**1**	**1**	**2**	**0.4**
Sodium	200	3	3	**312**	28	9	30	118	60	**236**
Strontium		0.1	0.1	2	0.3	0.2	0.4	1	1	1
Sulphate	500	10	9	65	70	38	24	27	24	136
TDS	500	229	224	**2,261**	**547**	379	**525**	**1,009**	**825**	**1,956**
Ammonia		0.4	0.2	160	0.2	0.3	16.1	1	0.3	141
TKN		1	0.4	195	1	1	20	2	1	158

ODWQS - Ontario Drinking Water Quality Objectives
Bold and highlighted indicates exceedance
All data in mg/L
Average Concentrations from 2021-2025 (where available)

Table 8: Average Leachate Indicator Parameter Concentrations – Downgradient Shallow Overburden

Parameters	ODWQS	Background		Leachate	Downgradient										
					North				West						
		9-I	33-II	14-III	30-I	31-I	32-I	35	8-I	7-I	19-I	27-II	29-III	36	37
Alkalinity	500	255	233	**1,470**	230	**906**	265	460	416	274	224	229	325	295	355
Boron	5	0.03	0.01	3	0.1	0.5	0.01	0.1	1	0.1	0.1	0.1	0.05	0.1	0.02
Chloride	250	4	4	**327**	42	194	2	63	35	15	8	8	23	14	10
Fluoride	1.5	0.1	0.1	1	0.1	0.5	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DOC	5	2	3	**21**	**10**	**19**	**11**	**7**	**6**	**5**	3	2	4	**13**	**39**
Iron	0.3	0.1	0.05	**16**	**1**	**6**	**1**	0.1	0.01	0.01	0.01	0.01	**1**	**1**	**3**
Manganese	0.05	0.02	0.03	**1**	**0.1**	**0.1**	**0.2**	**2**	**0.1**	0.001	0.002	0.001	**0.1**	**0.1**	**1**
Sodium	200	3	3	**312**	11	156	2	37	28	12	5	5	10	11	12
Strontium		0.3	0.2	2	1	3	0.2	1	0.3	0.2	0.2	0.2	0.3	0.2	0.3
Sulphate	500	15	11	65	10	42	3	31	70	21	17	15	32	29	38
TDS	500	264	247	**2,261**	296	**1,229**	279	**580**	**547**	346	252	260	389	337	418
Ammonia		0.3	0.5	160	0.6	3	0.6	0.3	0.2	0.3	0.2	0.4	0.2	0.4	1
TKN		1	1	195	2	11	4	7	1	1	0.4	1	0.5	5	10

ODWQS - Ontario Drinking Water Quality Objectives
Bold and highlighted indicates exceedance
All data in mg/L
Average Concentrations from 2021-2025 (where available)

Table 9: Average Leachate Indicator Parameter Concentrations – Downgradient Deep Overburden

Parameters	ODWQS	Background		Leachate	Proximal			Downgradient	
		12-I	11-II	14-III	25-I	26-II	201	17-I	29-II
Alkalinity	500	208	203	**1,470**	**515**	387	224	**808**	425
Boron	5	0.01	0.01	3	0.4	0.2	0.1	2	0.2
Chloride	250	6	6	**327**	101	57	9	109	33
Fluoride	1.5	0.1	0.1	1	0.2	0.1	0.1	0.3	0.1
DOC	5	2	2	**21**	**6**	**6**	3	**21**	5
Iron	0.3	0.01	0.01	**16**	**1**	0.01	0.1	**3**	**1**
Manganese	0.05	0.003	0.002	**1**	**0.1**	**1**	0.01	**2**	0.03
Sodium	200	3	3	**312**	66	37	6	114	24
Strontium		0.1	0.1	2	1	0.3	0.1	1	0.3
Sulphate	500	10	9	65	39	41	13	45	38
TDS	500	229	224	**2,261**	**715**	**526**	248	**1,028**	**507**
Ammonia		0.4	0.2	160	0.2	0.2	0.4	2	0.1
TKN		1	0.4	195	1	0.4	1	3	1

ODWQS - Ontario Drinking Water Quality Objectives
Bold and highlighted indicates exceedance
All data in mg/L
Average Concentrations from 2021-2025 (where available)

Table 10: Average Leachate Indicator Parameter Concentrations – Downgradient Bedrock

Parameters	ODWQS	Background				Leachate	Perimeter				Downgradient	
		10-I	11-I	33-I	34-I	14-III	14-I	13-I	26-I	16-I	27-I	29-I
Alkalinity	500	258	226	300	285	**1,470**	496	219	248	348	190	235
Boron	5	0.3	0.1	2	2	3	1	0.03	1	0.4	1	2
Chloride	250	**947**	43	**367**	**799**	**327**	**777**	7	134	155	**1,242**	236
Fluoride	1.5	1	0.1	1	1	1	1	0.1	0.2	0.1	1	**2**
DOC	5	2	4	1	1	**21**	5	2	2	4	1	2
Iron	0.3	0.02	0.03	0.3	**1**	**16**	**30**	0.01	0.02	0.03	0.1	0.02
Manganese	0.05	0.002	0.02	0.01	0.02	**1**	**1**	**0.1**	0.002	**0.2**	0.002	0.002
Sodium	200	**353**	47	**291**	**449**	**312**	**354**	6	96	62	**650**	**227**
Strontium		5	1	2	3	2	5	1	2	1	5	1
Sulphate	500	18	11	3	13	65	11	28	10	92	6	4
TDS	500	**1,800**	312	**924**	**1,566**	**2,261**	**1,764**	244	473	**716**	**2,247**	**632**
Ammonia		2	0.4	2	2	160	13	0.2	2	1	3	1
TKN		2	1	2	3	195	21	0.4	2	2	4	2

ODWQS - Ontario Drinking Water Quality Objectives

Bold and highlighted indicates exceedance

All data in mg/L

Average Concentrations from 2021-2025 (where available)

5.3 Ground Water / Surface Water Interaction

In addition to ODWQS as a comparative standard for the ground water quality results, a select number of shallow overburden monitoring wells have been targeted for comparison to PWQO. This comparison was requested by the MECP such that the locations targeted will follow those presented in previous reports including MW27-II, 29-III, 30-I, 31-I, 32-I, 35, 36 and 37. Table 11 summarizes the exceedances for associated PWQO values at these locations. No samples were obtained from MW32-I due to the well being destroyed and needing replacement.

Table 11: Ground Water PWQO Exceedances Summary Table

Location	Parameter	PWQO	Concentrations Exceeding PWQO	
			April, 2025	September, 2025
MW27-II	No Exceedances			
MW29-III	Iron	0.3	**0.83**	**0.941**
	Aluminum	0.075	**0.09**	**0.08**
MW30-I	Iron	0.3	**1.17**	**1.14**
	Chromium	0.001	<0.001	**0.005**
MW31-I	Iron	0.3	**6.11**	**6.43**
	Aluminum	0.075	0.07	**0.12**
	Boron	0.2	**0.457**	**0.605**
	Cobalt	0.0009	**0.0012**	**0.0015**
	Unionized Ammonia	0.02	**0.03**	<0.01
MW32-I	No Exceedances			
MW35	Cobalt	0.0009	**0.0133**	**0.0076**
	Copper	0.005	**0.0061**	0.003
MW36	Iron	0.3	**0.824**	**1.38**
	Chromium	0.001	**0.002**	<0.001
MW37	Cobalt	0.075	0.0004	**0.0011**
	Iron	0.3	**1.08**	0.058

Notes: All values are in mg/L
* - Concentrations in bold exceed PWQO

In reviewing the PWQO exceedances identified above, all parameters with the exception of iron and boron have been found at similar concentrations in the background locations historically. The boron exceedances at MW31-I likely related to localized leachate influence; however, caution should be exercised when evaluating boron compliance with PWQO as boron is also associated with natural brines and saline ground water which is known to occur in the area. Specifically, this is observed on-Site in background monitoring wells MW33-I (~2 mg/L) and MW34-I (~1.5 mg/L). As well, it is noted that the interim nature of the PWQO criteria for boron, the MECP Standards Branch

supports the use of the Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life (CCME, 2003) value. The CWQG value for boron for long term exposure is 1.5 mg/L, which is met with the measured concentrations at all monitoring locations including MW31-I.

The unionized ammonia exceedance at MW31-I has occurred in the past and is considered related to leachate given its proximity to the waste mound and elevations in other leachate parameter concentrations. However, it is noted despite this exceedance, the surface water quality from the adjacent surface water monitoring location SW1 did not indicate an elevated unionized ammonia concentration (<0.01 mg/) indicating that there is sufficient dilution potential in the shallow ground water and surface water within the feature to attenuate the elevated ammonia at this location.

The iron exceedances have been noted at most locations routinely with the exception of MW27-II and MW35, which are both located beyond the main wetland areas. These downgradient iron exceedances, as discussed previously in the report are interpreted to represent the anoxic wetland conditions rather than leachate impact, which would also be the same for other metals as well. This is most evident when reviewing the iron concentrations relative to distance from the landfill, which show the most elevated concentrations furthest from the waste at MW37 between 2021 and 2025, with iron concentrations decreasing eastwards towards the Site (*i.e.,* MW36 & MW29-III). The one location where there is a clearer correlation between the host water quality and leachate impacts is at MW31-I, which had elevated measurements for most other LIPs, including boron discussed above. On an individual parameter basis, it is difficult to quantify the contributions between the natural and landfill source. Our tendency is to look for multiple parameters like that seen at MW31-I. Where anoxic wetland conditions are present and increasing concentrations with distance downgradient from the waste mound are observed, then this would support more of a natural source opposed to the landfill.

5.4 Surface Water

5.4.1 Surface Water Flow

The monitoring program is in place to assess potential leachate influence in the perceived downgradient area to the west of the waste mound within the Butternut Creek Wetland Complex. Locations are targeted along the tributary that intersects this wetland feature with locations upstream to the north (SW2B), adjacent to the waste mound (SW1) and downstream at SW4. Additionally, surface water location SW5 represents background water quality at the east end of the Site, while SW6 is located downstream of any surface flow originating at the new waste cell area. It is noted that these locations are illustrated on Figure 2. Surface flow is

not typically observed at SW5 and SW6, while flow at the tributary locations is routinely only observed during the spring monitoring events. Flow within this tributary is also noted to be difficult to quantify in the Spring due to areas of the tributary becoming flooded causing braided flow through most of the area. Photos illustrating the surface water locations are provided in Appendix H.

5.4.2 Surface Water Quality

Table 12 summarizes average concentrations of LIPs between up and downstream monitoring locations that surround the landfill

Table 12: Average Leachate Indicator Parameter Concentrations – Surface Water

Parameters	PWQO	Upstream		Leachate	Downstream		
		SW-2B	SW-5	14-III	SW-6	SW-1	SW-4
Alkalinity		223	223	1,470	217	265	216
Boron	0.2	0.01	0.01	**3**	0.02	0.02	0.05
Chloride		10	10	327	23	13	14
DOC		17	17	21	14	25	16
Iron	0.3	**0.5**	**0.5**	**16**	**1**	**1**	**0.4**
Manganese		0.2	0.2	1	0.2	0.5	0.1
Sodium		4	4	312	8	6	7
Strontium		0.2	0.2	2	0.2	0.2	0.2
Sulphate		5	5	65	19	5	11
TDS		246	246	2,261	281	298	254
Ammonia		0.4	0.4	160	0.4	0.8	0.3
TKN		1	1	195	1	2	1

PWQO - Provincial Water Quality Objectives
Bold and highlighted indicates exceedance
All data in mg/L
Average Concentrations from 2021-2025 (where available)

As can be observed in this summary table as well as the 2025 results (Appendix E), there is a small but measurable difference between the up and downstream locations with elevated measurements noted for most LIPs.

The 2025 results were also compared to PWQO as is standard for surface water quality evaluations as summarized Table 13 below. Exceedances during 2025 were limited to iron at SW4, total phosphorus at SW4 and SW6, aluminum at SW4 and SW6 and phenols at SW6. Phenols concentrations exceeded the PWQO at SW6 in April. Phenols concentrations exceeding PWQO have also been noted at upstream locations and therefore were not attributed to leachate. The landfill derived exceedances observed at SW1 were not observed at

the further downstream location SW4. As such, these exceedances are interpreted to be localized. Further downstream impacts are not expected as dilution potential would increase with increased flows following the summer drought conditions. This would indicate that there is limited ability for the landfill to influence the downgradient wetland feature as flow conditions within the feature and baseflow contributions from the remainder of the watershed provide sufficient dilution for any leachate impacted ground water that is discharging into the feature downgradient of the waste mound.

Table 13: Surface Water PWQO Exceedances Summary Table

Location	Parameter	PWQO	Concentrations Exceeding PWQO		
			April, 2025	July, 2025	September, 2025
SW-1 (adjacent to waste mound)	No Exceedances				
SW-2B (upstream)	No Exceedances				
SW-4 (downstream)	Iron	0.03	**0.687**	dry	dry
	Total Phosphorus	0.03	**0.06**	dry	dry
	Aluminum	0.075	**0.1**	dry	dry
SW-5 (upstream)	No Exceedances				
SW-6 (south of waste)	Phenols	0.001	**0.002**	**<0.001**	dry
	Aluminum	0.075	0.05	**0.08**	dry
	Total Phosphorus	0.3	**0.03**	**0.07**	dry

* - Bold indicates PWQO exceedance

5.5 Surface Water Trigger Mechanism Program

Conditions 13.7 of the June 13, 2016 ECA Amendment required that a surface water trigger mechanism be developed following two years of monitoring at the new (Phase III) water monitoring stations SW5 and SW6, which was proposed by Golder as part of the 2018 AMR. Their program proposed separate surface water trigger mechanisms for the Phase I / II Butternut Creek Wetland Complex downstream stations SW1 and SW4 and the Phase III downstream station SW6 located in the low-lying wetland area southeast of Phase III.

The proposed trigger parameters were noted to be key leachate indicator parameters: boron, DOC, iron, manganese and unionized ammonia. These parameters have leachate source concentrations well above background groundwater / surface water concentrations and / or surface water quality guidelines (*i.e.,* PWQO).

Except for ammonia, the proposed trigger concentrations to be applied to the downstream surface water stations were set at 95th percentile of the concentrations obtained for the background stations SW2B (Phase I / II Butternut Creek Wetland Complex) and SW5 (Phase III upstream station). The 95th percentile concentration for a given trigger parameter was noted to be calculated as the average of the concentration data plus two standard deviations. All of the background concentration data for the spring, summer and fall events (combined) was used for the calculations. The resulting trigger concentrations and 2025 concentrations are summarized in the tables below.

Table 14: 2025 Phase I/II Trigger Concentrations

Trigger Parameters	PWQO	Trigger Concentrations	2025 Concentrations					
			SW1			SW4		
			April	August	September	April	July	September
Boron	0.2	0.04	0.019	Dry	Dry	0.04	Dry	Dry
DOC		27	10			10.4		
Iron	0.3	2.0	0.078			0.687		
Manganese		0.87	0.013			0.028		
Ammonia (unionized)	0.02	0.02	<0.01			<0.01		

* - all concentrations in mg/L

** - bold indicates PWQO exceedance – bold & underlined indicates trigger exceedance

Table 15: 2025 Phase III Trigger Concentrations

Trigger Parameters	PWQO	Trigger Concentrations (mg/L)	2025 SW6 Concentrations		
			April	July	September
Boron	0.2	0.09	0.019	0.02	Dry
DOC		12	8.4	**19.8**	
Iron	0.3	0.11	**0.149**	**0.232**	
Manganese		0.08	0.033	**0.145**	
Ammonia (unionized)	0.02	0.02	<0.01	<0.01	

* - all concentrations in mg/L

** - bold indicates PWQO exceedance – bold & underlined indicates trigger exceedance

As per the trigger program outlined by Golder, for additional trigger sampling to be initiated, two consecutive parameter exceedances at a given location need to occur. An additional sample from the trigger exceedance location within one month is required following the second exceedance. If the exceedance is still present, then potential sources of the exceedance need to be assessed within a calendar year. If the exceedance(s) are determined to be landfill sourced, then MECP should be notified and an action plan developed. If determined not to be landfill related then the trigger criteria and / or monitoring locations need to be re-established.

As noted in the summary of trigger data in Table 14, no parameters exceedances were noted in 2025 for Phase I/II. For Phase III, Table 15 indicates exceedances for iron on consecutive events in 2025 at SW6 in the Spring and Summer of 2025, which activated additional trigger samples to be collected at those locations within one month, which was unable to be completed due to the location being dry for the remainder of the year. It's important to note, the sample was obtained from a small, partially evaporated puddle with decomposing organic material as can be seen in Appendix H. Evaporation can concentrate dissolved ions by reducing water volume creating elevated parameters through these processes vs. landfill leachate. This is supported by the fact that other notable LIPs did not show elevations supporting a leachate source. As such, the reported concentrations reflect localized, non-representative conditions rather than broader site conditions. Due To dry conditions at the Site, no follow-up samples were able to be collected in September, and as such will be collected in Spring of 2026. It's noted that Iron and manganese have been historically found in high concentrations at the Site naturally, and that these levels are typically due to seasonal shifts in the overburden, as such they are not of particular concern. All other concentrations for all trigger exceedances, with the exception of iron, all fell within the historical background range and were not associated with any obvious leachate trends based on the remainder of the water quality data. Based on this interpretation, no additional sampling or assessment is proposed to address the exceedances noted in 2025.

Overall, the parameters and concentrations included in the trigger evaluation can be sourced naturally by the anoxic wetland conditions or through the upward gradients between the bedrock and overburden at MW29 (*i.e.,* boron). As such, the trigger program should be evaluated within this context and could potentially be revised in the future if continued exceedances are readily attributable to natural sources.

5.6 Organic Sampling Results

As part of the monitoring program in 2025, volatile organic compounds (VOC) sampling was to be completed from the leachate monitoring wells MW14-I/II/III. Sampling was only completed from MW14-I and MW14-II, as MW14-III is damaged and cannot be sampled. No detections for any organic parameter occurred in 2025.

It is recommended that the organic sampling component of the monitoring program be discontinued.

5.7 Graphical Analysis

An alternate evaluation technique (to identify unique waters) is to compare the major ion chemistry of different waters or waters that have been mixed with two or more sources. A comparison was done of the ratios of major ion constituents between locations in 2025. The assessment of ratios and plotting on a Piper diagram will show the consistency of the geochemical signatures and trends that demonstrate mixing or chemical reactions over time. As a result, the data tends to cluster in one location on the diagram for most monitors. Any deviation from this cluster can be readily observed and evaluated as a possible trend or influence from an alternate source (Appendix I).

For reference, MW9, 10, 11, 12, 33 and 34 were utilized for background signatures in both the bedrock and overburden units. The overburden ground water signature is very well defined and consistent over time, while the bedrock water quality shows a bit more variability, which is likely owed to the varying target depths and natural salty waters observed at some of the locations from the review of the general water quality. The saline waters are most evident at MW10, 11-I, 14-I, 26-I, 27-I, 29-I, 33-I, MW34, & 201. However, as the primary pathway for leachate migration is within the overburden sediments, the plots allow for very clear definition between natural and leachate influenced waters surrounding the Site. For instance, many of the proximal locations are a bit more scattered and / or plot somewhat closer to those observed at the leachate locations (MW14), while some of the distant wells do not indicate any observable variance from the background locations (*i.e.,* MW19 & 27). It should be noted that some subtle leachate influence was noted to the north at MW30 & 31, as well as to the west at

MW29 and possibly MW36 & 37, although these signatures plot closer to background than those observed in the leachate. As such, the anoxic wetland conditions may be contributing to the signature at MW29, 36 & 37 as the overall water quality does not suggest leachate impacts. Given the interpreted ground water flow direction and previous evaluation of the general water quality, this interpretation would seem appropriate.

The surface water stations were also evaluated as the Butternut Creek Wetland Complex has been interpreted to be a likely discharge point for ground water originating from the landfill Site. The signatures plotted for both the upstream and downstream locations are noted to be very similar and are relatively consistent over time. It should also be noted that the signature is similar to that observed in the background overburden water monitoring locations, which would attest to the wetland being at least partially ground water sourced.

5.8 Reasonable Use Policy

Calculations with respect to MECP's Reasonable Use Policy (RUP) B–7 were performed using the 2025 monitoring program results at MW11-II as this location is the furthest removed upgradient from the landfill, such it is viewed as the most representative background location. As with the previous AMRs, RUP assessment will focus on the overburden water quality. Given the relatively poor natural ground water quality in the shallow bedrock surrounding the Site (*i.e.,* elevated TDS, chloride, sodium, ammonia-N and boron at MW33-I & 34-I), drinking water is not considered a reasonable use of the bedrock ground water.

The MECP's Reasonable Use Policy states that, in accordance with the appropriate criteria for particular uses, a change in quality of the groundwater 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 2025, the RUP values were calculated using the values of the 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. The calculated C_m values for the Site were set as the RUP values.

As this assessment is based on compliance at the downgradient property boundaries, MW32-I was used for the north, MW7-I & 19-I were used for the south and MW36 and 37 were utilized for the west. Specific exceedances for RUP are illustrated in the summary chemistry table below.

As with previous years, a number of parameters have exceeded RUP, including hardness, alkalinity, iron, aluminum, manganese, DOC, TDS and nitrate.

Table 16: Reasonable Use Exceedance Summary Table

Location	Parameter	ODWQS	RUP	Concentrations Exceeding RUP*	
				April, 2025	September 2054
MW7-I	DOC	5	3.6	**3**	**6.4**
	TDS	500	362	279	**365**
	Nitrate	10	4.1	**4.72**	**6.26**
	Aluminum	0.10	0.069	0.02	**0.07**
MW19-I	DOC	5	3.6	2.2	**4.2**
MW32-I	DOC	5	3.6	**6.7**	Dry
	Manganese	0.05	0.03	**0.164**	
MW36	Aluminum	0.10	0.069	0.06	**0.07**
	DOC	5	3.6	**12.8**	**6.9**
	Iron	0.3	0.15	0.024	**1.38**
	Manganese	0.05	0.03	**0.055**	**0.084**
MW37	Alkalinity	500	349	**372**	234
	TDS	500	362	**384**	289
	DOC	5	3.6	**47.7**	**46**
	Hardness	500	363	**399**	301
	Iron	0.3	0.15	**1.08**	0.058
	Manganese	0.05	0.03	**0.21**	**0.398**

Notes: All values are in mg/L
* - Concentrations in bold exceed RUP and Underline for ODWQS

Exceedances to the south were limited to TDS, DOC, nitrate and Aluminum at MW7-I, while only one exceedance for DOC detections were observed at MW19-I. Despite these exceedances, the purchase of additional lands to the south for a Contaminant Attenuation Zone (CAZ) (Figure 2) represent an attenuation distance of ~600 m to the CAZ boundary, such that it is expected that these lands would be fully capable of providing the required attenuation. This is supported by the fact that the concentrations at MW19-I, which is only 50 m downgradient of MW7-I have shown reductions in the concentrations for all leachate indicator parameters and only exceed on occasion. It is also noted that the nitrate source may not be related to the landfill as elevated and variable concentrations have been noted across the monitoring network including the background location MW11-II and could as easily be decaying leaf litter given the surrounding natural setting. Elevated nitrate concentrations can be associated with agricultural fertilizers and/or vegetation decay. There are some nearby agricultural properties and on a more regional scale, there are many. As well, the local treed setting surrounding the landfill does contain considerable seasonal vegetation litter as well as peat all around the Site.

MW32-I has been installed after being previously damaged in 2022. Exceedances were observed to the north at MW32-I and include DOC and manganese. However, the LIP concentrations at this location show a significant reduction from those in closer proximity to the waste mound (MW31-I), with the RUP exceedance parameters are more likely sourced to the anoxic wetland conditions (iron, manganese & DOC), such that they are not interpreted to be related to the landfill.

Finally, exceedances were also noted to the west at MW36 and MW37 which included alkalinity, aluminum, hardness, iron, manganese, DOC and TDS. However, similar to the northern compliance well, it is interpreted that natural sources are influencing these locations. The iron, aluminum, manganese and DOC are surmised to be sourced to the anoxic conditions of the wetland, which is more extensive to the west of the landfill. This is supported by the fact that the further downgradient monitor MW37 shows more elevated concentrations than those closer to the landfill (MW36 and MW29). This distribution of concentrations would better support variance of the wetland conditions than influence from the landfill, which would more likely show a declining trend with distance. With respect to the alkalinity, hardness and by association TDS exceedances at MW37, these concentrations similarly do not correlate with those observed further upgradient at MW36 & MW29. Given the consistency between MW36 and MW29-III, the water quality at MW37, which is also screened at a similar shallow overburden depth (<4 m) is reflective of potential natural variability within the area. A few parameters which assist in this interpretation include the ammonia and TKN concentrations. Organic nitrogen is calculated as the difference between the ammonia and TKN values. For leachate impacted waters both the TKN and ammonia are elevated. For nutrient rich waters, the ammonia is negligible; but the TKN is elevated. Another evaluated parameter was the phosphorus concentration. At MW14-III, the typical phosphorus result is minimal. In contrast, wetland monitoring wells show an elevated phosphorus attributed to the organic decay of vegetation and peat in the wetland setting. This decaying vegetation also elevates the DOC concentration in the same way that it shows an elevated organic nitrogen result. Furthermore, there is an additional 120 m of attenuation lands to the west, which would be more than capable of providing attenuative capacity for the Site.

Given these items, it is interpreted that the Site is in compliance with RUP at the northern, western and southern downgradient property boundaries and no further actions are proposed to address these measured exceedances.

5.9 Gas Monitoring

Landfill gas venting occurs naturally through the landfill cover soils and laterally through the unsaturated sands along the perimeter of the waste fill area. The potential lateral extent of subsurface landfill gas migration is typically taken as about 10 times the thickness of the unsaturated zone. Given that the unsaturated zone thickness is less than about 2 m along the perimeter of the Phase I/II waste fill area, the potential lateral migration distance out from the limit of waste is estimated at about 20 m. The nearest residence is 700 m from the waste fill area. Furthermore, the landfill exists within a bedrock trough which daylights to the north and south and falls away to the west into the Butternut Wetland Complex and similarly to the east at the Rockview Road. Based on the Site setting and landfill orientation within this setting it is our opinion that there will be no meaningful impacts.

On-Site buildings/structures (*i.e.*, scale house and equipment shelter) are within the potential zone of landfill gas migration and therefore are constructed as ventilated above grade structures to minimize the accumulation of landfill gas. Landfill staff measure gas levels in the on-Site buildings each day during their shift for health and safety as requested previously by the MECP. To date, no detections in the buildings have occurred. Historically, no landfill gas monitoring has been undertaken at the Site, with the exception of a short term monitoring program requested by the MECP which included landfill gas measurements within the monitoring well network in 2014, 2015 and 2016. The results indicated negligible values at all wells beyond the waste area and the requirement was subsequently omitted from the June 2016 amended ECA as a monitoring requirement.

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 2025 were:

Winter – October 16 to April 30
Wednesdays: 9:00 AM to 5:00 PM
Saturdays: 11:00 AM to 5:00 PM

Summer – May 1 to October 15
Wednesdays: 9:00 AM to 5:00 PM
Saturdays, Sunday & Holiday Mondays: 11:00 AM to 5:00 PM

6.1 2025 Site Maintenance & Activities

The Site inspection logs are included in Appendix J, which were completed as part of the semi-annual monitoring events. Minor amounts of debris were noted along the tree / fence line surrounding the waste mound; however, it is understood that the City undertakes routine litter collection at all active sites such that this is not seen as a concern or require any additional actions. Overall, the Site was noted to be neat and organized with proper waste and diversion material separation occurring.

All monitoring wells except, MW14-I and MW14-III, were noted to be in good condition. During spring sampling MW14-I and MW14-III were blocked and samples were not able to be taken. MW14-I was only able to be sampled in the October monitoring event. Azimuth recommends that MW14-III be fixed or replaced. The protective casing for MW32-I was repaired in 2025.

6.2 2025 Waste Volumes / Site Capacity

A topographic survey of the Site was completed by the City in December 2025, which was compared to a similar survey completed in December 2024 utilizing cut and fill calculations in AutoCAD to generate an annual volume estimate for 2025. A total of 3,760 m^3 including waste and cover material was determined to have occurred between 2024 and 2025. This fill rate for 2025 similar to previous years and close to the annual estimate of ~5,000 m^3, which was based on a waste compaction of 0.5 tonnes/m^3 with an annual estimate of 2,500 tonnes (Golder, 2019). However, that estimate does not include daily cover material. Given the total capacity of Stage 1 of the landfill being estimated at 107,600 m^3 and the total current waste volume in that area at 28,311 m^3, the remaining capacity is 79,289 m^3. With half of the Stage 1 cell currently constructed (about 36,000 m^3), only 7,689 m^3 of workable capacity remains before the remaining half of the Stage 1 cell has to be constructed. Based on a fill rate of approximately 5,000 m^3 per year, the Stage 1 area of Phase III has a remaining lifespan of

approximately 16 years, while the remaining section of Stage 1 will need to be constructed in approximately 1-2 years.

6.3 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 2025.

Table 17: Summary of Recyclable Materials Received in 2025

Item	Number of Units	Units
Recycling (containers)	9.3	Tonnes
Recycling (fibres)	16.4	Tonnes
Leaf and Yard Waste	874	Tonnes
Electronics	12.4	Tonnes
Scrap Metal	22.7	Tonnes
Textiles	1.5	Tonnes

Based on the diversion quantities listed above, and 1,295 tonnes of waste received in 2025, the total divertible material received at the Site in 2025 was approximately 937 tonnes. Of the material received at the Eldon WDS, approximately 70% of the material was separated from the landfill. 63 tonnes were diverted off-site for recycling and 874 tonnes of leaf and yard waste was used or will be used as daily cover material. The leaf and yard waste amount was much larger in 2025 owing to a 220% increase in leaf and yard waste, which is primarily sourced to materials associated with cleanup from the 2025 ice storm.

6.4 Compost Operations

Approximately 874 tonnes of leaf and yard waste was received at the Site in 2025. In accordance with Condition 11.2 of the March 1, 2016 ECA Amendment, only leaf and yard waste that has been fully composted and cured in accordance with Sections 31 to 33 of Regulation 101/94, Part V – Leaf and Yard Waste Composting Sites, may leave the Site for use at other sites or by the general public. In 2025, none of the leaf and yard waste received was fully composted and diverted from the Site. All material was partially composted and reused for daily cover mixed with soil at a ratio of 3 parts soil to 1 part screened partially composted material in accordance with Condition 11.7 of the March 1, 2016 ECA Amendment.

6.5 Active Waste Area

During 2025, the active landfilling area was Stage 1 of Phase III, which was initiated at the end of 2019. As the new lined cell for Stage 1 of Phase III has a leachate collections system, the City

pumps and hauls leachate collected to the Lindsay Sewage Treatment Facility as required when levels achieve a specific threshold. During 2025, no leachate was removed from the Site as the levels within the collection system did not increase to a level where removal was required.

6.5.1 Daily Cover

Daily cover was applied on Wednesdays and Saturdays. These days correspond to the two days of Site operation each week between October 16 and April 31. During the period of May 1 and October 15, the Site was open on Wednesday, Saturday, Sunday and Holiday Mondays and therefore there was one and possibly two operating days that daily cover was not applied to landfill waste on that day.

Condition 7(8) of the March 1, 2016 ECA permits alternative materials to soil for daily cover provided that an application with supporting information is provided to the MECP for review and approval. The alternative daily cover materials must be non-hazardous and perform at least as well as soil in relation to the following functions:

1) Control of blowing litter, odours, dust, landfill gas, gulls, vectors, vermin and fires;
2) Provision of an aesthetic condition of the landfill: and
3) Provision of a suitable surface for equipment access to the active tipping face.

In addition, the alternative daily cover must be compatible with the design of the Site for ground water protection, leachate management and landfill gas management. In the event that alternative daily cover materials are used, the ECA requires that a suitable stockpile of clean granular cover soil equivalent to 20% of the daily cover quantity required annually be maintained at the Site as a contingency measure.

Alternative daily cover used at the Site has historically consisted of a mix of sand with finished leaf and yard waste compost. The March 1, 2016 ECA now allows the use of partially composted leaf and yard waste, wood chips and wood grindings instead of finished compost. Partially composted material mixed with sand at a ratio of 1 part compost to 3 parts sand was used as alternative daily cover throughout 2025.

6.5.2 Interim Cover

In areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 300 mm of soil cover or an approved thickness of alternative cover must be placed. The March 1, 2016 amendment of the ECA allows, on a two year trial basis, the use

of a mixture of 1 part screened partially composted leaf and yard waste to 3 parts sand as interim cover. Partially composted leaf and yard waste is defined as material that has not been composted in strict accordance with Sections 31 to 33 of Regulation 101/94, Part V-Leaf and Yard Waste Composting Sites. The compost promotes the establishment of vegetation on the interim cover, which in turn helps to protect the cover from erosion. The City is currently using this combination of material for daily and interim cover and has indicated that the material is performing well.

6.5.3 Final Cover

In areas where landfilling has been completed to final contours, final cover consisting of a minimum 600 mm thick layer of soil of "medium permeability" overlain by 150 mm of topsoil (vegetative cover) is required by the ECA. The final cover is to be placed progressively as areas of the landfill reach final contours. To date, final cover has been placed entirely over the Phase I/II waste area, with the most recent additions taking place over the central, north and eastern sections of the waste mound in 2021. Vegetation was noted to continue to establish throughout 2025.

7.0 CONCLUSIONS

Based on the interpretation presented in the above sections, the environmental setting at the Eldon Landfill Site is well understood based on over 25 years of performance monitoring. The data trends over this monitoring period have generally yielded a relatively consistent geochemical signature at most monitoring locations, although some subtle long term trends are present at select locations owing to the fact that the Site is still active. More localized trending is present in closer proximity to the waste mound as anticipated, and is determined to represent changes in the operations within waste mound over time. Despite these trends, the relative consistency would indicate that underlying environmental setting has characteristics that facilitate a steady state condition. Results from monitoring wells to the west appear to illustrate a leachate influence, although at much lower concentrations than those observed in closer proximity wells. However, a careful interpretation of the Site data would suggest that the data more accurately reflects the wetland setting present in the Butternut Creek Wetland Complex.

Attenuative processes at this Site are pronounced and have abated the influence of the contaminant plume that is detected downgradient of the landfill. It is also recognized that the contaminant flux from the landfill Site is rate-limited by the waste permeability and this mass flux into the underlying aquifer system is limiting and appears to be effectively dispersed such that a significant contaminant plume away from the landfill Site has not been measured.

It is our opinion that transverse dispersion of the leachate within the bedrock trough in the vicinity of the landfill accounts for the detections noted in the overburden to the north of the waste fill area. However, this transverse migration pathway is limited by the extent of the bedrock trough within the waste fill area. Therefore, there is no meaningful concern with contaminant migration to the north or south of the Site based on the existing geologic setting.

The primary pathway for leachate influenced ground water to migrate from the Site is within the overburden aquifer unit with a dynamic flow direction that is controlled by the bedrock trough with ridges to the north and south as well as the presence of the esker complex that is situated within this trough. As such, ground water originating at the Site would be directed to the west and to the northwest within the incised bedrock channel that is cut through this Site. The edge of the bedrock trough to the south also prevents over burden ground water migration in this direction which is evidenced by the very limited leachate influence at MW7 and MW8 despite their proximal locations to the waste mound.

Despite the dominant westerly flow path and permeable overburden materials, there is a significant reduction in leachate indicator parameter concentrations with distance from the waste mound indicating that the attenuative capacity of the Site is sufficient.

Surface water quality from the Butternut Creek Wetland Complex has also shown to be relatively consistent over time and only indicates a subtle shift for a couple of parameters between upstream and downstream locations indicating that the surface water quality may be influenced very subtly by leachate or some degree of natural variability in the ground water downgradient of the Site. The surface water system at the Site conveys excess waters during the Spring and therefore is considered to be a "losing" stream once it drops into the bedrock trough. The stream displays an ephemeral nature and the corridor is often dry in the summer months since the granular soils in the trough readily drain the water course where modern alluvium is thin or absent. The leachate influence in surface waters is most evident during dry periods when the surface flow is minimal creating limited flow within the surface water regime. This coupled with ground water elevations sufficient to contribute to the stream corridor facilitate this flux reversal occasionally detected. Overall, the limited concentrations observed at both downstream locations, the wetland complex provides adequate attenuation to potential leachate influenced ground water discharge.

The downgradient ground water quality at this Site reflects a wetland environment. Elevated earth elements like iron and manganese concentrations are the result of the geochemically reduced conditions created by the fully saturated environment. The wetland complex is also

organically rich and significantly forested. Evidence of this is measured by both the Organic Nitrogen / Organic Carbon results at ground water monitoring locations within the wetlands.

Immediately surrounding the landfill (*i.e.,* perimeter), leachate influence will increase the dissolution potential of naturally occurring metal ions. As such, the dissolved phase ground water plume attributable to the landfill Site is likely depleted with respect to dissolved oxygen accounting for the geochemically reduced conditions, similar to the natural condition noted above owing to the wetland environment. It is expected that the ground waters discharge to the wetland complex from the landfill and this would result in a valence change and hence precipitation of the excess iron and manganese at or near the interface point. The downstream water quality in the wetland would suggest this interaction has no detrimental effect on the surface water quality based on the monitoring to date. The net result is that the landfill Site is incapable of influencing the surrounding natural environment to any measurable extent owing to the geologic setting that exists at this location. The large Contaminant Attenuation Zone present to the west would also allow for further attenuation of leachate influence downgradient of the existing monitoring wells, prior to the western compliance point such that there would be no expectation of trigger or RUP exceedances at the western property. The natural anoxic conditions of the Site and nutrient rich peat soils represent the source of the elevated parameters noted at MW36 and MW37. Similarly, although there are perceived non-compliance issues to the north of the Site at MW30 & 31 more related to the landfill, the presence of the bedrock ridge and additional distance to the northern compliance boundary would limit any non-compliance issues to the north.

8.0 RECOMMENDATIONS

The monitoring program recommended for 2026 is identified in Table 18 and is the same as what has been proposed in previous years; however, the changes will not be undertaken until they are endorsed and formally approved by the MECP as per Conditions 12 and 13 of the ECA.

The changes include a reduction to the number of background locations be targeted and the deeper leachate monitoring wells MW14-I & 14-II should be abandoned as they have become compromised and represent conduits for enhanced leachate migration into the underlying aquifers. MW14-III could be maintained as a leachate monitoring wells to track leachate quality and leachate mound conditions following formal closure of the Phase I/II area.

As for the background locations, there are currently four bedrock and four overburden locations included in the monitoring program, with several of these having been sampled for the entire period of record. Given the size of the background data set for both overburden and

bedrock and relatively stability in water quality over time, it is proposed that water quality samples from the background locations could be limited to a single sample from both a bedrock and overburden well on an annual basis (*i.e.,* MW11-I & 11-II). The remaining background locations could be maintained for ground water level measurements (*i.e.*, MW9-I, 10-1, 12-I, 33-I, 33-II).

It is noted that other monitoring wells should be considered for removal from the monitoring program in the near future if leachate conditions stabilize as a result of the closing and capping of the Phase I/II area. These potential locations include the bedrock monitoring wells (MW13-I, 16-I, 26-I, 27-I, 28-I & 29-I) as they do not represent the primary leachate migration pathway and are known to have natural mineralization as well as some redundant downgradient monitors where there are intervals at these nested locations that better represent leachate migration (MW17-II, 26-II & 29-II), while MW35 also represents a redundant shallow overburden location given its close proximity to MW26-III.

Finally, the sporadic and limited priority pollutant organic detections within the leachate over the period of record would indicate there is likely a limited organic source with the landfill. As such, it is proposed that this program could be eliminated or at least curtailed such that only an annual sample collected from MW14-III be collected which would assist to track the potential changes in conditions over time.

The proposed monitoring surface water monitoring program is proposed to remain the same to what was completed in 2025 with no proposed changes from what is currently approved.

It is noted that the proposed reduced program will only be implemented following endorsement and approval from the MECP.

Table 18: Proposed 2026 Monitoring Program

Monitoring Station	Frequency	Parameters
Ground Water MW7-I, MW8-I, **MW9-I**, **MW10**, **MW12**, MW13-I, MW13-II, **MW14-I**, **MW14-II**, MW14-III*, MW16-I, MW16-II, MW17-I, **MW17-II**, MW19-I, MW25-I, MW25-II, MW26-I, **MW26-II**, MW26-III MW27-I, MW27-II, MW27-III, MW29-I, **MW29-II**, MW29-III, MW30-I, MW31-I, MW32-I, **MW33-I, MW33-II**, MW34, **MW35**, MW36, MW37, MW201 & New Southwest RUP compliance MW	Semi-Annual (April / May & September / October)	Total Kjeldahl Nitrogen (TKN), Nitrate, Nitrite, Ammonia, Alkalinity, Hardness, Chloride, Calcium, Magnesium, Total Phosphorus, Sulfate, Phenols, Dissolved Organic Carbon (DOC), Aluminum, Arsenic, Barium, Boron, Cadmium, Chromium, Cobalt, Copper, Fluoride, Iron, Lead, Manganese, Mercury, Nickel, Potassium, Sodium, Zinc, pH, Conductivity, Total Dissolved Solids (TDS), Chemical Oxygen Demand (COD). * VOCs – annual during Fall event Water Level Measurements
MW11-I & MW11-II	Annual (September / October)	
Surface Water SW1, SW2B, SW4, SW5 & SW6	Seasonal (April / May, July & September / October)	Total Kjeldahl Nitrogen (TKN), Nitrate, Nitrite, Ammonia, Alkalinity, Hardness, Chloride, Calcium, Magnesium, Total Phosphorus, Sulfate, Phenols, Dissolved Organic Carbon (DOC), Aluminum, Arsenic, Barium, Boron, Cadmium, Chromium, Cobalt, Copper, Fluoride, Iron, Lead, Manganese, Mercury, Nickel, Potassium, Sodium, Zinc, pH, Conductivity, Total Dissolved Solids (TDS), Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD), Free Cyanide, Colour, Turbidity, Total Suspended Solids (TSS)

Notes: **Bold** and underlined monitoring locations could be considered for removal from the program

9.0 REFERENCES

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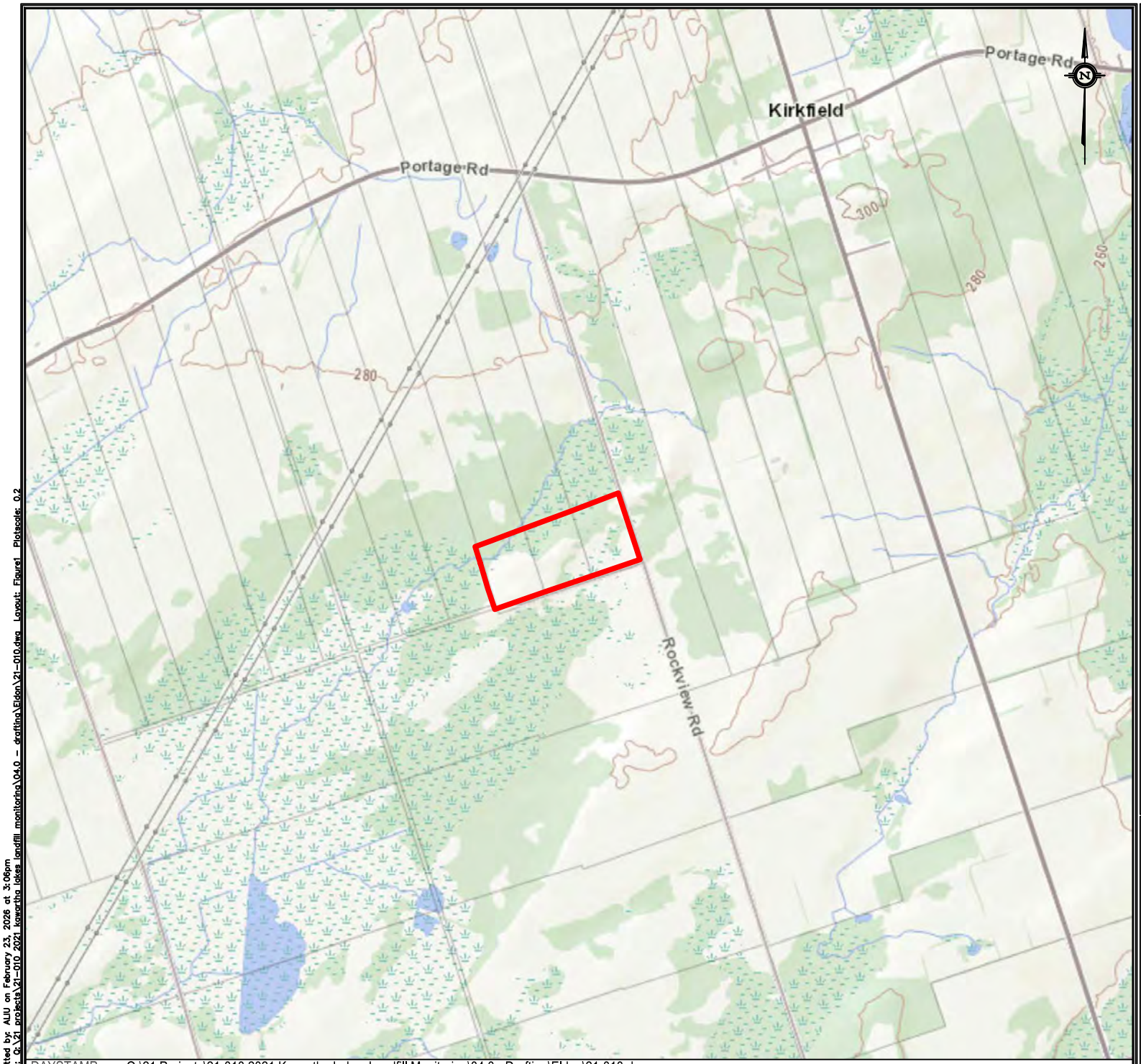
FIGURES



LEGEND:

Approx. Property Boundary

REG MAP

250m 0 750m

HORIZONTAL SCALE 1: 25,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

Eldon Waste Disposal Site
Eldon, Kawartha Lakes, ON

DATE ISSUED: *February 2026*	Figure No.
CREATED BY: *JLM*	
PROJECT NO.: *26-010*	1
REFERENCE: *MNRF*	

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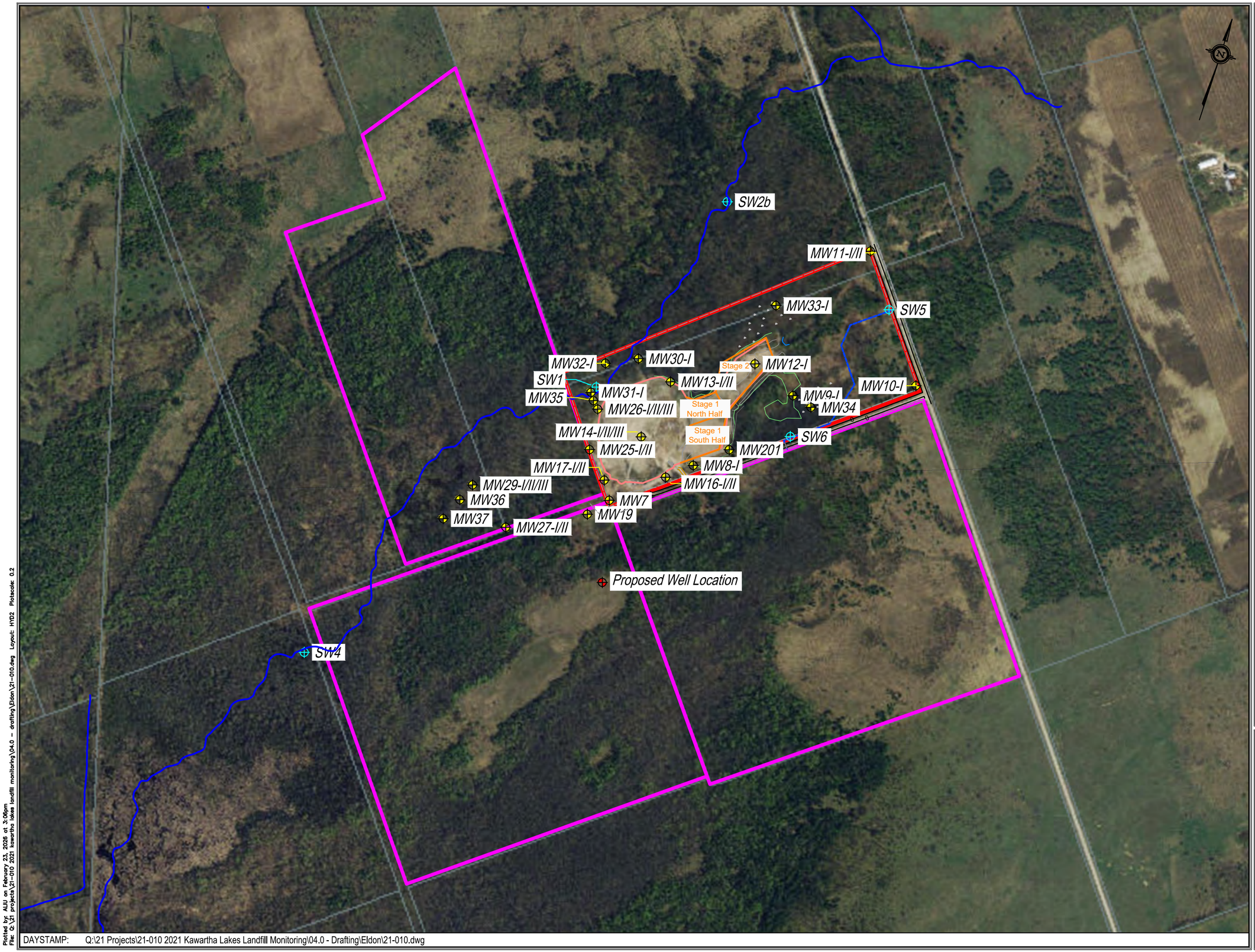

LEGEND:

- Watercourse
- Primary Topographic Contour Line
- Secondary Topographic Contour Line
- Contaminant Attenuation Zone (CAZ)
- Property Boundary
- Approved Waste Footprint
- Fence
- Low Wet Area
- Monitoring Well Location
- Proposed Monitoring Well
- Surface Water Sampling Location

100m 0 200m

HORIZONTAL SCALE 1:7,500

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Monitoring Locations

Eldon Landfill,
Eldon, Kawartha Lakes, ON

DATE ISSUED:	February 2026	Figure No.
CREATED BY:	JLM	2
PROJECT NO.:	26-010	
REFERENCE:	MNRF	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Eldon\21-010.dwg

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File: Q:\21 projects\21-010 2021 kawartha lakes landfill monitoring\04.0 - drafting\Eldon\21-010.dwg Layout: H1D2 Plotscale: 0.2

LEGEND:

- Contaminant Attenuation Zone (CAZ)
- Property Boundary
- Existing Limit of Waste
- Approved Waste Footprint
- Fence
- Approximate Tree Line
- Low Wet Area
- Monitoring Well Location
- Proposed Monitoring Well
- 268.17 Ground Water Elevation (masl)
- 260.00 Ground Water Contour (masl)
- Inferred Ground Water Flow Direction

50m 0 100m

HORIZONTAL SCALE 1: 3,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Overburden Ground Water Contours
Spring 2025

Eldon Landfill,
Eldon, Kawartha Lakes, ON

DATE ISSUED:	February 2026	Figure No.
CREATED BY:	JLM	3
PROJECT NO.:	26-010	
REFERENCE:	MNRF	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Eldon\21-010.dwg

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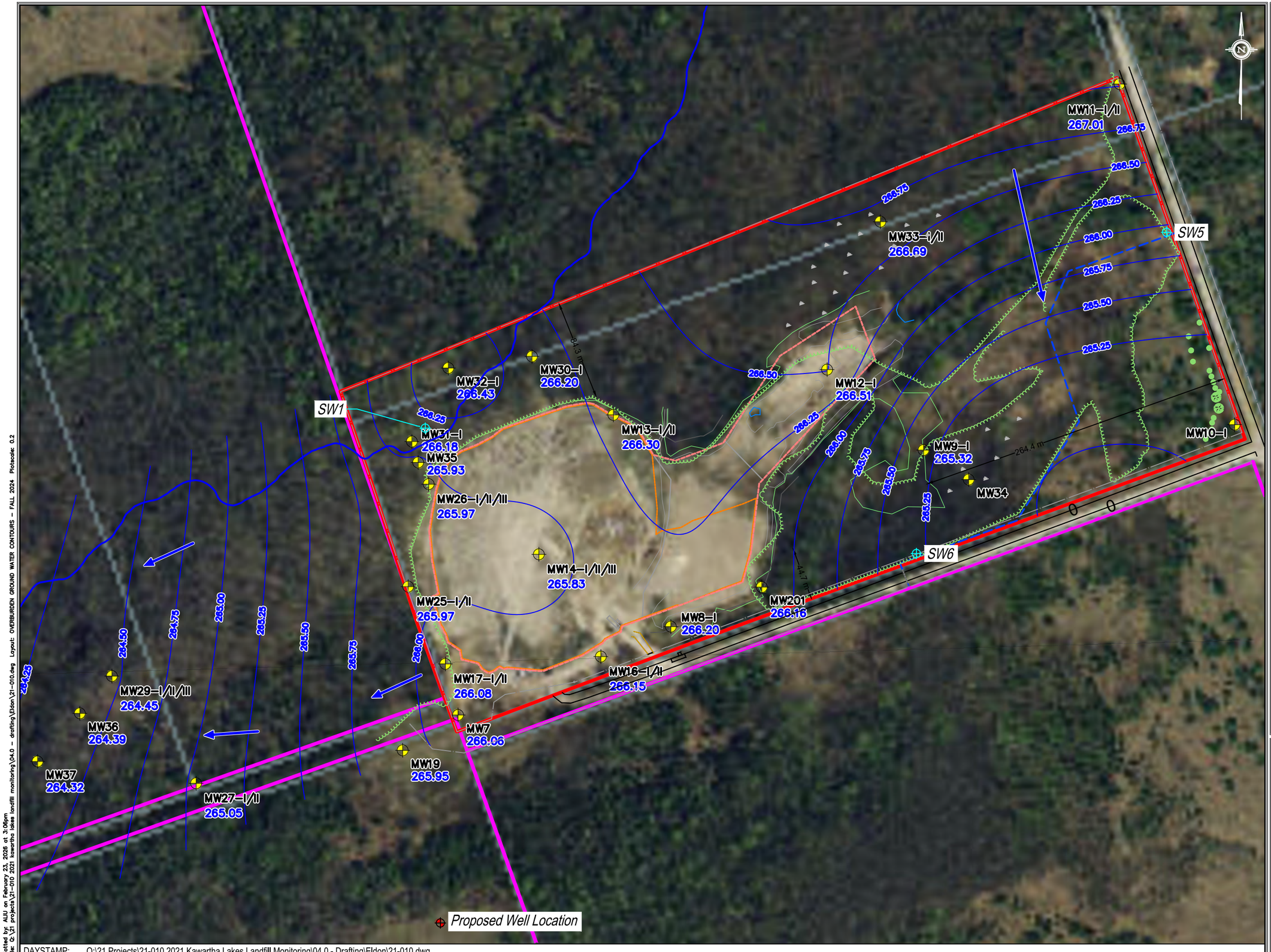

LEGEND:

- Contaminant Attenuation Zone (CAZ)
- Property Boundary
- Existing Limit of Waste
- Approved Waste Footprint
- Fence
- Approximate Tree Line
- Low Wet Area
- Monitoring Well Location
- Proposed Monitoring Well
- 268.17 Ground Water Elevation (masl)
- 260.00 Ground Water Contour (masl)
- Inferred Ground Water Flow Direction

50m 0 100m

HORIZONTAL SCALE 1:3,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Overburden Ground Water Contours
Fall 2025

Eldon Landfill,
Eldon, Kawartha Lakes, ON

DATE ISSUED:	February 2026	Figure No.
CREATED BY:	JLM	4
PROJECT NO.:	26-010	
REFERENCE:	MNRF	

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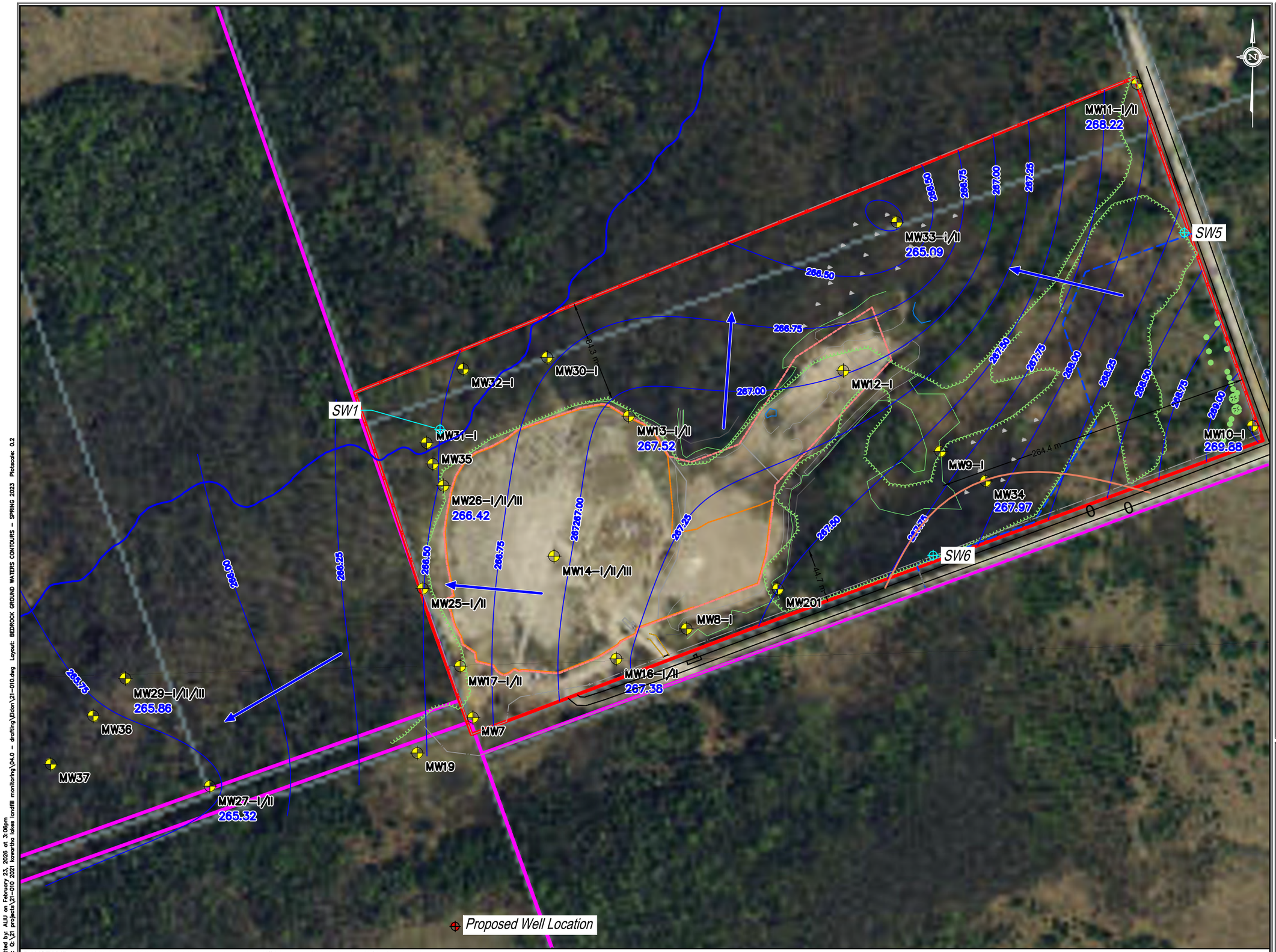

LEGEND:

- Contaminant Attenuation Zone (CAZ)
- Property Boundary
- Existing Limit of Waste
- Approved Waste Footprint
- Fence
- Approximate Tree Line
- Low Wet Area
- Monitoring Well Location
- Proposed Monitoring Well
- 268.17 Ground Water Elevation (masl)
- 260.00 Ground Water Contour (masl)
- Inferred Ground Water Flow Direction

50m 0 100m

HORIZONTAL SCALE 1:3,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Bedrock Ground Water Contours
Spring 2025

Eldon Landfill,
Eldon, Kawartha Lakes, ON

DATE ISSUED:	February 2026	Figure No.
CREATED BY:	JLM	5
PROJECT NO.:	26-010	
REFERENCE:	MNRF	

Plotted by: ALIU on February 23, 2026 at 3:06pm Plotscale: 0.2
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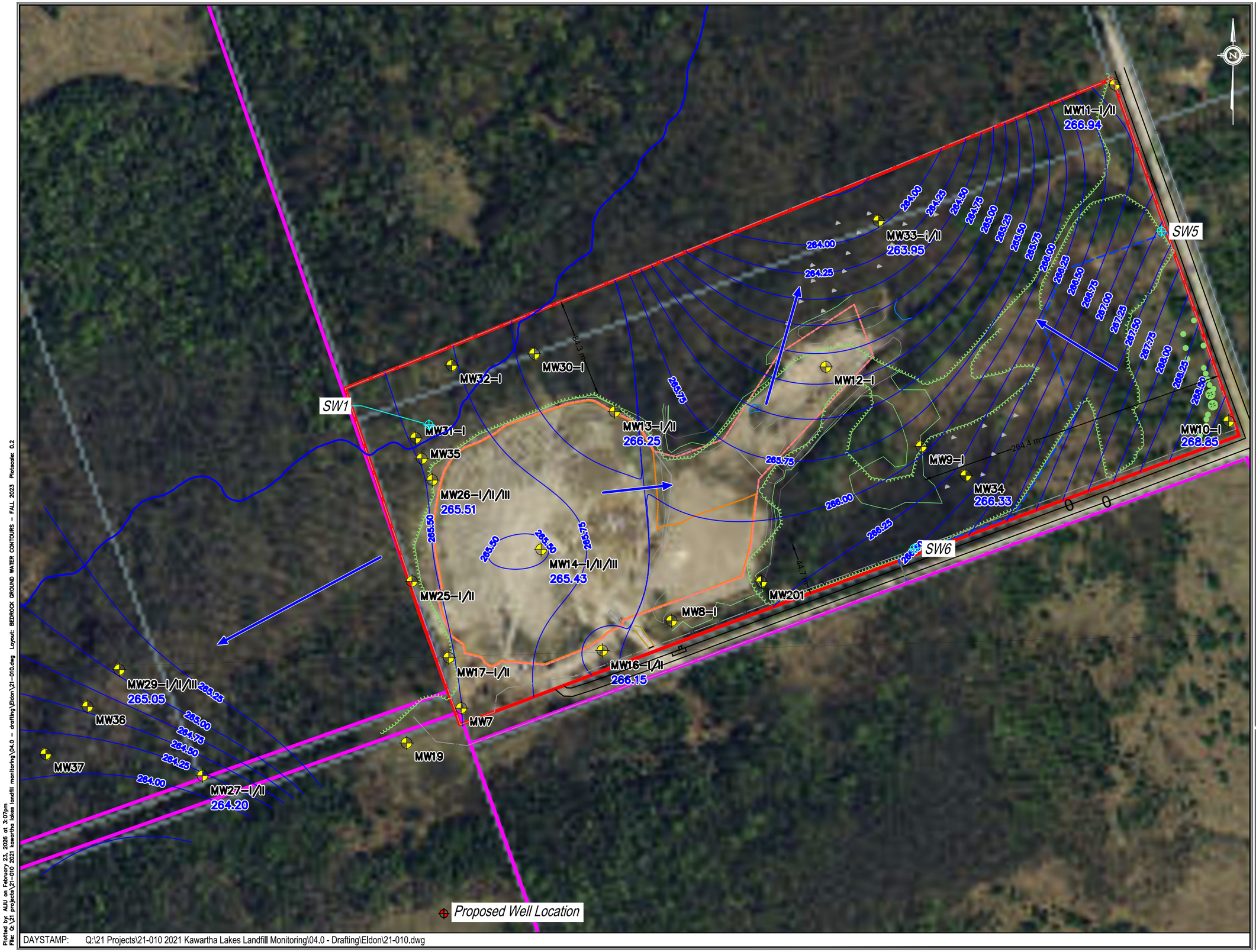

LEGEND:

- Contaminant Attenuation Zone (CAZ)
- Property Boundary
- Existing Limit of Waste
- Approved Waste Footprint
- Fence
- Approximate Tree Line
- Low Wet Area
- Monitoring Well Location
- Proposed Monitoring Well
- 268.17 Ground Water Elevation (masl)
- 260.00 Ground Water Contour (masl)
- Inferred Ground Water Flow Direction

50m 0 100m

HORIZONTAL SCALE 1: 3,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Bedrock Ground Water Contours
Fall 2025

Eldon Landfill,
Eldon, Kawartha Lakes, ON

DATE ISSUED:	February 2026	Figure No.
CREATED BY:	JLM	6
PROJECT NO.:	26-010	
REFERENCE:	MNRF	

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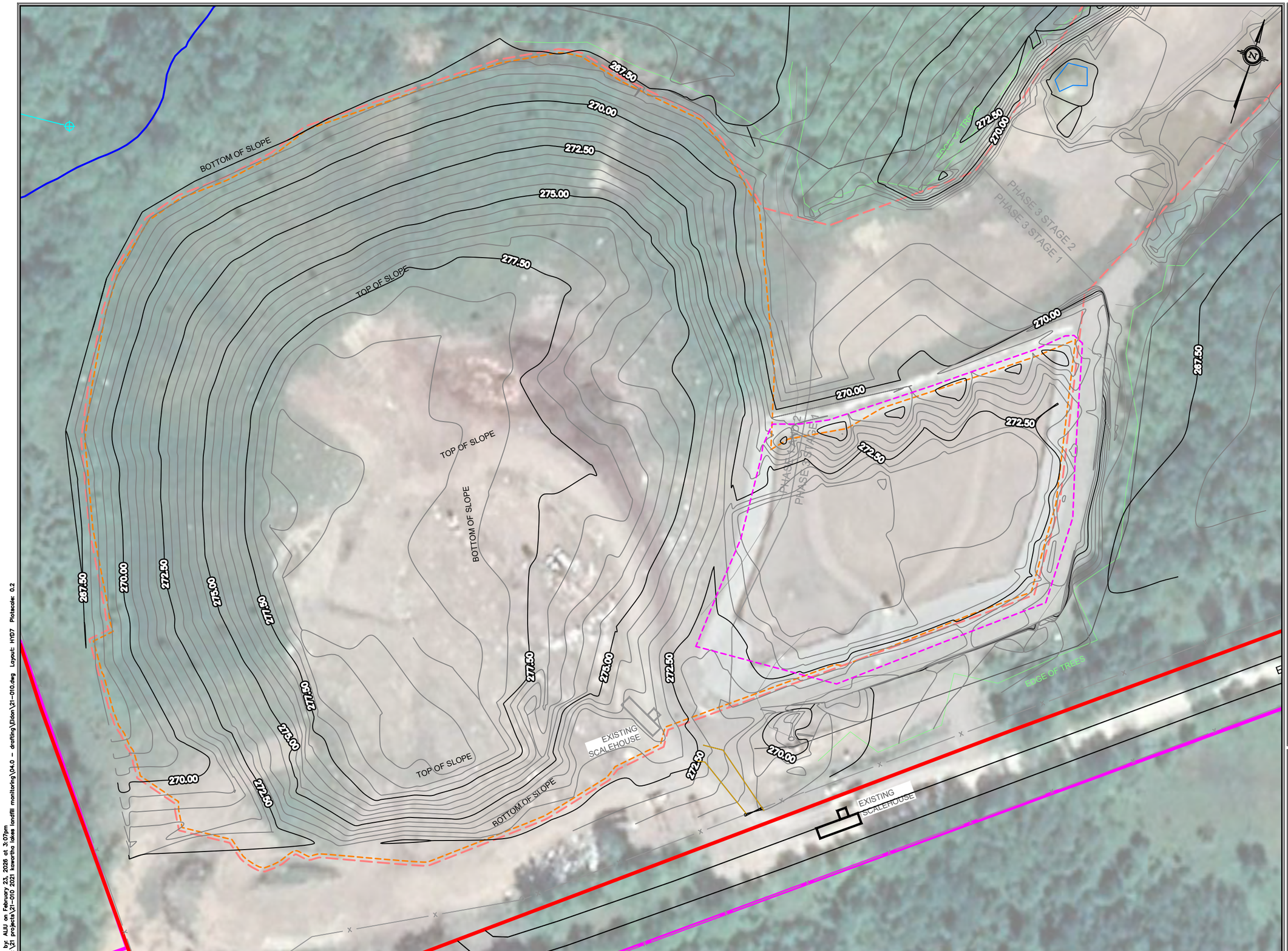

LEGEND:

- Watercourse
- Primary Topographic Contour Line
- Secondary Topographic Contour Line
- Contaminant Attenuation Zone (CAZ)
- Property Boundary
- Existing Limit of Waste
- Active Waste Area
- Approved Waste Footprint
- Fence

100m 0 200m

HORIZONTAL SCALE 1:7,500

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Site Layout

Eldon Landfill,
Eldon, Kawartha Lakes, ON

DATE ISSUED:	February 2026	Figure No.
CREATED BY:	JLM	7
PROJECT NO.:	26-010	
REFERENCE:	MNRF	

DAYSTAMP: Q:\21 Projects\21-010 2021 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Eldon\21-010.dwg

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APPENDICES

Appendix A: ECA and MECP Communications
Appendix B: Borehole Logs
Appendix C: Ground Water Elevation Tables
Appendix D: Laboratory Certificate of Analysis
Appendix E: Chemistry Summary Tables
Appendix F: Chemistry Over Time Graphs
Appendix G: Surface Water Photos
Appendix H: Piper Diagrams
Appendix I: Site Inspection Forms
Appendix J: MECP Landfill Reporting Submission Forms

APPENDIX A

ECA and MECP Communications

RECEIVED

OCT 13 2011

OFFICE OF THE CITY CLERK
CITY OF K.L.

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDED PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A321004
Issue Date: September 28, 2011

The Corporation of the City of Kawartha Lakes
26 Francis St
Post Office Box, No. 9000
Lindsay, Ontario
K9V 5R8

Site Location: Eldon Waste Disposal Site
311 Rockview Road, RR 3 Rd Lot 26, Part 32, 33, Concession 6, South of Portage Road
Kawartha Lakes City,
K0M 2B0

You have applied in accordance with Section 27 of the Environmental Protection Act for approval of:

the use and operation of 8.1 hectare waste disposal/transfer/composting site within a total site area of 59.8 hectares.

This Certificate revokes all Terms and Conditions on Provisional Certificate of Approval No. A321004 , which was issued to the Township of Eldon on February 21, 1980, and subsequent notices of amendment issued to the Corporation of the City of Kawartha Lakes.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

"*Certificate* " means this entire provisional Certificate of Approval document, issued in accordance with section 39 of the *EPA,* and includes any schedules to it, the application and the supporting documentation listed in Schedule "A";

"Contaminating Life Span" means,

(a) in respect of a landfilling site, the period of time during which the site will produce contaminants at concentrations that could have an unacceptable impact if they were to be discharged from the site, and

(b) in respect of a landfilling site and a contaminant or group of contaminants, the period of time during which the site will produce the contaminant or a contaminant in the group at concentrations that could have an unacceptable impact if they were to be discharged from the site;

"Compost" means the material produced by an aerobic Composting of leaf and yard waste and which has been tested to show compliance with the Compost Quality Criteria set out in Schedule "B" of this *Certificate* and can be used as a soil additive or for other similar uses on an unrestricted basis;

"Composting" means an aerobic biological process, conducted under controlled engineered conditions, designed to decompose and stabilize organic matter. Simple exposure of solid organic waste under non-engineered conditions resulting in uncontrolled decay is not considered composting;

"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;

"Finished Compost" means leaf and yard waste that has been Composted and fully cured and is considered ready for sampling and testing for compliance with the Compost Quality Criteria. Finished Compost is considered a waste until testing for the Compost Quality Criteria is completed and compliance with the criteria is demonstrated;

"Immature Compost" means leaf and yard waste which has been composted in windrows and screened. Composted leaf and yard waste is considered an Immature Compost until it has been fully cured and is ready for compliance testing for Compost Quality Criteria. Immature Compost is considered a waste;

"Leaf and Yard Waste" means waste consisting of leaves, yard brush, natural Christmas trees and other plant materials but not tree limbs or other woody materials in excess of 7 centimetres in diameter and wood waste as defined in *Ontario Regulation 347;*

"Ministry" means the Ontario Ministry of the Environment;

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

"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 *Certificate,* 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 from time to time;

"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* .

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

"*Regulation 347* " or "*Reg. 347* " means Regulation 347, R.R.O. 1990, made under the EPA, as amended;

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

"rejected compost" means waste that has gone through the composting process but did not meet the time, temperature or turning requirements specified in Condition 11 (11) or exceeds the parameters listed in Schedule "B". Rejected compost is considered a waste and must be handled and disposed in accordance with Ontario Regulation 347;

"*Site* " means the entire 59.8 hectare waste disposal site, consisting of an 8.1 hectare landfilling area and the 65 m x 75 m composting area shown in Items No. 6 and No. 14 of Schedule "A", and includes buffer lands and contaminant attenuation zone, located at Lot 26, Concession 6 and Part of Lots 32 and 33, South of Portage Road, geographic Township of Eldon, City of Kawartha Lakes, approved by this *Certificate.*

"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 *Certificate.*

You are hereby notified that this 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

Certificate and shall ensure that any person authorized to carry out work on or operate any aspect of the *Site* is notified of this *Certificate* 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 *Certificate* .

In Accordance

(3) Except as otherwise provided by this *Certificate,* 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 *Certificate,* and the conditions of this *Certificate,* the conditions in this *Certificate* 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 *Certificate* are severable. If any condition of this *Certificate,* or the application of any condition of this *Certificate* to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this *Certificate* shall not be affected thereby.

Other Legal Obligations

(8) The issuance of, and compliance with, this *Certificate* 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 *Certificate* .

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 *Certificate* the person remains responsible for any contravention of any other condition of this *Certificate* 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 *Certificate,* 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 sixty (60) days of the date of the issuance of this *Certificate,* 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 *Certificate* to each person acquiring an interest in the *Site* as a result of the dealing.

Inspections by the Ministry

(16) 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 *Certificate* 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 *Certificate* are kept;

(b) to have access to, inspect, and copy any records required to be kept by the conditions of this *Certificate;*

(c) to inspect the *Site,* related equipment and appurtenances;

(d) to inspect the practices, procedures, or operations required by the conditions of this *Certificate;* and

(e) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Certificate or the *EPA,* the *OWRA,* the *PA,* the *SDWA* or the *NMA.*

Information and Record Retention

(17) Any information requested, by the *Ministry,* concerning the *Site* and its operation under this *Certificate,* including but not limited to any records required to be kept by this *Certificate* shall be provided to the *Ministry,* upon request, in a timely manner. Records shall be retained for *contaminating life span* of the *Site* except for as otherwise authorized in writing by the *Director.*

(18) 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 *Certificate* 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 *Certificate* or any statute, regulation or other legal requirement; or

(b) acceptance by the *Ministry* of the information's completeness or accuracy.

(19) The *Owner* shall ensure that a copy of this *Certificate,* in its entirety and including all its Notices of Amendment, and documentation listed in Schedule "A", are retained at the *Site* at all times.

2. SITE OPERATION

Operation

(1) The *Site* shall be operated and maintained at all time including management and disposal

of all waste in accordance with the *EPA, Regulation 347,* and the conditions of this *Certificate.* 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 *Certificate;*
(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 and composting areas.

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

(4) 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

(5) Burning of waste at the *Site* is prohibited.

Site Access

(6) (a) Waste shall only be accepted from 8:00 a.m. to 8:00 p.m. seven days a week.
(b) The *Owner* may provide alternative hours of operation for the *Site* provided that the proper notice is given to the public and is posted at the gate to the *Site.*
(c) The *Owner* shall inform the *District Manager* of the changes to the hours of operation two (2) weeks prior to implementation.

(7) 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 *Certificate.*

(8) 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

(9) No waste shall be received, landfilled or removed from the *Site* unless a site supervisor or 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.

(10) 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.

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 *Certificate* .

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 all 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 and retain in a centralized location, 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. This report shall be made available to Provincial Officers upon request.

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 three (3) business days 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.*

(4) All equipment and materials required to handle the emergency situations shall be:
   (a) kept on hand at all times that waste landfilling and/or handling is undertaken at the *Site;* and
   (b) adequately maintained and kept in good repair.

(5) The *Owner* shall ensure that the emergency response personnel are familiar with the use of such equipment and its location(s).

6. RECORD KEEPING AND REPORTING

Daily Log Book

(1) A daily log shall be maintained in written format and shall include the following information:
   (a) the type, date and time of arrival, hauler, and quantity (tonnes) of all industrial and commercial 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.

(2) Any information requested, by the *Director* or a *Provincial Officer,* concerning the *Site* and its operation under this *Certificate,* including but not limited to any records required to be kept by this *Certificate* shall be provided to the *Ministry,* upon request.

Daily Inspections and Log Book

(3) An inspection of the entire *Site* and all equipment on the *Site* shall be conducted each day the *Site* is in operation to ensure that: the *Site* is secure; that the operation of the *Site* is not causing any nuisances; that the operation of the *Site* is not causing any adverse effects on the environment and that the *Site* is being operated in compliance with this *Certificate.* Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the *Site* if needed.

(4) A record of the inspections shall be kept in a daily log book that includes:
   (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.

(5) 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.

Annual Report

(6) 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 March 31st of the year following the period being reported upon.

(7) 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; previously existing site facilities; facilities installed during the reporting period; location of the composting pad; 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) a summary of the monthly and total annual quantity (tonnes) of waste received at the *Site* on a quarterly basis for final disposal and on a monthly basis for composting;

(g) a summary of finished compost transferred from the *Site* and the amount and destination of rejected compost.

(h) analytical results of samples taken from the finished compost;

(i) a summary of any complaints received and the responses made;

(j) a discussion of any operational problems encountered at the *Site* and corrective action taken;

(k) any changes to the Design and Operations Report and the Closure Plan that have been approved by the *Director* since the last *Annual Report;*

(l) a report on the status of all monitoring wells and a statement as to compliance with *Ontario Regulation 903;*

(m) any other information with respect to the *Site* which the *Regional Director* may require from time to time;

(n) an assessment of the groundwater quality as it relates to the RUPO and ODWO;

(o) an assessment of the surface water quality with respect to the PWQO/Guidelines; and

(p) a summary and analysis of all hydraulic and geochemical monitoring results.

7. LANDFILL DESIGN AND DEVELOPMENT

Approved Waste Types

(1) (a) Only solid non-hazardous municipal waste as defined under *Reg.* 347 shall be accepted at the *Site* for landfilling;

(b) The disposal of the putrescible municipal waste shall be limited to areas of Phase 1 and Phase 2 of the Site which are on the north side of the longitudinal axis of the esker that is located at the Site;

(c) Subject to the limitations of Condition 7 (1) (b), the disposal of waste referred to in Condition 7(1) (b) may continue until final contours are achieved.

(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 *Certificate*.

(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) business day from their occurrence.

Capacity

(4) The calculated theoretical maximum volumetric capacity of the *Site*, consisting of the waste, daily cover and intermediate cover, but excluding the final cover is 1,123,000 cubic metres.

(5) Phase I and Phase II are approved for the design, operation and use of 152,000 cubic meters (total air space volume including final cover) of the calculated theoretical maximum volumetric capacity of the *Site* as described in Items in Schedule "A".

(6) (a) The *Owner* shall bring the *Site* into compliance (as defined in condition 8 (2)) with respect to surface and groundwater prior to the development and use of the Phase III as detailed in Item 18 in Schedule "A".

(b) The *Owner* shall submit to the District Manager a Report with details of the monitoring showing compliance with respect to surface and groundwater.

(c) Within fourteen (14) days of receiving the written correspondence from the *District Manager* confirming that the *District Manager* is in agreement with the details and the *Site* is in compliance, the *Owner* shall forward a copy of the correspondences from the *District Manager* and all other correspondences and responses related to the request, to the *Director* requesting the *Certificate* be amended to approve the development and use of Phase III.

Service Area

(7) Only waste that is generated within the boundaries of the City of Kawartha Lakes may be accepted at the *Site.*

Cover

(8) Alternative materials to soil may be used as weekly 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 *Certificate.* 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.

(9) Cover material shall be applied as follows:

(a) Periodic Cover - Weather permitting, deposited waste shall be covered at least twice weekly in a manner acceptable to the *District Manager* so that no waste is exposed to the atmosphere. Suitable stock pile of clean granular cover material, which shall be equivalent to 20% of the quantity of the required annual daily cover material shall be maintained at the *Site* as a contingency measure;

(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 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.

(10) (a) Contaminated soil, construction and demolition fines, petroleum hydrocarbon contaminated soils received at the *Site* shall be solid non-hazardous waste as per

Regulation 347, EPA.

(b) The quantity of the daily alternative cover material stored at the *Site* shall not exceed the 20% (percent) limit of the annual volume of waste received at the *Site.*

8. LANDFILL MONITORING

Landfill Gas

(1) (a) The *Owner* shall operate the *Site* in accordance with the landfill gas management program outlined in Section 4.4.4 of Item 6 of Schedule "A".

(b) The *Owner* shall ensure that any buildings or structures at the *Site* contain adequate ventilation systems to relieve any possible landfill gas accumulation. 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 the monitoring programs outlined in documents listed in the attached Schedule "A".

(4) A certified Professional Geoscientist or Engineer possessing appropriate hydrogeologic training and experience shall execute or directly supervise the execution of the groundwater monitoring and reporting program.

Groundwater Wells and Monitors

(5) The *Owner* shall ensure that all groundwater monitoring wells which form part of the

monitoring program are properly capped, locked and protected from damage.

(6) Where landfilling is to proceed around monitoring wells, suitable extensions shall be added to the wells and the wells shall be properly re-secured.

(7) 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.

Trigger Mechanisms and Contingency Plans

(8) (a) Trigger mechanisms shall be in accordance with documents in the Schedule "A".

(b) Contingency plan in the event of a confirmed exceedence of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate shall be in accordance with documents in the of Schedule "A".

(9) In the event of a confirmed exceedence of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate, the *Owner* shall immediately notify the *District Manager*, and an investigation into the cause and the need for implementation of remedial or contingency actions shall be carried out by the *Owner* in accordance with the approved trigger mechanisms and associated contingency plans. These actions shall be completed by November 2012.

(10) 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 and completed by September 1, 2013:

(a) The *Owner* shall notify the *District Manager*, in writing of the need to implement contingency measures, no later than 30 days after confirmation of the exceedences;

(b) 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 *District Manager* for approval; and

(c) The contingency measures shall be implemented by the *Owner* upon approval by the *District Manager* .

(11) 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 *Certificate.*

Changes to the Monitoring Plan

(12) The *Owner* may request to make changes to the monitoring program(s) to the *District Manager* in accordance with the recommendations of the annual report. The *Owner* shall make clear reference to the proposed changes in separate letter that shall accompany the annual report.

(13) Within fourteen (14) days of receiving the written correspondence from the *District Manager* confirming that the *District Manager* is in agreement with the proposed changes to the environmental monitoring program, the *Owner* shall forward a letter identifying the proposed changes and a copy of the correspondences from the *District Manager* and all other correspondences and responses related to the changes to the monitoring program, to the *Director* requesting the *Certificate* be amended to approve the proposed changes to the environmental monitoring plan prior to implementation.

(14) In the event any other changes to the environmental monitoring program are proposed outside of the recommendation of the annual report, the *Owner* shall follow current ministry procedures for seeking approval for amending the *Certificate.*

9. CLOSURE PLAN

(1) At least 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 descriptions 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;

(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. 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 the high wind events; and

(c) if necessary to prevent litter, waste storage areas shall be covered during the high winds events.

(2) The *Owner* shall provide a segregated area for the storage of *Refrigerant Appliances* so that the following are ensured:

(a) all *Refrigerant Appliances* have been tagged to indicate that the refrigerant has been removed by a licensed technician. The tag number shall be recorded in the log book and shall remain affixed to the appliance until transferred from the *Site;* **or**

(b) all *Refrigerant Appliances* accepted at the *Site*, which have not been tagged by a licensed technician to verify that the equipment no longer contains refrigerants, are stored segregated, in a clearly marked area, in an upright position and in a manner which allows for the safe handling and transfer from the *Site* for removal of refrigerants as required by O.Reg. 189; and

(c) all *Refrigerant Appliances* received on-site shall either have the refrigerant removed prior to being transferred from the *Site* or shall be shipped off-site only to facilities where the refrigerants can be removed by a licensed technician in accordance with O.Reg. 189.

(3) Propane cylinders shall be stored in a segregated area in a manner which prevents cylinders from being knocked over or cylinder valves from breaking.

(4) 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 bunker; and
   (d) immediately, in the event that waste is creating an odour or vector problem.

(5) The *Owner* shall notify the appropriate contractors that waste and recyclable wastes that are to be transferred off-site are ready for removal. Appropriate notice time, as determined by the contract shall be accommodated in the notification procedure.

(6) Collection, storage and transfer electronic waste in accordance shall be in accordance with the document titled "Organizing & Operating waste Electrical and Electronic Equipment (WEEE) collection sites" dated September 27, 2009" prepared by Ontario Electronic Stewardship.

11. COMPOSTING

(1) The *Owner* shall ensure that composting is conducted in accordance with the "Interim Guidelines for the Production and Use of Aerobic Compost in Ontario" dated November 1991 or its latest amendment.
(2) Waste accepted for composting shall be limited to leaf and yard waste. Leaf and yard waste received at the Site shall not exceed the maximum concentrations for metals listed in Schedule "B".
(3) Not more than 200 tonnes of leaf and yard waste shall be accepted in any given day and the total amount of leaf and yard waste accepted annually shall be limited to 2000 tonnes.
(4) No more than 2000 tonnes of leaf and yard waste, Immature Compost and finished compost shall be stored on *Site* at any one time.
(5) All activities associated with the composting operation shall take place on the designated pad constructed of wood chips.
(6) Waste shall be incorporated into windrows within thirty (30) days of receipt.
(7) The Owner may store *Finished Compost* on *Site* for a maximum of twelve (12) months after the curing phase is complete.
(8) Rejected compost shall be disposed of at a waste disposal site approved by the Ministry, or its equivalent if in jurisdictions outside of Ontario, to accept such waste.
(9) Windrows shall be arranged in a manner which allows equipment access for efficient turning of windrows and to allow access for emergency vehicles.
(10) Windrows shall be constructed at bulk densities and heights which promote aerobic conditions.

(11) All waste being composted shall be held at a temperature of at least 55 °C for a minimum of fifteen (15) cumulative days to ensure proper bacteria growth and pathogen inactivation. During this period, the temperature of the waste being composted shall be monitored and recorded on each day the *Site* is in operation. Windrows shall be turned a minimum of five (5) times and the temperature must reach 55 °C after the fifth turning. During the remainder of the composting process, the temperature shall be monitored and recorded on a weekly basis at a minimum.

(12) Compost shall be cured for a minimum of six (6) months.

(13) For the first two (2) years of operation, a representative composite sample of compost that has completed the curing phase shall be taken at least once per year and analyzed for the parameters listed in Schedule "B". After two (2) years of operation, the sampling schedule may be adjusted with the prior written consent of the *District Manager*.

(14) Finished compost may be released from the *Site* for unrestricted use. Rejected compost which meets the parameters listed in Schedule B, but does not meet the requirements of Condition 11 (11), may be returned to the composting process as waste for re-processing.

(15) At a minimum, the *Owner* shall keep daily records of the operations (e.g. windrow turning, screening, sampling etc) taking place that day, the atmospheric conditions and the windrow reading temperatures.

(16) With respect to the compost sampling required by Condition 11 (13), the *Owner* shall maintain the following records as a minimum: sample collection locations and volume of the samples collected, day and time of collection, sample handling procedures, parameters tested for and the resulting concentrations, name of the laboratory facility doing the testing, and conclusions drawn with respect to the results of the monitoring and testing.

SCHEDULE "A"

1. Letter dated June 29, 1998 from the County of Victoria to Approvals Branch, Ministry of the Environment (MOE).

2. Letter dated October 21, 1997 from George Rocoski, Waste Reduction Branch, MOE, to Rancor Wood Recycling Inc.

3. Completed and signed form for Application for Approval of a Waste Disposal Site dated June 27, 1998 and attachments.

4. Comments from John Allen dated July 22, 1998 to Approvals Branch, MOE, regarding performance of similar alternative cover material at Brockville Landfill Site.

5. Comments dated July 27, 1998 on the use of construction/demolition material as an alternative landfill cover from Peterborough District Office, MOE, to Approvals Branch, MOE.

6. "Eldon Landfill Site Design and Operation Report," prepared for the Corporation of the County of Victoria, prepared by Gartner Lee Limited dated February, 2000.

7. "Geological and Hydrogeological Investigation Eldon Landfill Site," prepared for the Corporation of the County of Victoria Township prepared by Gartner Lee Limited dated February, 2000.

8. Application for a Provisional Certificate of Approval for a Waste Disposal Site, dated October 22, 2001, and signed by P. Jeffrey Seaton, P. Eng.

9. Letter dated November 6, 2001 from P. Jeffrey Seaton, City of Kawartha Lakes, to Ian Parrott, MOE, re: City of Kawartha Lakes Eldon Landfill, Certificate of Approval A321004, Request for Amendment to Operating Days.

10. Copy of May 6, 2000 Edition of the Ontario Gazette, containing the Order of the Commission for the City of Kawartha Lakes made under the Municipal Act, R.S.O. 1990, c.M. 45.

11. Application for a Provisional Certificate of Approval for a Waste Disposal Site dated January 27, 2006 and signed by Bill Pickard, Manager of Solid Waste Services, including the attached Plan 57R-8474, showing the location of the CAZ.

12. Application for a Provisional Certificate of Approval for a Waste Disposal Site dated February 1, 2008 and signed by Mr. Bill Pickard.

13. Design and Operations Report, City of Kawartha Lakes, Composting Facility at Eldon Landfill, prepared by Totten Sims Hubicki Associates, dated December 21, 2007.

14. Figure 2, Eldon Landfill Site, Proposed Compost Facility Location, dated November 2007.

15. Letter from K. Dechert, Totten Sims Hubicki Associates, to Environmental Assessment and Approvals Branch, dated May 5, 2008, re: addendum to Section 6 of the Design and Operations Report.

16. Application for a Provisional Certificate of Approval for a Waste Disposal Site dated October 1, 2007 and signed by Bill Pickard.

17. Letter from Terry La Chapelle, B.Sc., P.Geo, Senior Geologist, Gartner Lee Limited, dated October 1, 2007 addressed to the Environmental Assessment and Approval Branch, re: Application to Continue to Receive Municipal (Putrescible) Waste at the Eldon Landfill Site.

18. The report titled "Phase III Feasibility Assessment Eldon Waste Disposal Site" dated November 26, 2010, prepared by Cambium Environmental Inc.

19. Application for a Certificate of Approval for a Waste Disposal Site dated December 10, 2010 signed by David Kerr, Manager-Environmental Services, The Corporation of the City of Kawartha Lakes.

This Schedule "B" forms part of Certificate of Approval No. A321004.

SCHEDULE "B"

Parameter	**Maximum concentration**
Metals	
arsenic	13 ppm
cadmium	3 ppm
chromium	210 ppm
cobalt	34 ppm
copper	100 ppm
lead	150 ppm
mercury	0.8 ppm
molybdenum	5 ppm
nickel	62 ppm
selenium	2 ppm
zinc	500 ppm
Foreign material	
plastic particles greater than 3 mm in any direction	1%
non-biodegradable material greater than 3 mm in any direction	2 %

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), (17), (18) and (19) is to clarify the legal rights and responsibilities of the *Owner* and *Operator* under this Certificate of Approval.

2. The reasons for Condition 1(3) is 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 Certificate of 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(16) 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 Certificate of 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* .

SITE OPERATION

8. The reasons for Conditions 2(1), 2(4) 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.

9. The reason for Conditions 2 (2) and 2(3) is to ensure that users of the *Site* are fully aware of important information and restrictions related to *Site* operations and access under this *Certificate.*

10. The reasons for Condition 2(5) are open burning of municipal waste is unacceptable because of concerns with air emissions, smoke and other nuisance affects, and the potential fire hazard and to make sure burning of brush and wood are carried out in accordance with Ministry guidelines.

11. The reasons for Condition 2(6), 2(7) and 2(8) are to specify the hours of operation for the landfill site and a mechanism for amendment of the hours of operation, as required.

12. The reasons for Condition 2(9) and 2(10) 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.

EMPLOYEE TRAINING

13. 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

14. 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

15. 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.

16. Conditions 5(3), 5(4) and 5(5) 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

17. 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 Certificate of Approval (such as fill rate, site capacity, record keeping, annual reporting, and financial assurance requirements), the *EPA* and its regulations.

18. The reason for Conditions 6(4) and 6(5) is to ensure that detailed records of *Site* inspections are recorded and maintained for inspection and information purposes.

19. The reasons for Conditions 6(6) and 6(7) 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

20. The reason for Conditions 7(1) to 7(7) inclusive 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.

21. Condition 7(8) is to provide the Owner the process for getting the approval for alternative daily and intermediate cover material.

22. The reasons for Condition 7(9) are to ensure that daily/weekly 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.*

23. The reasons for Condition 7(10) is to ensure the *Owner* uses alternative daily cover material in accordance with Ministry standards, and to ensure the long-term protection of the health and safety of the public and the environment.

LANDFILL MONITORING

24. 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*.

25. Condition 8(2) is included to provide the groundwater and surface water limits to prevent water pollution at the *Site*.

26. 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.

27. Conditions 8(5), 8(6) and 8(7) are included to ensure the integrity of the groundwater monitoring network so that accurate monitoring results are achieved and the natural environment is protected.

28. Conditions 8(8) to 8(11) 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.

29. Conditions 8(12), 8(13) and 8(14) are included to streamline the approval of the changes to the monitoring plan.

CLOSURE PLAN

30. 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.

WASTE DIVERSION

31. Condition 10 is included to ensure that the recyclable materials are stored in their temporary storage location in a manner as to minimize a likelihood of an adverse effect or a hazard to the natural environment or any person.

COMPOSTING

32. Condition 11 was added to ensure that composting is undertaken in a manner which does not result in a nuisance or a hazard to the health and safety of the environment or people.

This Provisional Certificate of Approval revokes and replaces Certificate(s) of Approval No. A321004 issued on February 21, 1980 and associated notices.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, 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 approval or each term or condition in the 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.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

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, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Section 39, *Environmental Protection Act*
Ministry of the Environment
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) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.

DATED AT TORONTO this 28th day of September, 2011

Tesfaye Gebrezghi, P.Eng.
Director
Section 39, *Environmental Protection Act*

RM/
c: District Manager, MOE Peterborough
Dave Bucholtz, Cambium Environmental Inc.

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A321004
Notice No. 1
Issue Date: March 1, 2016

The Corporation of the City of Kawartha Lakes
12 Peel St
Lindsay, Ontario
K9V 5R8

Site Location: Eldon Waste Disposal Site
311 Rockview Road, RR 3 Rd Lot 26, Part 32, 33, Concession 6, South of Portage Road
Kawartha Lakes City,
K0M 2B0

You are hereby notified that I have amended Approval No. A321004 issued on September 28, 2011 for use and operation of a landfill site , as follows:

The definitions for Compost, Finished Compost, Immature Compost, Leaf and Yard Waste are hereby revoked and replaced with the following:

"Coarse Leaf and Yard Waste" means leaf and yard waste that consists of tree trunks, stumps, limbs or other woody material in excess of 7 centimetres in diameter;

"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; and

"Partially Composted Leaf and Yard Waste" is leaf and yard waste which has not been composted in strict accordance with Sections 31 to 33 of Regulation 101/94, Part V- Leaf and Yard Waste Composting Sites and can not be defined as Compost.

I. Schedule B is hereby removed.

II. Condition 7.(1)(b) and Condition 11 are hereby revoked and replaced with the following Conditions:

11. COMPOSTING OPERATIONS

(1) Waste accepted for composting or grinding/chipping shall be limited to leaf and yard waste, tree trunks, stumps, branches, leaves and brush, not to exceed 150 tonnes in any given day and not to exceed 500 tonnes annually.

(2) Only leaf and yard waste that has been composted and cured in accordance with Sections 31 to 33 of Regulation 101/94, Part V - Leaf and Yard Waste Composting Sites, and can be defined as Compost, may leave the Site for use at other sites or by the general public.

(3) All activities associated with the composting operations shall take place on the designated pad with measures in place to control storm water run off and leachate.

(4) Leaf and yard waste segregated fine material may not be stored for more than five days before it is placed in windrows.

(5) Coarse Leaf and Yard Waste that is segregated for grinding/chipping shall be processed once per year at a minimum.

(6) Partially Composted Leaf and Yard Waste, wood chips and wood grindings may be used as alternative daily cover at the Site.

(7) The Owner is permitted to use as a trial, for a period not exceeding 2 years from the issuance of this Approval, a mixture of Partially Composted Leaf and Yard Waste as interim cover. The mixture shall consist of 3 parts soil, one part screened Partially Composted Leaf and Yard Waste.

(8) At a minimum, the Owner shall keep weekly records of all the operations related to composting (e.g. windrow turning, screening, sampling etc.), including quantities and source of leaf and yard waste received at the Site, and include this information in the Annual Report.

II. Condition 12 is hereby added to the Approval:

12. The Owner shall locate the scales in a new temporary location in accordance with drawings provided by Angela Porteous, S.C., Regulatory Compliance Officer, City of Kawartha Lakes, in an email dated February 5, 2016, to permit disposal of waste in previously approved footprint and utilizing the approved capacity.

The reason for this amendment to the Approval is to improve composting operations at the Site and to permit for temporary re-location of the scale house so that remaining capacity can be utilized.

The following items are added to Schedule A:

20. Environmental Compliance Approval Application received on Mar 2, 2014, and letter dated October 21, 2013 addressed to Ms. Cathy Curlew, Senior Environmental Officer, MOECC, signed by Mr. David Kerr, P.Geo., Manager of Environmental Services, City of Kawartha Lakes.

21. Email dated February 5, 2016, from Angela Porteous, S.C., Regulatory Compliance Officer, City of Kawartha Lakes, containing drawings for scale house relocation.

This Notice shall constitute part of the approval issued under Approval No. A321004 dated September 28, 2011, as amended.

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
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**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 1st day of March, 2016

Dale Gable, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

NP/
c: District Manager, MOECC Peterborough
Heather Dzurko, The Corporation of the City of Kawartha Lakes

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A321004
Notice No. 2
Issue Date: June 13, 2016

The Corporation of the City of Kawartha Lakes
12 Peel St Lindsay, P.O. Box 9000
Kawartha Lakes, Ontario
K9V 5R8

Site Location: Eldon Waste Disposal Site
311 Rockview Road, RR 3 Rd Lot 26, Part 32, 33, Concession 6, South of Portage Road
City of Kawartha Lakes
K0M 2B0

You are hereby notified that I have amended Approval No. A321004 issued on September 28, 2011 and amended on March 1, 2016 for use and operation of a 5.5 hectare waste disposal, transfer and composting site within a total site area of 100.5 hectares including contaminant attenuation zone , as follows:

In accordance with the Environmental Compliance Approval Application dated November 3, 2015, approval is hereby granted for use of Phase III in accordance with the supporting documentation, terms and conditions of this Environmental Compliance Approval;

For the purpose of this Environmental Compliance Approval:

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

"Contaminant Attenuation Zone" means lands described as:

- 43 ha parcel of land, Roll #165116004001600, E 1/2LT 25 Con 6, Eldon, City of Kawartha Lakes;
- 21.5 ha parcel of land, Roll #165116004007900, PT LT 33 Con S Portage Rd, Eldon, PT 4; and
- 16.8 ha parcel of land, Roll #165116004007805, PT LT 32 Con S Portage Rd, Eldon, PTS 1 & 2, 57R9894, S/T E12174, City of Kawartha Lakes.

I. The term *"rejected compost"* defined in the Approval issued on September 28, 2011 is hereby revoked.

II. Conditions 7.(6)(a), 7.(6)(b), and 7.(6)(c) are hereby revoked.

III. The following conditions are added to the Approval:

13. PHASE III DESIGN, DEVELOPMENT AND OPERATION

1. The Owner shall ensure that Phase III is designed and operated in accordance with Items 23 through 29 of Schedule A and terms and conditions of this Approval.

2. The final capacity of Phase III, including waste and daily cover, shall not exceed 143,900 cubic meters.

3. Liner and leachate collection system shall be designed, constructed and monitored in accordance with details outlined in Section 6.3, of Item 23, Schedule A and modifications outlined in Items 26 and 28, Schedule A, including addition of 4 vibrating wire piezometers, and two standpipes for monitoring leachate head on the geosynthetic clay liner.

4. a. Liner and leachate collection system construction shall be supervised by a licensed professional engineer or a geoscientist.

b. Within 60 days of completion of each section of the liner and leachate collection system, a construction and installation report prepared by a licensed professional engineer or a geoscientist, shall be submitted to the Director and District Manager. The report shall include but not be limited to field observations, any deviations from approved plans, quality control and quality assurance measures, and as built drawings.

5. The Owner shall carry out groundwater and surface water monitoring in accordance with the following table:

Monitoring station	Frequency	Parameters
Groundwater monitoring wells: 7-I, 8-I, 9-I, 10-I, 11-I, 11-II, 12-I, 13-I, 13-II, 14-I, 14-II, 15-I, 15-II, 15-III, 16-I, 17-I, 17-II, 18-I, 18-II, 19-I, 25-I, 25-III, 26-I, 26-II, 26-III, 27-I, 27-II, 28-I, 29-I, 29-II, 29-III, 30-I, 31-I, 32-I and 5 new monitoring wells specified in condition 13.6.	Spring and fall	Field parameters: water level, pH and conductivity Parameters listed in Table 2, Item 23, Schedule A. MW9-1 and MW8-1 sampled for all additional parameters in Table 4, Item 23, Schedule A.

Monitoring wells to be removed with development of Stage 1 (Phase III): 15-I, 15-II, 15-III, 18-I, 18-II, and 25-III		
Surface water monitoring stations: SW1, SW2B, SW4 and a new station upstream (north) side of the culvert crossing beneath the access road as shown on Figure 2, Item 26 Schedule A.	Spring, summer and fall	Field parameters: conductivity, dissolved oxygen, flow, pH, and temperature Laboratory parameters listed in Table 4, Item 23, Schedule A.

6. Within one year of issuance of this Approval, the Owner shall install, and add to the monitoring program, 5 additional groundwater monitoring wells at the following locations:

- two new background wells to the east of Phase III,
- between the proposed Stage 1 and the southern wetland,
- to the west of MW31, and
- to the west of MW29.

7. Following two years of monitoring at the new surface water monitoring stations, the Owner shall submit to the Director for approval, a detailed surface water trigger mechanism program.

Registration on Title for Contaminant Attenuation Zone

8. The Owner shall, within 120 calendar days from the date of issuance of this Approval, submit to the Director documents confirming that a contaminant attenuation zone (CAZ) has been established and shall provide:

a. documentation evidencing ownership of the CAZ obtained;

b. a completed Certificate of Requirement and supporting documents containing a registerable description of the CAZ; and

c. 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.

9. Within ten calendar days of receiving a Certificate of Requirement signed or authorized by the Director, the Owner shall:

a. register the Certificate of Requirement in the appropriate Land Registry Office on the title to the property; and

b. submit to the Director a written verification that the Certificate of Requirement has been registered on title.

The following items are added to Schedule A:

22. Environmental Compliance Approval Application dated November 3, 2015.

23. Updated Design and Operations Plan, Eldon Waste Disposal Site, The Corporation of the City of Kawartha Lakes, dated November 2015, prepared by Golder Associates, signed by Frank Barone, Ph.D., P.Eng, including revised Figure 2 and 3 with the corrected CAZ size of 43 ha (not 88ha).

24. Memorandum dated January 20, 2016, from Laurel Rudd, Surface Water Evaluator, MOECC, containing surface water related comments.

25. Memorandum dated January 29, 2016, from Shawn Trimper, Hydrogeologist, MOECC, containing groundwater related comments.

26. Letter dated March 2, 2016, from Golder Associates, in response to surface water and groundwater related comments.

27. Letter dated April 22, 2016, from Nafiseh Pourhassani, MOECC, containing engineering related comments.

28. Letter dated May 6, 2016, from Golder Associates, in response to engineering related comments.

29. Letter dated May 27, 2016, from Angela Porteous, Kawartha Lakes in response to groundwater related comments.

The reasons for this amendment to the Approval are as follows:

Condition 13.1 is added to ensure that the site is constructed, maintained and operated as considered and approved by the Director.

Condition 13.2 is to specify the design capacity of Phase III.

Conditions 13.3 and 13.4 are added to ensure that the liner and leachate collection system are built, maintained and operated as approved.

Conditions 13.5, 13.6, and 13.7 are added to ensure the site is monitored regularly to prevent adverse impact.

Condition 13.8 and 13.9 are added to ensure that pursuant to s.197(2) of the EPA, any person having an interest

in the property in any way, is made aware of the existence of this Approval.

This Notice shall constitute part of the approval issued under Approval No. A321004 dated September 28, 2011 and subsequent amendments.

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
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**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 13th day of June, 2016

Dale Gable, P.Eng.

Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

NP/
c: District Manager, MOECC Peterborough
Frank Barone, Golder Associates

Public Works Department
12 Peel Street, Lindsay, Ontario, K9V 3L8
Tel: (705) 324-9411 ext. 2360, 1 888-822-2225
Fax: (705) 328-3122
ksnoddy@kawarthalakes.ca

Kerri Snoddy, C.Tech., *Regulatory Compliance Officer*

November 22, 2019

Mr. Glenn Rutherford
Senior Environmental Officer
Ministry of the Environment, Conservation and Parks
Peterborough District Office
300 Water Street, 2nd Floor South
Peterborough, ON, K9J 8M5

Dear Mr. Rutherford,

Re: Solid Non-Hazardous Waste Disposal Site Inspection Report for the Eldon Landfill October 3, 2019

This letter is in response to section 5.0 Action(s) Required regarding the inspection completed at the Eldon landfill site on October 3, 2019. Below is each Action Item with the City's response following in bolded font. While the Action items state the due date of the response is November 15, 2019 this due date was revised to be completed by November 30, 2019.

1. By November 15, 2019, provide to the undersigned Provincial Officer confirmation that the windblown litter clean-up has been completed.

   Litter clean up efforts have been made by landfill staff since the inspection on October 3, 2019 whenever possible. Staff will continue to clean up litter when possible throughout the winter when there is not a layer of snow cover, and then again in the spring. I inspected the site on November 13, 2019 and it appeared that there was significantly less wind blown litter around the landfill. I was told by staff that the majority of litter was removed from the ditches before the first snowfall.

2. By November 15, 2019, provide to the undersigned Provincial Officer confirmation that adequate daily cover is being completed as per the ECA.

   On November 13, 2019 I had a meeting with the contractor for cover and compaction at the site. We viewed the current tipping face and the contractor was informed that more cover material needed to be used. The contractor is now adequately covering the active tipping face to prevent future wind blown litter.

3. By November 15, 2019, provide to the undersigned Provincial Officer copies of the site inspection logs completed in 2019 and confirmation that site inspections will take place as per the ECA.

   The daily inspection logs completed for 2019 have been attached as separate documents. These have been completed as per ECA requirements.

4. By November 15, 2019, provide to the undersigned Provincial Officer records confirming methane gas monitoring has been undertaken at the site during site operational days in 2019.

   As per the ECA requirement, routine methane gas levels are currently conducted in the attendant shack on site. This is the only on site building. Landfill staff have a handheld gas metre available to them to bring to the site on each operating day. Training is conducted on how to use the handheld metre approximately once or twice per year at the semi-annual landfill staff training. Additional training on how to use the hand held metre will also be conducted at the upcoming staff training in December due to frequent staffing changes. While staff have been trained on how to use the metres and know that daily monitoring is required to take place there has been no formal procedure for documenting the readings. At the spring landfill staff training in 2019 staff were asked to start recording the readings on the daily log inspection forms. However, there is currently no defined area on the forms for them to record these values so it often does not get recorded on the forms. There were some readings recorded on the forms in 2019 attached and all methane levels were at 0% LEL. The 2020 daily log inspection forms will include a defined section for methane readings. This will also be reviewed at the upcoming staff training in December to ensure staff are recording the readings in the daily log inspections.

If you have any questions please call me at (705) 324-9411, extension 2360.

Yours truly,

Kerri Snoddy
Regulatory Compliance Officer

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

Solid Non-Hazardous Waste Disposal Site Inspection Report

Client:	The Corporation of the City of Kawartha Lakes Mailing Address: 12 Peel St, Post Office Box, 9000, Lindsay, Ontario, Canada, K9V 5R8 Physical Address: 12 Peel St Lindsay, Kawartha Lakes, City, Ontario, Canada, K9V 5R8 Telephone: (705)324-9411, email: jrotas@kawarthalakes.ca Client #: 4353-78NJW9, Client Type: Municipal Government, NAICS: 913910 Additional Address Info: Lindsay		
Inspection Site Address:	Eldon Waste Disposal Site Address: 311 Rockview Road RR 3 Rd Lot 26 Part 32 33 Concession 6 South of Portage Road, Kawartha Lakes, City, K0M 2B0 District Office: Peterborough GeoReference: Map Datum: NAD83, Zone: 17, UTM Easting: 659180, UTM Northing: 4934229, , LIO GeoReference: Zone: 17, UTM Easting: 659335.75, UTM Northing: 4934380.0, Latitude: 44.545143, Longitude: -78.99418 Site #: 7648-8C6MET		
Contact Name:	Kerri Snoddy	**Title:**	Regulatory Compliance Officer
Contact Telephone:	(705)324-9411 **ext**2360	**Contact Fax:**	
Last Inspection Date:	2017/01/27		
Inspection Start Date:	2019/10/03	**Inspection Finish Date:**	2019/10/03
Region:	Eastern		

1.0 INTRODUCTION

The City of Kawartha Lakes operates a solid non-hazardous waste landfill site at 311 Rockview Road in the former Township of Eldon. The site is generally known as the Eldon Landfill Site.

The site has been in operation since 1980. Phases I and II were approved at that time and more recently Phase III of the landfill was approved and has been constructed for use. The site is approved as a 8.1 hectare waste disposal, transfer and composting site within a total site area of 100.5 hectares including a contaminant attenuation zone.

The Eldon Landfill Site accepts solid, non-hazardous wastes from a service area consisting of the City of Kawartha Lakes. The site is approved by Environmental Compliance Approval (ECA) A321004 was issued on September 28, 2011 and amended by notice March 1, 2016 and June 13, 2016

Site hours are as follows:

Winter hours
Wednesday: 9am to 5pm
Saturday: 11am to 5pm

Summer hours
Wednesday: 9am to 5pm
Saturday: 11am to 5pm
Sunday: 11am to 5pm
(In the summer this landfill is open from 11am to 5pm on holiday Mondays)

The inspection was undertaken to determine compliance with the Environmental Protection Act (EPA), Regulation 347 (O. Reg. 347), Amended ECA 321004 issued January 20, 2016, and other relevant ministry legislation, policies and guidelines.
The inspection was conducted by Provincial Officer Glenn Rutherford with Kerri Snoddy, Regulatory Compliance Officer, City of Kawartha Lakes, in attendance. At the time of the inspection, the landfill was closed to the public.

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):
ECA A321004 was issued on September 28, 2011
Notice 1 was issued March 1, 2016
Notice 2 was issued June 13, 2016

2.1 FINANCIAL ASSURANCE:

Specifics:
Financial Assurance is not required for this municipally owned site.

2.2 APPROVED AREA OF THE SITE:

Specifics:
The site is approved as a 8.1 hectare waste disposal, transfer and composting site within a total site area of 100.5 hectares including a contaminant attenuation zone.

The fill area is clearly defined by the lined landfill cell created for Phase III of the landfill.

2.3 APPROVED CAPACITY:

Specifics:
Phases I and II had an approved capacity of 152,000 cubic meters. Landfilling of Phases I and II are largely complete and it was estimated that final cover will be completed over the next two years.

The approved final capacity of Phase III of the site is 143,900 cubic meters. Landfilling in Phase III commenced about a month prior to the inspection.

2.4 ACCESS CONTROL:

Specifics:
The landfill site is located in a remote area surrounded by forest. The forested area is part of the contaminant attenuation zone.

The east side of the site closest to Rockview Road is fenced and gated. The gate was locked.

Adequate signage is posted at the site entrance.

2.5 COVER MATERIAL:

Specifics:
ECA Condition 7. (9) indicates that cover material is to be applied as follows:

Periodic Cover - Weather permitting, deposited waste shall be covered at least twice weekly in a manner acceptable to the District Manager so that no waste is exposed to the atmosphere.

No cover material had been applied to the tipping face at the time of the inspection. The landfill had been open to the public the previous day. It was not determined when the tipping face had last received daily cover but normal practice is to cover the tipping face at the end of each working day.

A significant amount of wind-blown litter was noted in the areas surrounding the waste handling area.

See Section 5. below, for required actions.

The 2018 AMR reported that in 2018 daily cover material consisted of partially composted leaf and yard waste mixed with sand on a 1:3 ratio, respectively.

2.6 WASTE BURNING:

Specifics:
The burning of waste is not an operational practice at this site.

2.7 GROUNDWATER/SURFACEWATER IMPACT:

Specifics:
No groundwater or surface water impacts were noted during the inspection. The native soils in the area appear to be well drained. In addition to the monitoring well network, surface water monitoring stations are located on Butternut Creek and in the wetland to the southeast.

Groundwater and surface water monitoring are undertaken at this site and reported in the annual monitoring report (AMR) for the site.

A request for a detailed groundwater and surface water review of the 2018 AMR by Eastern Region Tech Support has been submitted.

A brief review of the 2018 AMR was completed during the inspection. The following points were noted during the review:

- ECA Condition 6. (3) requires that "An inspection of the entire Site and all equipment on the Site shall be conducted each day the Site is in operation ...".
- The 2018 AMR indicates that only two site inspections were completed and that on both occasions the site was not open. The site log book is kept in the attendant's hut and was not observed during the inspection as the site was closed. Confirmation that site inspections are being completed in 2019 is requested. See Section 5, below, for required actions.
- Records of routine methane gas monitoring at the site are also requested. See Section 5, below, for required actions.
- The AMR recommends working with the ministry to determine suitable locations for boundary wells on the most recently acquired CAZ lands southwest of the site. The AMR suggests this be done to facilitate well installation in 2020. See Section 6, below, for a recommended action.
- The 2018 AMR also summarizes compliance with the reasonable use guideline (RUG) as follows:
  - West of the site, monitoring wells (MW36 and 37) installed for the assessment of RUG compliance are new and only two monitoring events are available. RUG exceedances were encountered for several parameters at MW37 in 2018. Additional monitoring is recommended by the consultant to determine if the RUG exceedances are long term or just seasonal variations.
  - North of the site, new CAZ boundary well MW5 was installed in 2018. RUG exceedances were found at this well for several parameters in limited sampling. The northern CAZ boundary well MW32-I also demonstrated RUG exceedances. The consultant recommended allowing for additional monitoring at the new well to take place to allow for further assessment and a better understanding of the groundwater trends.
  - For the southern monitoring wells, minor RUG exceedances were reported for well MW7-1. The City of Kawartha Lakes has acquired additional CAZ lands south of the landfill in 2015 and southwest of the landfill in 2017. New monitoring wells need to be established to groundwater trends in these areas.

  Overall, there are minor concerns with RUG exceedances at this site identified. Recommendations for further monitoring are made in the AMR to allow time to establish trends at the newer monitoring locations. A request for both groundwater and surface review of the 2018 AMR by Easter Region Tech Support staff has been made. It is expected that the groundwater review by the ministry will comment more definitively on the RUG situation at the site. A voluntary abatement plan can be established, if warranted, once Tech. Support comments on the AMR are received.

2.8 LEACHATE CONTROL SYSTEM:

Specifics:
Phases I and II of the landfill were designed and operated without a leachate collection system. Natural attenuation was intended as the method of leachate treatment. This has necessitated the acquisition of additional lands for the purpose of contaminant attenuation.

Phase III of the landfill was been approved with a leachate collection system. The leachate collection system for the Phase III - Stage 1 cell has been completed. Some wastes have now been placed in that cell beginning in the southwest end of the cell. The Stage 1 cell has been lined with a geosynthetic clay liner to collect leachate and convey it to a low point in the cell. From there, the leachate will be periodically pumped and transported off-site for treatment at the Lindsay WPCP.

2.9 METHANE GAS CONTROL SYSTEM:

Specifics:
Landfill gas is not actively managed at the site.

ECA condition 8. (1) requires the site be operated in accordance with the landfill gas management program which was outlined in the site's Design and Operations Report.

As well the ECA requires that on-site buildings be have adequate ventilation and that routine monitoring be undertaken to manage landfill gas. It was indicated during the inspection that routine monitoring of landfill gas levels is completed by landfill staff using portable gas meters on days when the site is open.

2.10 OTHER WASTES:

Specifics:
No unapproved waste types were noted at the site.

The site accepts leaf and yard waste for composting. All of the 148 tonnes of collected leaf and yard waste underwent partial composting and will be used as alternative daily cover.

The site does accept a number of other waste types for recycling or disposal off-site:

- used tires
- propane tanks
- scrap metal
- paper material
- containers
- electronics
- boat and bale wrap

All these waste types are approved for the site.

3.0 REVIEW OF PREVIOUS NON-COMPLIANCE ISSUES

The previous inspection completed in 2017 noted minor issues with signage related to directing site users around the site.

It is understood these issues were corrected.

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:
Concerns related to daily cover and windblown litter at the site were noted above.

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?
Yes

Specifics:
Completion of daily (operating day) of site inspections as per the ECA, as noted above.

5.0 ACTION(S) REQUIRED

1. By November 15, 2019, provide to the undersigned Provincial Officer confirmation that the windblown litter clean-up has been completed.

2. By November 15, 2019, provide to the undersigned Provincial Officer confirmation that adequate daily cover is being completed as per the ECA.

3. By November 15, 2019, provide to the undersigned Provincial Officer copies of the site inspection logs completed in 2019 and confirmation that site inspections will take place as per the ECA.

4. By November 15, 2019, provide to the undersigned Provincial Officer records confirming methane gas monitoring has been undertaken at the site during site operational days in 2019.

6.0 OTHER INSPECTION FINDINGS

The City of Kawartha Lakes is reminded to contact MECP to discuss proposed locations for boundary wells on the most recently acquired CAZ lands southwest of the site.

7.0 INCIDENT REPORT

Applicable
7182-BGZRNN

8.0 ATTACHMENTS

PREPARED BY:
Environmental Officer:
Name: **Glenn M Rutherford**
District Office: **Peterborough District Office**
Date: **2019/10/16**
Signature

REVIEWED BY:
District Supervisor:
Name: **Courtney Redmond**
District Office: **Peterborough District Office**
Date: **2019/10/29**

Signature:

File Storage Number: KL EL RO 610

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"

APPENDIX B

Borehole Logs

GRAPHICS, SYMBOLS AND ABBREVIATIONS ON LOGS

SAMPLE TYPES and TESTS

SS	Split Spoon Sample	
SN	Non-Standard Split Spoon Sample	
ST	Shelby Tube Sample : (unconfined compression or unconsolidated undrained test)	- ◆
DS	Denision Type Sample	
PS	Piston Type Sample	
CS	Continuous Sample	
GS	Grab Sample	
WS	Wash Sample	
BQ	BQ Core Sample	
HQ	HQ Core Sample	
NQ	NQ Core Sample	
DT	Dynamic Penetration Test	
VT	Field Vane Test (undisturbed)	- +
VT	Field Vane Test (remoulded)	- ⊕

PENETRATION RESISTANCES

Standard Penetration Resistance(N Value)

The number of blows by a 63.6 kg (140 lb) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) Split Spoon Sampler for a distance of 300 mm (12 in.).

ABBREVIATIONS

DTPL: Drier Than Plastic Limit
APL: About Plastic Limit
WTPL: Wetter Than Plasic Limit
K: Hydraulic Conductivity (m/s)
C_u: Undrained Shear Strength (kPa)
% REC : Percentage of Sample Recovered
% RQD : Indirect Measure of the Number of Fractures and Soundness of Rock Mass
▼ Approximate Water Table

GRAIN SIZE CLASSIFICATION

	%
trace, "eg. trace sand"	1 - 10
some, "eg. some sand"	10 - 20
adjective, "eg. sandy"	20 - 35
and, "eg. and sand"	35 - 50
noun, "eg. sand"	>50

Note: Classification Divisions Based on Modified M.I.T. Grain Size Scale

SOIL DESCRIPTIONS

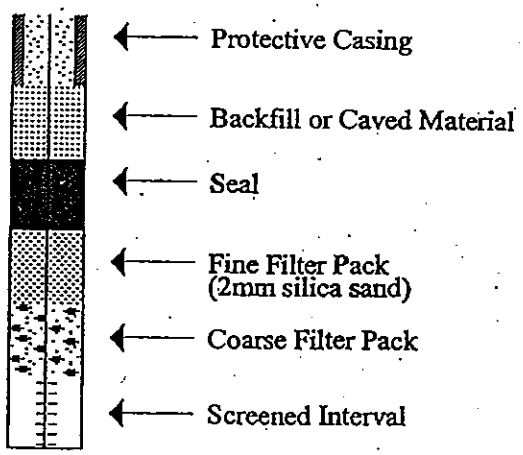
Cohesionless Soils

Relative Density	N Value
Very loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	over 50

Cohesive Soils

Consistency	C_u(kPa)	N Value
Very soft	0 to 12	0 to 2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 200	15 to 30
Hard	over 200	over 30

MONITOR DETAILS



BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 7-I	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 12 August 1997 GEOLOGIST BJS ELEVATION 306.4 m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.2		**TOPSOIL** Dark brown silty sand topsoil, moist loose.		1		SS	4	1.7	90			
		SAND Light to medium brown sand, trace silt, moist, loose.		2		SS	5	1.9	90			
1				3		SS	7	2.3	90			
2				4		SS	8	2.8	80			
3				5		SS	9	2.8	90			
4		-becoming compact below about 3.7 m.		6		SS	10	2.1	75			
		-increasing fine sand content below about 4.5 m.		7		SS	9	2.3	80			
5		-becoming saturated below about 5.5 m.										
6				8		SS	12	20.7	95			
7												
7.5		Borehole terminated at 7.49 m in sand on assumed bedrock surface.										

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BOREHOLE LOG

PROJECT: Eldon

BOREHOLE: 8-I

Hydrogeological Investigations
Eldon Landfill Property
FOR: County of Victoria

DATE: 12 August 1997
GEOLOGIST BJS
ELEVATION 305.2 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		SILT Dark brown silt, trace coarse sand and gravel, rootlets, moist, loose.		1		SS	8	12.7	75			
1				2		SS	8	13.2	50			
1.4		**SAND** Light brown to greyish brown fine sand, trace to some silt, trace medium sand, moist, compact.		3		SS	10	2.1	60			
2				4		SS	12	3.8	65			
3				5		SS	13	10.5	75			
4				6		SS	11		0			
		-becoming saturated below about 4.5 m.		7		SS	8	20.4	60			
5				8		SS	20	12	100			
5.8												
6.1 6		**SILT AND SAND WITH GRAVEL** Medium brown medium to coarse sand and silt with gravel, saturated, compact.										

Borehole terminated at 6.12 m in silt and sand with gravel.

BOREHOLE LOG

PROJECT: Eldon

BOREHOLE: 9-I

Hydrogeological Investigations
Eldon Landfill Property
FOR: County of Victoria

DATE: 13 August 1997
GEOLOGIST BJS
ELEVATION 300.5 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		SAND TO SANDY SILT Mottled grey and rust brown fine sand to sandy silt, saturated, loose to compact.		1		SS	5	17	50			
1.4	1			2		SS	12	21	60			
		SHALY LIMESTONE Grey aphanitic to fine crystalline thin bedded limestone interbedded with shale, highly weathered.		3		SS	30		75			
2.3	2											
		Borehole terminated at 2.30 m in weathered bedrock.										

BOREHOLE LOG

PROJECT: Eldon

BOREHOLE: 10-I

Hydrogeological Investigations
Eldon Landfill Property
FOR: County of Victoria

DATE: 15 August 1997
GEOLOGIST BJS
ELEVATION 305.1 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.3		**TOPSOIL** Dark brown silty topsoil, trace fine sand, rootlets, moist to wet.		1		SS	33		70	0		
1		**SHALY LIMESTONE** Grey aphanitic to fine crystalline thin bedded limestone interbedded with shale, numerous shale stingers. Highly weathered to about 4.9 m.										
2				2		HQ			95	25		
3				3		HQ			98	34		
4												
5				4		HQ			100			
6												
7				5		HQ			100			
7.9		Borehole terminated at 7.87 m in shaly limestone bedrock.										

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BOREHOLE LOG

PROJECT: Eldon

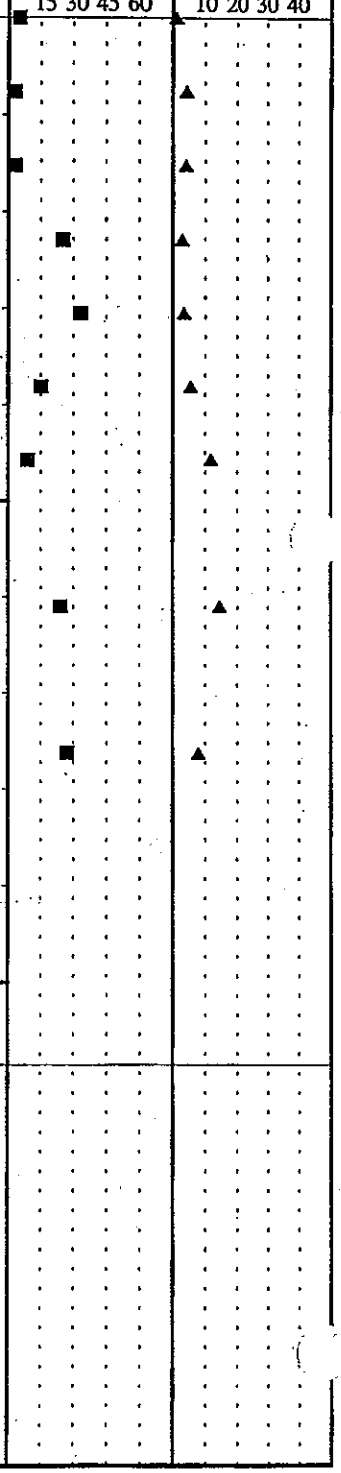
BOREHOLE: 11-I

Hydrogeological Investigations
Eldon Landfill Property
FOR: County of Victoria

DATE: 14 August 1997
GEOLOGIST PW
ELEVATION 306.5 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER
0.2		**TOPSOIL** Dark brown to black fine to medium sand topsoil, rootlets, moist, loose.	
1		**SAND** Brown medium sand, some fine sand, moist, very loose.	
2.2		**SAND AND GRAVEL** Grey fine to coarse sand and fine to coarse gravel, trace silt, moist, compact to dense.	
3			
4		-becoming saturated below about 4.5 m.	
5			
6			
7			
8			
9.0		**SHALY LIMESTONE** Light grey aphanitic to fine crystalline, medium bedded limestone thinly interbedded with shale, numerous shale stringers.	
10			
10.9		Borehole terminated at 10.85 m in shaly limestone bedrock.	

SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD
1		SS	5	1	70	
2		SS	3	4.2	70	
3		SS	3	4	70	
4		SS	25	2.8	70	
5		SS	33	3.4	60	
6		SS	15	5.5	70	
7		SS	9	11.8	60	
8		SS	24	14.3	60	
9		SS	27	7.9	30	
10		HQ			95	0
11		HQ			98	65



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BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 11-II	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 14 August 1997 GEOLOGIST PW ELEVATION 306.5 m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.2		**TOPSOIL** Dark brown to black fine to medium sand topsoil, rootlets, moist, loose.										
1		**SAND** Brown medium sand, some fine sand, moist, very loose.										
2.2 2		**SAND AND GRAVEL** Grey fine to coarse sand and fine to coarse gravel, trace silt, moist, compact to dense.										
3												
4												
5		-Becoming saturated below about 4.5 m.										
6.1 6												
		Borehole terminated at 6.05 m in sand and gravel. Soil statigraphy was inferred from borehole 11-I										

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BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 12-I	1 of 1

Hydrogeological Investigations
Eldon Landfill Property
FOR: County of Victoria

DATE: 12 August 1997
GEOLOGIST BJS
ELEVATION 306.1 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		TOPSOIL Reddish brown to black medium to coarse sand, trace gravel, moist, compact.		1		SS	14		65			
0.7		**SAND** Brown fine to medium sand, trace silt, moist, loose to compact.		2		SS	7		75			
1				3		SS	17		70			
2		-becoming grey below about 2.2 m.		4		SS	13		75			
3				5		SS	21		80			
3.5		**SAND AND GRAVEL** Brown to grey medium to coarse sand and gravel, trace silt, moist, compact to dense.		6		SS	>50		70			
4				7		SS			0			
5		-Becoming saturated below about 5.2 m.		8		SS	17		90			
6.2		Borehole terminated at 6.22 m in sand and gravel.										

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BOREHOLE LOG

PROJECT: Eldon

BOREHOLE: 13-I

Hydrogeological Investigations
Eldon Landfill Property
FOR: County of Victoria

DATE: 13 August 1997
GEOLOGIST BJS
ELEVATION 301.9 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		WASTE Shingles, wood scaps, metal, plastic landfill waste.										
0.8												
1.0	1	**FILL** Medium brown medium sand fill, trace silt, moist, very loose.		1		SS	2	141.1	50			>>
1.4												
	2	**PEAT** Dark brown to black silty peat, wood fragments and rootlets, wet, very loose.		2		SS	17	18.4	40			
2.3												
		SILTY SAND Grey silty medium sand, saturated, compact.		3		SS	13	20.1	100			
	3											
		SILT Grey silt, trace sand and clay, saturated, firm. -becoming silty sand below about 3.6 m.		4		SS	21	19.6	100			
3.6												
	4			5		SS	>50	20.9	75			
4.6												
5.0	5	-changing back to silt below about 4.6 m.		6		SS		24.7	95			
		SAND Grey fine sand, trace to some silt, saturated, loose to compact.										
	6											
				7		SS	17	20.3	60			
	7											
	8			8		SS	16	19.3	100			
	9											
9.3		**SAND AND GRAVEL** Reddish brown sand and gravel, poorly sorted, trace silt, saturated, dense.		9		SS	20	9.5	99	83		
	10											
11.1	11	-Fine to medium sand with trace silt encountered at the bedrock surface.		10		SS	>50/ 0.15m	6.8	92	26		
		SHALY LIMESTONE Dark grey aphanitic to fine crystalline, thin bedded limestone, thinly interbedded with shale, numerous shale stringers. Highly weathered to about 11.9 m.		11		HQ						
	12			12		HQ						
	13											
13.4		Borehole terminated at 13.43 m in shaly limestone bedrock.										

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BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 13-II	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 13 August 1997 GEOLOGIST BJS ELEVATION 302.1 m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		WASTE Shingles, wood scaps, metal, plastic landfill waste.										
0.8												
1.0	1	**FILL** Medium brown medium sand fill, trace silt, moist.										
1.4		**PEAT** Dark brown to black silty peat, wood fragments and rootlets, wet.										
2.3	2	**SILTY SAND** Grey silty medium sand, saturated.										
	3	**SILT** Grey silt, trace sand and clay, saturated, soft.										
3.6		-becoming silty sand below about 3.6 m.										
	4											
4.7		Borehole terminated at 4.65 m in silt and sand. **Soil stratigraphy was inferred from borehole 13-II.**										

BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 14-I	1 of 2
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 28 October 1998 GEOLOGIST BJS ELEVATION 307.0 m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		WASTE Medium brown medium sand fill mixed with layers of waste consisting of: paper, plastic, metal, wood, glassm rags, moist, loose to dense.		1		SS	10		90			
1				2		SS	6		60			
2				3		SS	19		0			
				4		SS	41		50			
3				5		SS	14		10			
4				6		SS	5		5			
5.2 5				7		SS	23		5			
		SILT Greyish brown silt with some fine sand lenses, trace clay, WTPL, stiff.		8		SS	8		70			
6 6.4				9		SS	27		75			
7		**SAND** Greyish brown fine sand with some silt, saturated, very loose to compact.		10		SS	24		80			
8				11		SS	14		75			
9		-Increasing coarse sand content below about 9.0 m.		12		SS	6		75			
10												
11				13		SS	6		50			
12				14		SS	24		60			
13		-Sand and gravel from about 12.6 to 12.8 m.										
14		-Changing to fine to medium sand, trace coarse sand, trace silt below about 14.0 m.		15		SS	11		50			

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BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 14-I	2 of 2

Hydrogeological Investigations
Eldon Landfill Property
FOR: County of Victoria

DATE: 28 October 1998
GEOLOGIST BJS
ELEVATION 307.0 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		SAND (continued)		16		SS	1		60			
16.3		SHALY LIMESTONE Dark grey aphanitic to fine crystalline, thin bedded limestone, thinly interbedded with shale, numerous shale stingers. Very weathered to about 17.3 m.		18		HQ			100	0		
				17		SS	18		70	17		
				19		HQ			100	66		
				20		HQ			100			
18.9		Borehole terminated at 18.85 m in shaly limestone.										

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BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 14-II	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 31 October 1998 GEOLOGIST BJS ELEVATION 307.1 m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		WASTE Medium brown medium sand fill mixed with layers of waste consisting of: paper, plastic, metal, wood, glassm rags, moist, loose to dense.										
1												
2												
3												
4												
5.2 5												
		SILT Greyish brown silt with some fine sand lenses, trace clay, WTPL, stiff.										
6												
6.4		**SAND** Greyish brown fine sand with some silt, saturated, very loose to compact.										
7												
8												
9		-Increasing coarse sand content below about 9.0 m.										
10												
11												
12												
13.1 13		-Sand and gravel from about 12.6 to 12.8 m.										
		Borehole terminated at 13.11 m in sand. **Soil stratigraphy was inferred from borehole 14-I.**										

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BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 14-III	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 27 October 1998 GEOLOGIST BJS ELEVATION 307.1 m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		WASTE Medium brown medium sand fill mixed with layers of waste consisting of: paper, plastic, metal, wood, glassm rags, moist, loose to dense.										
1												
2												
3												
4												
5.2 5												
		SILT Greyish brown silt with some fine sand lenses, trace clay, WTPL, stiff.										
6												
6.4		**SAND** Greyish brown fine sand with some silt, saturated, very loose to compact.										
7												
7.6		Borehole terminated at 7.62 m in sand. **Soil stratigraphy was inferred from borehole 14-I.**										

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BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 15-I	1 of 2
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 30 October 1998 GEOLOGIST BJS ELEVATION 307.0 m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		WASTE Medium brown medium sand fill mixed with layers of waste consisting of: paper, plastic, metal, wood, glassm rags, moist, loose to dense.		1		SS	20		25			
1				2		SS	6		0			
				3		SS	5		10			
2												
3				4		SS	10		25			
4.1 4		**SAND** Medium brown fine sand, trace silt, moist, compact.										
5				5		SS	19		40			
6				6		SS	18		60			
		-Becoming grey below about 6.5 m.										
7		-Grading to fine to medium sand, trace coarse sand below about 7.0 m.		7		SS	14		70			
8												
9		-becoming poorly sorted sand with some gravel from about 8.7 to 13.3 m.		8		SS	27		60			
10												
11				9		SS	29		75	0		
12				10		SS	43		85			
13.3 13		-becoming a fine sand below about 13.3 m.										
14.3 14				11		SS	11		85			
		SHALY LIMESTONE Dark grey aphanitic to fine crystalline, thin bedded		12		HQ			100			
				13		HQ			100	61		

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BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 15-I	2 of 2
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 30 October 1998 GEOLOGIST BJS ELEVATION 307.0 m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % REC	SAMPLE % RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
16 16.7		limestone, thinly interbedded with shale, numerous shale stingers. Very weathered to about 14.5 m.		14		HQ			100	84		
		Borehole terminated at 16.69 m in shaly limestone.										

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BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 15-II	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 30 October 1998 GEOLOGIST BJS ELEVATION 307.2 m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		WASTE Medium brown medium sand fill mixed with layers of waste consisting of: paper, plastic, metal, wood, glassm rags, moist, loose to dense.										
1												
2												
3												
4.1 4												
		SAND Medium brown fine sand, trace silt, moist, compact.										
5												
6												
		-Becoming grey below about 6.5 m.										
7		-Grading to fine to medium sand, trace coarse sand below about 7.0 m.										
8												
8.7												
9		-becoming poorly sorted sand with some gravel from about 8.7 to 13.3 m.										
10												
11												
12.1 12												
		Borehole terminated at 12.12 m in sand. **Soil stratigraphy was inferred from borehole 15-I.**										

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BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 15-III 1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 30 October 1998 GEOLOGIST BJS ELEVATION 307.1 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE 15 30 45 60	WATER CONTENT (%) 10 20 30 40
		WASTE Medium brown medium sand fill mixed with layers of waste consisting of: paper, plastic, metal, wood, glassm rags, moist, loose to dense.										
1												
2												
3												
4.1 4		**SAND** Medium brown fine sand, trace silt, moist, compact.										
5												
6												
7		-Becoming grey below about 6.5 m. -Grading to fine to medium sand, trace coarse sand below about 7.0 m.										
8.2 8												
		Borehole terminated at 8.23 m in sand. **Soil stratigraphy was inferred from borehole 15-I.**										

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Log of Borehole MW16-I

Project No. MRK-00256269-A0

Drawing No. 7

Project: City of Kawartha Landfill Sites

Sheet No. 1 of 2

Location: Various Landfill Sites, Kawartha Lakes

Eldon Landfill

Date Drilled: October 19, 2019

Drill Type: CME-75 Track Mount

Datum:

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

GWL	SYMBOL	Soil Description	ELEV. m
		Dark brown sandy silt **TOPSOIL**, trace rootlets and gravel, moist, no odour, no staining.	272.63
		Brown **SAND**, trace silt and gravel, moist, no odour, no staining.	~272.3
		LIMESTONE BEDROCK	~263.6
			~261.4

DEPTH: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

N Value: 20 40 60

Combustible Vapour Reading (ppm): 25 50 75

SAMPLES | % RECOV | SAMPLE ID | ANALYSIS

ENVIRONMENTAL-EXP TESTHOLE LOGS.GPJ 1/17/20

Continued Next Page

Time	Water Level (m)	Depth to Cave (m)

exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Log of Borehole MW16-I

Project No. MRK-00256269-A0

Drawing No. 7

Project: City of Kawartha Landfill Sites

Sheet No. 2 of 2

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH	N Value 20 40 60	Combustible Vapour Reading (ppm) 25 50 75	SAMPLES	% RECOV	SAMPLE ID	ANALYSIS
			260.63	12						
		End of Test hole at 11.25 mbgs.		13						
				14						
				15						
				16						
				17						
				18						
				19						
				20						
				21						
				22						
				23						
				24						
				25						
				26						

ENVIRONMENTAL-EXP TESTHOLE LOGS.GPJ 1/17/20

exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)

BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 16-II	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 29 October 1998 GEOLOGIST BJS ELEVATION 306.6 m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.3		**TOPSOIL** Dark brown fine sandy silt topsoil, trace rootlets, wet loose.										
		SAND Medium brown fine sand, trace coarse sand, trace silt, moist, dense to very dense. -becoming poorly sorted sand, some gravel from about 1.5 to 4.4 m.										
1												
2												
3												
4		-Gravelly between about 3.8 and 4.3 m.										
		-becoming a fine to medium sand below about 4.4 m.										
5												
6												
7												
7.6		Borehole terminated at 7.62 m in sand. **Soil stratigraphy was inferred from borehole 16-I**										

Printed: 14 Feb 00

Gartner Lee Limited

BOREHOLE LOG

PROJECT: Eldon

BOREHOLE: 17-I

Hydrogeological Investigations
Eldon Landfill Property
FOR: County of Victoria

DATE: 28 April 1999
GEOLOGIST BJS
ELEVATION 306.4 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		SAND WITH SOME GRAVEL Medium brown fine to coarse sand, some fine and coarse gravel, trace silt, moist, loose to compact.		1		SS	9		25			
1				2		SS	14		50			
				3		SS	33		40			
2.0 2		**SAND** Reddish brown fine sand with some silt, moist, compact.		4		SS	21		60			
3				5		SS	26		10			
4		-becoming medium brown in colour with a decreasing silt content below about 3.7 m.		6		SS	4		50			
4.5		**SAND WITH SOME GRAVEL** Medium brown fine to coarse sand with some fine and medium gravel, trace silt, moist becoming saturated below 5.2 m, compact to dense.		7		SS	39		70			
5				8		SS	28		60			
6				9		SS	40		50			
7				10		SS	36		40			
8				11		SS	39		50			
				12		SS	26		40			
9.1 9		**SAND** Medium brown fine sand with some silt, subtle laminations, saturated, dense.		13		SS	31		70			
10		-Decreasing silt content below about 9.9 m.		14		SS	35		75			
11				15		SS	28		80			
				16		SS	50		80			
12				17		SS	50		90			
12.8 13		**STONEY SILT TILL** Grey silt, some medium and coarse sand, trace fine to coarse gravel, saturated, dense.										
14.0				18		SS			0			
		Borehole terminated at 13.95 on assumed bedrock surface.										

Printed: 14 Feb 00

Gartner Lee Limited

BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 17-II	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 28 April 1999 GEOLOGIST BJS ELEVATION 306.3 m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		SAND WITH SOME GRAVEL Medium brown fine to coarse sand, some fine and coarse gravel, trace silt, moist, loose to compact.										
1												
2.0 2		**SAND** Reddish brown fine sand with some silt, moist, compact.										
3												
4		-becoming medium brown in colour with a decreasing silt content below about 3.7 m.										
4.5		**SAND WITH SOME GRAVEL** Medium brown fine to coarse sand with some fine and medium gravel, trace silt, moist becoming saturated below 5.2 m, compact to dense.										
5												
6												
7												
7.5		Borehole terminated at 7.47 sand with some gravel. **Borehole was straight augered to 4.57 m without sampling. Stratigraphy was inferred from borehole 17-I.**										

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Gartner Lee Limited

BOREHOLE LOG

PROJECT: Eldon

BOREHOLE: 18-I

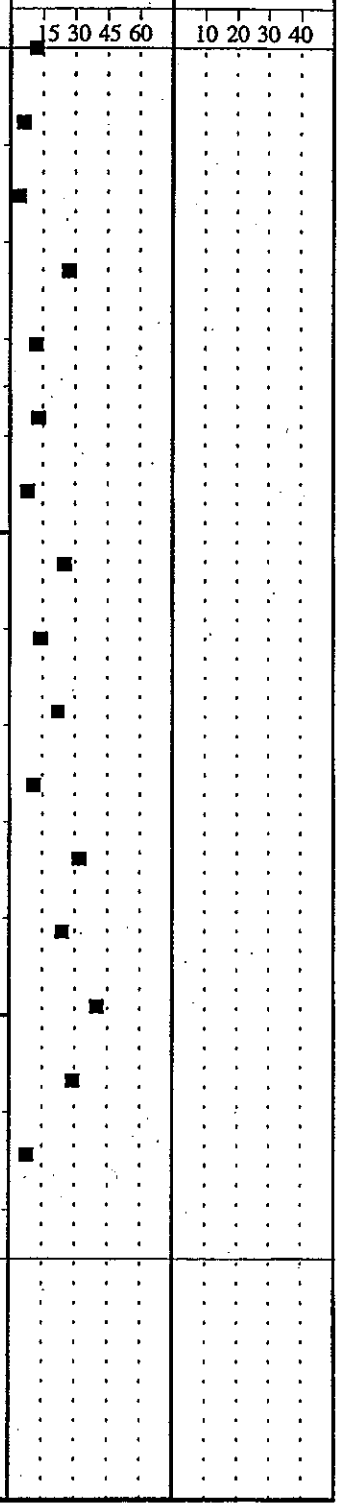
Hydrogeological Investigations
Eldon Landfill Property
FOR: County of Victoria

DATE: 26 April 1999
GEOLOGIST BJS
ELEVATION 303.1 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER
		FILL Medium brown fine to coarse sand fill, trace fine and coarse gravel, trace silt, trace refuse, moist, loose to compact. -black in colour from about 1.5 to 2.1 m.	
2.6		**SAND** Grey to dark grey fine sand with some silt, saturated, compact, grading to medium sand below about 2.7 m..	
3.0		**SANDY SILT** Mottled grey and medium brown very fine sandy silt, saturated, compact. Occasional very thin sand seams.	
4.5		**SILTY CLAY** Grey silty clay with occasional seams of fine sand, saturated, firm.	
5.5		**SAND** Medium brown fine sand, trace silt, saturated, compact.	
11.9		**STONEY SILT TILL** Grey silt, some fine to coarse sand and fine to coarse gravel, saturated, very stiff.	
12.5		Borehole terminated at 12.50 on assumed bedrock surface.	

Replacement for orginal SSF Location 3 which had been damaged beyond repair. Location 3 was overdrilled and sealed to surface.

SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD
1		SS	12		75	
2		SS	6		40	
3		SS	4		50	
4		SS	27		60	
5		SS	12		75	
6		SS	13		90	
7		SS	8		95	
8		SS	25		60	
9		SS	14		75	
10		SS	22		50	
11		SS	11		50	
12		SS	32		50	
13		SS	24		40	
14		SS	40		70	
15		SS	29		100	
16		SS	8		50	
17		SS			0	



Gartner Lee Limited

BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 18-II	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 27 April 1999 GEOLOGIST BJS ELEVATION 303.1 m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
1 2 2.6		**FILL** Medium brown fine to coarse sand fill, trace fine and coarse gravel, trace silt, trace refuse, moist, loose to compact. -black in colour from about 1.5 to 2.1 m.										
3.0 3 4 4.6		**SAND** Grey to dark grey fine sand with some silt, saturated, compact, grading to medium sand below about 2.7 m.. **SANDY SILT** Mottled grey and medium brown very fine sandy silt, saturated, compact. Occasional very thin sand seams.										
		Borehole terminated at 4.57 m in sandy silt. **Borehole was straight augered to 4.57 m without sampling. Stratigraphy was inferred from borehole 18-I.**										

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BOREHOLE LOG

PROJECT: Eldon

BOREHOLE: 19-I

Hydrogeological Investigations
Eldon Landfill Property
FOR: County of Victoria

DATE: 16 November 1999
GEOLOGIST EK
ELEVATION m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.3		**TOPSOIL** Dark brown sandy topsoil, rootlets, moist, loose.		1		SS	8		75			
1		**SAND** Reddish brown to brown fine to medium sand, trace to some silt, moist, loose to compact. -Medium to coarse sand, trace of fine sand from about 0.8 to 1.4 m. -Grading back to fine to medium sand below about 1.4 m. -Increasing coarse sand content and becoming wet below about 2.2 m.		2		SS	7		71			
2				3		SS	13		67			
				4		SS	16		79			
3.0 3		**SAND WITH GRAVEL** Brown fine to medium gravel, trace fine gravel, saturated, compact. -0.05 m grey silt seam encountered at about 3.5 m. -Increasing frequency of cobbles below about 3.6 m. -Sand fraction becoming fine to medium grained below about 4.5 m.		5		SS	19		83			
4				6		SS	18		0			
5				7		SS	8		25			
6				8		SS	15		0			
6.7 7		**STONEY SILT TILL** Grey silt, some fine to coarse sand and fine to coarse gravel, saturated, dense.										
8				9		SS	60		58			
8.9		Borehole terminated at 8.87 m in stoney till on assumed bedrock.										

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BOREHOLE LOG

PROJECT: Eldon

BOREHOLE: 20-I

Hydrogeological Investigations
Eldon Landfill Property
FOR: County of Victoria

DATE: 16 November 1999
GEOLOGIST EK
ELEVATION m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.2		**TOPSOIL** Brown sandy silt topsoil, moist, loose.		1		SS	5		42			
1		**STONEY SILT TILL** Grey clayey silt, stoney, some fracturing observed with rust staining, moist, very dense.		2		SS			0			
1.6		Borehole terminated at 1.60 m in stoney till on assumed bedrock surface.		3		SS	100/ 0.08m		100			

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Gartner Lee Limited

BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 21-I	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 16 November 1999 GEOLOGIST EK ELEVATION m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.2		**TOPSOIL** Brown sandy silt topsoil, moist, loose.										
1		**STONEY SILT TILL** Grey clayey silt, stoney, some fracturing observed with rust staining, moist, very dense.										
1.6		Borehole terminated at 1.60 m in stoney till on assumed bedrock surface.		1		SS			100			

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BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 22-I	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 16 November 1999 GEOLOGIST EK ELEVATION m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.2		**TOPSOIL** Brown sandy silt topsoil, moist, loose.										
1		**STONEY SILT TILL** Grey clayey silt, stoney, some fracturing observed with rust staining, moist, very dense.										
1.7		Borehole terminated at 1.65 m in stoney till on assumed bedrock surface.		1		SS			100			

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BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 23-I	1 of 1

Hydrogeological Investigations
Eldon Landfill Property
FOR: County of Victoria

DATE: 16 November 1999
GEOLOGIST EK
ELEVATION m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % REC	SAMPLE % RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.2		**TOPSOIL** Brown sandy silt topsoil, moist, loose.										
1		**STONEY SILT TILL** Grey clayey silt, stoney, some fracturing observed with rust staining, moist, very dense.										
1.7				1		SS			100			
		Borehole terminated at 1.65 m in stoney till on assumed bedrock surface.										

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Gartner Lee Limited

BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 24-I	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 17 November 1999 GEOLOGIST EK ELEVATION m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % REC	SAMPLE % RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.2		**TOPSOIL** Brown sandy silt topsoil, moist, loose.										
1.5		**STONEY SILT TILL** Grey clayey silt, stoney, some fracturing observed with rust staining, moist, very dense.		1		GS						
		Borehole terminated at 1.45 m in stoney till on assumed bedrock surface.										

Printed: 14 Feb 00

Gartner Lee Limited

BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 25-I	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 26 October 2000 GEOLOGIST TLC ELEVATION m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		ROAD BASE FILL Brown fine to medium sand fill, trace silt and fine gravel, occasional cobbles, moist, loose.		1		GS						
1.0	1	**SILTY SAND TO SANDY SILT** Grey silty fine sand to sandy silt, wet, loose.		2		SS	7		17			
2.3	2	-Evidence of peat at upper contact. -Silt content increasing with depth and becoming a grey silt with trace sand, saturated, below about 1.5 m.		3		SS	9		8			
	3			4		SS	8		79			
3.9	4	**CLAYEY SILT TO SILTY CLAY** Grey clayey silt to silty clay, saturated, soft. -0.05 m medium sand seam with some coarse sand observed at 3.0 m. -Becoming grey silt with some clay seams below about 3.1 m, then begins to grade into sandy silt to silty fine below about 3.6 m.		5		SS	15		67			
5.1	5			6		SS	15		63			
	6			7		SS	5		58			
	7	**FINE TO MEDIUM SAND** Brownish grey fine to medium sand (clean), saturated, compact. -Gradational becoming finer with depth below about 4.7 m.		8		SS	5		100			
	8	**FINE SAND** Brownish grey to grey very fine sand to fine sand (gradational), saturated, compact to dense. -Gradational coarse sand to medium sand to fine sand below about 9.1 m.		10		SS	14		100			
	9			11		SS	42		100			
9.8	10	**WEATHERED LIMESTONE** Upper 0.3 m assumed to be weathered limestone/Till complex.		12		SS	39		63			
10.7		Borehole terminated at 10.67 m in weathered limestone.		13		Spoon Bouncing						

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BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 25-II	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 27 October 2000 GEOLOGIST TLC ELEVATION m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		ROAD BASE FILL Brown fine to medium sand fill, trace silt and fine gravel, occasional cobbles, moist, loose.										
1.0	1	**SILTY SAND TO SANDY SILT** Grey silty fine sand to sandy silt, wet, loose.										
2.3	2	-Evidence of peat at upper contact. -Silt content increasing with depth and becoming a grey silt with trace sand, saturated, below about 1.5 m.										
3.9	3	**CLAYEY SILT TO SILTY CLAY** Grey clayey silt to silty clay, saturated, soft. -0.05 m medium sand seam with some coarse sand observed at 3.0 m. -Becoming grey silt with some clay seams below about 3.1 m, then begins to grade into sandy silt to silty fine below about 3.6 m.										
4.6	4	**FINE TO MEDIUM SAND** Brownish grey fine to medium sand (clean), saturated, compact. Borehole terminated at 4.57 m in fine to medium sand. Stratigraphy inferred from adjacent borehole 25-I.										

BOREHOLE LOG	PROJECT: Eldon	BOREHOLE: 25-III	1 of 1
Hydrogeological Investigations Eldon Landfill Property FOR: County of Victoria		DATE: 27 October 2000 GEOLOGIST TLC ELEVATION m ASL	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
		ROAD BASE FILL Brown fine to medium sand fill, trace silt and fine gravel, occasional cobbles, moist, loose.										
1.0	1	**SILTY SAND TO SANDY SILT** Grey silty fine sand to sandy silt, wet, loose.										
2.3	2	-Evidence of peat at upper contact.										
3.4	3	-Silt content increasing with depth and becoming a grey silt with trace sand, saturated, below about 1.5 m.										
		CLAYEY SILT TO SILTY CLAY Grey clayey silt to silty clay, saturated, soft.										
		Borehole terminated at 3.35 m in clayey silt to silty clay.										
		Stratigraphy inferred from adjacent borehole 25-I.										

MONITOR CONSTRUCTION DETAILS
GEOLOGICAL/HYDROGEOLOGICAL INVESTIGATION
ELDON LANDILL PROPERTY

Borehole Details			Monitor Details					Monitor Construction			
No.	Diameter (mm)	Ground Elevation (mASL)	No.	Type of Monitor	Diameter (mm)	MONITOR STICK UP (m)	Elevation of Top of Monitor (mASL)	Depth Interval of Screen (m)	Depth Interval of Filter Pack (m)	Depth Interval of Borehole Seal (m)	Depth Interval of Native / Backfill (m)
GL 7	200	306.41	I	S	51	0.93	307.34	7.08 - 4.03	7.08 - 3.30	3.30 - 3.02 0.90 - 0.00	3.02 - 0.90
GL 8	200	305.19	I	S	51	0.75	305.94	6.12 - 3.07	6.12 - 2.74	2.74 - 2.29 0.61 - 0.00	2.29 - 0.61
GL 9	200	300.54	I	S	51	0.71	301.25	2.30 - 0.78	2.30 - 0.61	0.61 - 0.00	
GL 10	96	305.06	I	S	51	0.79	305.85	7.87 - 1.77	7.87 - 1.22	1.22 - 0.00	
GL 11	96	306.45	I	P	51	0.73	307.18	10.85 - 9.32	10.85 - 9.14	9.14 - 0.00	
GL 11	200	306.45	II	S	51	0.76	307.21	6.05 - 3.00	6.05 - 2.77	2.77 - 2.33 0.30 - 0.00	2.33 - 0.30
GL 12	200	306.07	I	S	51	0.78	306.85	6.22 - 3.17	6.22 - 2.74	2.74 - 2.34 0.51 - 0.00	2.34 - 0.51
GL 13	96	301.88	I	P	51	0.85	302.73	13.43 - 11.91	13.43 - 11.58	11.58 - 0.00	
GL 13	200	302.14	II	S	51	0.77	302.91	4.65 - 1.60	4.65 - 1.24	1.24 - 0.00	
GL 14	96	307.04	I	P	51	0.71	307.75	18.85 - 17.33	18.85 - 17.07	17.07 - 5.18 0.61 - 0.00	5.18 - 0.61
GL 14	200	307.11	II	P	51	0.61	307.72	13.11 - 11.28	13.11 - 10.06	10.06 - 9.60 5.18 - 4.27 0.91 - 0.00	9.60 - 5.18 4.27 - 0.91
GL 14	200	307.13	III	S	51	0.66	307.79	7.62 - 4.57	7.62 - 4.27	4.27 - 3.76 0.61 - 0.00	3.76 - 0.16
GL 15	96	307.01	I	P	51	0.66	307.67	16.69 - 15.16 6.22 - 3.17	16.69 - 14.94 6.22 - 2.74	14.94 - 14.33 4.47 - 3.81 0.91 - 0.00	14.33 - 4.47 3.81 - 0.91
GL 15	200	307.15	II	P	51	0.73	307.88	12.12 - 10.59	12.12 - 9.75	9.75 - 9.45 4.27 - 3.66 0.91 - 0.00	9.45 - 4.27 3.66 - 0.91
GL 15	200	307.08	III	S	51	0.75	307.83	8.23 - 5.18	8.23 - 4.88	4.88 - 3.66 0.91 - 0.00	3.66 - 0.91
GL 16	96	306.52	I	P	51	0.77	307.29	11.25 - 9.73	11.25 - 9.45	9.45 - 8.84 0.91 - 0.00	8.84 - 0.91
GL 16	200	306.58	II	S	51	0.75	307.33	7.62 - 4.57	7.62 - 4.27	4.27 - 3.66 0.91 - 0.00	3.66 - 0.91
GL 17	200	306.31	I	P	51	0.73	307.04	12.65 - 11.13	12.80 - 10.67	10.67 - 0.00	13.95 - 12.80
GL 17	200	306.25	II	S	51	0.78	307.03	7.32 - 4.27	7.47 - 3.96	3.96 - 3.35 0.61 - 0.00	3.35 - 0.61
GL 18	200	303.11	I	P	51	0.76	303.87	11.74 - 10.22	11.89 - 9.75	9.75 - 0.00	12.50 - 11.89
GL 18	200	303.11	II	S	51	0.71	303.82	4.42 - 1.32	4.57 - 1.07	1.07 - 0.00	
GL 19	200	303.69	I	S	51	0.81	304.50	7.47 - 4.47	7.62 - 3.61	3.61 - 0.31	8.87 - 7.62 0.31 - 0.00
GL 25	200	300.79		P	51	0.9	301.69	9.75 - 8.23	8.23 - 7.62	7.62 - 0.00	10.67 - 9.75
GL 25	200	300.79		P	51	1.15	301.94	4.57 - 3.81	3.81 - 3.51	3.51 - 0.00	
GL 25	200	300.79		S	51	1.1	301.89	3.35 - 0.30		0.30 - 0.00	
MP 1	80	300.56		S	31	0.51	301.07	1.35 - 1.04			
MP 2	80	300.91		S	31	2.09	303.00	0.69 - 0.38			
MP 3	80	301.07		S	31	0.61	301.68	1.23 - 0.92			
MP 4	80	300.44		S	31	0.66	301.10	2.12 - 1.68			

DRILL HOLE # Eldon Landfill MW1a (deep) (29-I)

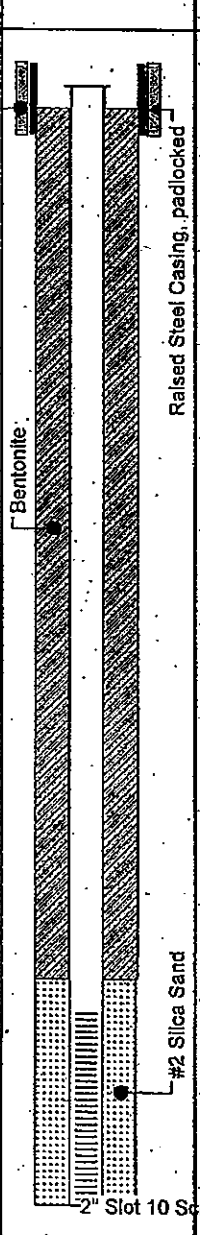
Date Drilled: Dec. 19, 2007
Rig: CME 55N
Contractor: Aardvark Drilling Inc.
Hammer Type: cathead

Location: Eldon Landfill
Elevation:
Co-ord: 658759 E, 4934175 N

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

Depth (m)	Sample Type	Recovery	Number	Blows/0.15 m	Symbols	SOIL DESCRIPTION	Elevation
						Ground Surface	0
						PEAT	0
							-4
						SILTY SAND	4
	SS	1	5				
							-10
	SS	2	9			*SANDY SILT* grey, saturated	10
							-20
	SS	3	28			*SAND* saturated, some silt seams	20
							-25
	SS	4	>50			*SANDY SILT TILL*	25
							-28
	SS	5	>50			*BEDROCK*	28

Well Installation



Moisture Content %
Wp |---X---| Wl
10 30 50 70 90

Pocket Penetrometer
kPa
100 200 300 400

SPT (N)
Blows/ft
10 20 30 40

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 # Eldon Landfill MW1b (29-II)

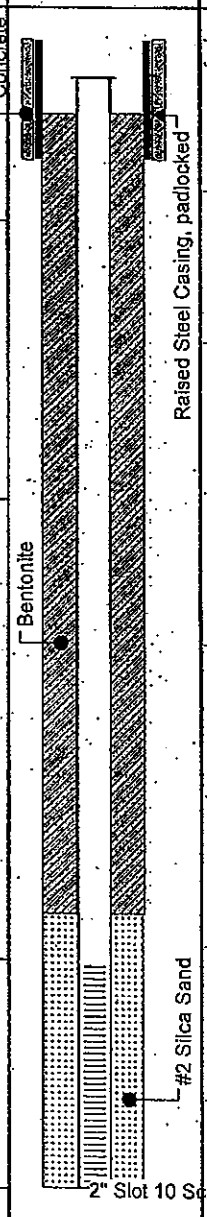
Date Drilled: Dec. 13, 2007
Rig: CME 55N
Contractor: Aardvark Drilling Inc.
Hammer Type: cathead

Location: Eldon Landfill
Elevation:
Co-ord: 658759 E, 4934175 N

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

Depth (m)	Sample Type	Recovery Number	Blows/0.15 m	Symbols	SOIL DESCRIPTION	Elevation	Depth
					Ground Surface	0	0
					PEAT	0	0
					SILTY SAND	-4	4
					SANDY SILT grey, saturated	-10	10
					SAND saturated, some silt seams	-20	20
					SANDY SILT TILL	-25	25

Well Installation



Moisture Content % Wp |—X—| Wl 10 30 50 70 90

Pocket Penetrometer kPa 100 200 300 400

SPT (N) Blows/ft 10 20 30 40

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 # Eldon Landfill MW1c (shallow) (29-III)

Date Drilled: Dec. 19, 2007
Rig: CME 55N
Contractor: Aardvark Drilling Inc.
Hammer Type: cathead

Location: Eldon Landfill
Elevation:
Co-ord: 658759 E, 4934175 N

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

Depth (m)	Sample Type	Recovery	Number	Blows/0.15 m	Symbols	SOIL DESCRIPTION	Well Installation	Moisture Content % Wp |----X----| Wl 10 30 50 70 90	Pocket Penetrometer kPa 100 200 300 400 / SPT (N) Blows/ft 10 20 30 40
0						Ground Surface 0	Concrete		
						PEAT 0	Bentonite; Raised Steel Casing, padlocked		
1						-4			
						SILTY SAND 4	#2 Silca Sand		
2									
3						-10	2" Slot 10 Screen		
						SANDY SILT 10 grey, saturated			
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

DRILL HOLE # Eldon Landfill MW 2 (shallow) (30-I)

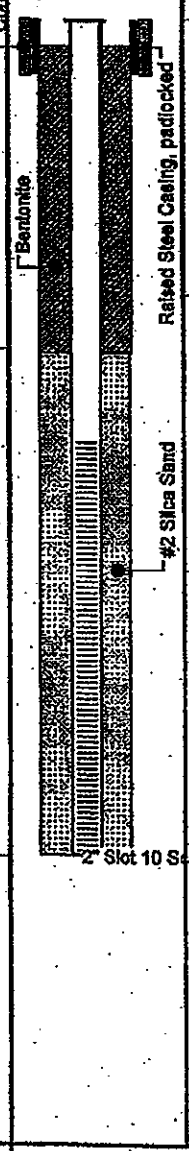
Date Drilled: Dec. 19, 2007
Rig: CME 55N
Contractor: Aardvark Drilling Inc.
Hammer Type: cathead

Location: Eldon Landfill
Elevation:
Co-ord: 658759 E, 4934175 N

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

Depth (m)	Sample Type	Recovery Number	Blows/0.15 m	Symbols	SOIL DESCRIPTION	Elevation	Depth
					Ground Surface	0	0
0					*PEAT*		0
1					*SILTY SAND*	-4	4
2							
3					*SANDY SILT* grey, saturated	-10	10
4							

Well Installation



Moisture Content %
Wp |---X---| Wl
10 30 50 70 90

Pocket Penetrometer
kPa
100 200 300 400

SPT (N)
Blows/ft
10 20 30 40

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 # Eldon Landfill MW 3 (shallow) (31-I)

Date Drilled: Dec. 19, 2007
Rig: CME 55N
Contractor: Aardvark Drilling Inc.
Hammer Type: cathead

Location: Eldon Landfill
Elevation:
Co-ord: 658759 E; 4934175 N

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

Depth (m)	Sample Type	Recovery Number	Blows/0.15 m	Symbols	SOIL DESCRIPTION	Well Installation	Moisture Content % Wp |—X—| Wl 10 30 50 70 90	Pocket Penetrometer ● kPa ● 100 200 300 400 / SPT (N) ■ Blows/ft ■ 10 20 30 40
0					Ground Surface 0	Concrete		
					PEAT 0	Bentonite; Raised Steel Casing, padlocked		
1					-4 *SILTY SAND* 4	#2 Silica Sand		
2								
3					-10 *SANDY SILT* 10 grey, saturated	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

Ontario Ministry of the Environment

Well Tag Number (if any) A 033850

A033850

MW 26

Well Record

Regulation 903 Ontario Water Resources Act

page 1 of 1

Instructions for Completing Form

- For use in the Province of Ontario only. This document is a permanent legal document. Please retain for future reference.
- All Sections must be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- All metre measurements shall be reported to 1/10th of a metre.
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
CITY OF KAWARTHA	LAKES	50 WOLFE ST

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	LINDSAY	Ontario	K9V 2J2	705-878-1282

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
FLOOD LANDFILL VICTORIA CTY			

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
311 ROCKVIEW RD.		

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	83	17	615901241	4934313319		☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
BLACK	PEAT			0	1.25
GREY	SAND	SILT		1.25	2
GREY	CLAY	SILT	CLAYEY SILT	2	3.75
BROWN	FINE SAND	SILT		3.75	7
GREY	SILT	SAND, STONES	STONEY SILT TILL	7	8
GREY	LIMESTONE	SHALE	FRACTURED SHALEY LIMESTONE	8	14.6

Hole Diameter

Depth From (Metres)	Depth To (Metres)	Diameter (Centimetres)
0	8.2	20
8.2	14.6	10.2

Water Record

Water found at ___ Metres: / Kind of Water

☐ ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

☐ ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

☐ ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was ☐ Clear and sediment free ☐ Other, specify

Chlorinated ☐ Yes ☑ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To
Casing				
5	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	.4	+.75	11.6
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	Material	Slot No.		
6.1	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	010	11.6	14.6
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___ hrs + ___ min	2		2	
Final water level end of pumping ___ metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___ metres	5		5	
Recommended pump rate. (litres/min)	10		10	
	15		15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record

☑ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	11	BENTONITE	
11	14.6	SAND	

Method of Construction

☐ Cable Tool ☑ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☑ Other USA
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

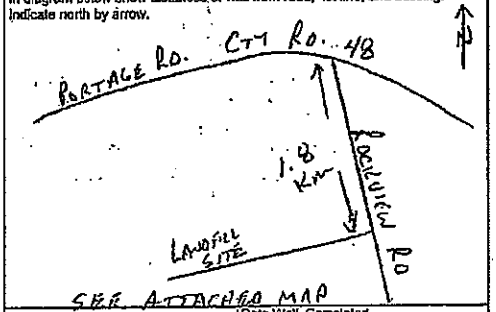
☐ Domestic ☐ Industrial ☐ Public Supply ☑ Other MONITORING
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☑ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

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



SEE ATTACHED MAP

Audit No. Z 37101

Date Well Completed YYYY MM DD 05 12 16

Was the well owner's information package delivered? ☐ Yes ☑ No

Date Delivered YYYY MM DD

Well Contractor/Technician Information

Name of Well Contractor: ALL-TERRAIN DRILLING LIMITED

Well Contractor's Licence No. 1129

Business Address (street name, number, city etc.): 3-661 COLBY DR. WATERLOO ONT N2V1C2

Name of Well Technician (last name, first name): GRANT DON / POLLICE MIKE

Well Technician's Licence No. 2688

Signature of Technician/Contractor: X

Date Submitted YYYY MM DD 06 01 27

Ministry Use Only

Data Source | Contractor

Date Received YYYY MM DD | Date of Inspection YYYY MM DD

Remarks | Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☑

Cette formule est disponible en français

Ontario Ministry of the Environment

Well A 033849 (number below) A033849

MW 27-III

Well Record

Regulation 903 Ontario Water Resources Act

page 1 of 1

Instructions for Completing Form

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- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only: MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR,Lot,Concession)
CITY OF KAWARTHA	LAKES	50 WOLFE ST

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	LINDSAY	Ontario	K9V 2J2	705-878-1282

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
ELDON LANDFILL VICTORIA CTY			

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
311 ROCKVIEW RD		

GPS Reading NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
83	17	658894	4934096	MAGELLAN	☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
BLACK	PEAT			0	.3
BROWN	FINE SAND	SILT	SILTY FINE SAND	.3	1.2
BROWN	MED. SAND	SILT	SILTY MEDIUM SAND	1.2	4
GREY	LIMESTONE	SHALE	SHALEY LIMESTONE	4	16.3
	NESTED LOCATION -	SECOND	WELL INSTALLED AT 4m		
		W/ 5 FT	SCREEN		

Hole Diameter

Depth From (Metres)	To	Diameter (Centimetres)
0	4	20
4	16.3	10.2

Water Record

Water found at Metres	Kind of Water
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was ☐ Clear and sediment free ☐ Other, specify

Chlorinated ☐ Yes ☑ No

Construction Record

Inside diam - centimetres	Material	Well thickness centimetres	Depth From	Metres To
Casing				
5	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	.4	+.75m	13.3
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
6.1		.010	13.3	16.3
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

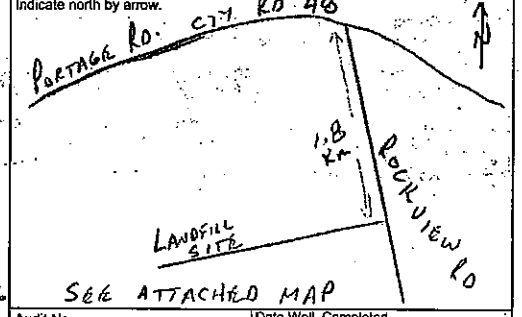
Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___hrs + ___ min	2		2	
Final water level end of pumping ___metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___metres	5		5	
Recommended pump rate. (litres/min)	10		10	
	15		15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record ☑ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	12.5	BENTONITE	
12.5	16.3	SAND	

Location of Well

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



SEE ATTACHED MAP

Method of Construction

☐ Cable Tool ☑ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☑ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving NSA.

Water Use

☐ Domestic ☐ Industrial ☐ Public Supply ☑ Other
☐ Stock ☐ Commercial ☐ Not used MONITORING
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☑ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Audit No. Z 37100

Date Well Completed YYYY MM DD: 05 12 14

Was the well owner's information package delivered? ☐ Yes ☑ No

Date Delivered YYYY MM DD

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
ALL-TERRAIN DRILLING LIMITED	1129

Business Address (street name, number, city etc.): 3-661 COLBY DR. WATERLOO ONT. N2V1C2

Name of Well Technician (last name, first name)	Well Technician's Licence No.
GRANT, DON / POLLICE MIKE	268

Signature of Technician/Contractor: X

Date Submitted YYYY MM DD: 06 01 29

Ministry Use Only

Data Source	Contractor
Date Received YYYY MM DD	Date of Inspection YYYY MM DD
Remarks	Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☑

Cette formule est disponible en français

Ontario Ministry of the Environment

Well Tag A 033848 (Tag number below)

A033848

MW. 28

Well Record

Regulation 903 Ontario Water Resources Act

page 1 of 1

Instructions for Completing Form

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- All Sections must be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- All metre measurements shall be reported to 1/10th of a metre.
- Please print clearly in blue or black ink only.

Ministry Use Only: MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
CITY OF KAWARTHA LAKES		50 WOLFE ST.

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	LINDSAY	Ontario	K9V2J2	705-878-1282

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
FLDON LANDFILL VICTORIA CTY			

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
311 ROCKVIEW RD.		

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	83	17	659291	4934266	MAGELLAN	☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
BROWN	TOPSOIL			0	.3
BROWN	SAND	SILT	FINE TO COARSE SAND	.3	4.3
GREY	LIMESTONE	SHALE, CLAY	SHALEY LIMESTONE	4.3	7.8

Hole Diameter

Depth From (Metres)	Depth To (Metres)	Diameter (Centimetres)
0	4.5	20
4.5	7.8	10.2

Water Record

Water found at ___ Metres / Kind of Water

☐ ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

☐ ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

☐ ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was ☐ Clear and sediment free ☐ Other, specify

Chlorinated ☐ Yes ☑ No

Construction Record

Inside diam (centimetres)	Material	Wall thickness (centimetres)	Depth From	Depth To (Metres)
Casing				
5	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	.4	+.75	6.3
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
6.1		.010	6.3	7.8
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___ hrs + ___ min	2		2	
Final water level end of pumping ___ metres	3		3	
Recommended pump type: ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___ metres	5		5	
Recommended pump rate. (litres/min)	10		10	
	15		15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record

☑ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	5.8	BENTONITE	
5.8	7.8	SAND	

Method of Construction

☐ Cable Tool ☑ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☑ Other HSA
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

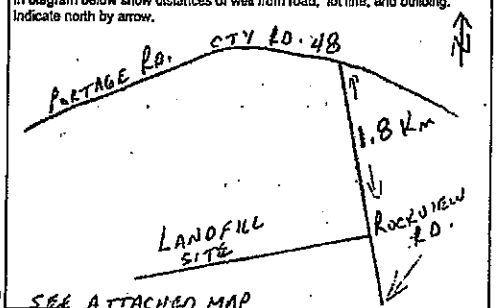
☐ Domestic ☐ Industrial ☐ Public Supply ☑ Other MONITORING
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☑ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

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



SEE ATTACHED MAP

Audit No. Z 37099

Date Well Completed YYYY MM DD: 05 12 07

Was the well owner's information package delivered? ☐ Yes ☑ No

Date Delivered YYYY MM DD

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
ALL-TERRAIN DRILLING LIMITED	1129

Business Address (street name, number, city etc.): 3-661 COLBY DR. WATERLOO ONT. N2V1C2

Name of Well Technician (last name, first name)	Well Technician's Licence No.
GRANT DON POLLICE MIKE	268

Signature of Technician/Contractor	Date Submitted YYYY MM DD
X	06 01 27

Ministry Use Only

Data Source	Contractor
Date Received YYYY MM DD	Date of Inspection YYYY MM DD
Remarks	Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☑ *Cette formule est disponible en français*

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below): ABANDONMENT NOT TAGGED

SSFC 5

Well Record

Regulation 903 Ontario Water Resources Act

page 1 of 1

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Ministry Use Only: MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR,Lot,Concession)
CITY OF KAWARTHA LAKES		50. WOLFE ST.

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	LINDSAY	Ontario	K9V 2T2	705-878-1282

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
ELDON LANDFILL VICTORIA CTY			

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
311 ROCKVIEW RD.		

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	83	17	659024	4934339	MACELLAN	☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
	WITHIN 15 FT. OF NEW WELL TAG # A033850 2-ABS PLASTIC				
	MONITORING WELLS (1-4FT, 1-10FT) WERE PULLED				
	THE 4 FT HOLE WAS FILLED WITH BENTONITE. THE 10 FT				
	HOLE WAS OVERDRILLED WITH 4.25" I.D. HSA. (9" HOLE)				
	AND THE HOLE WAS FILLED WITH BENTONITE				

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)

Water Record

Water found at ___ Metres / Kind of Water

___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was ☐ Clear and sediment free ☐ Other, specify

Chlorinated ☐ Yes ☑ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Metres To
Casing				
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___ hrs + ___ min	2		2	
Final water level end of pumping ___ metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___ metres	5		5	
Recommended pump rate. (litres/min)	10		10	
	15		15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record

☐ Annular space ☑ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	3.	BENTONITE	

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

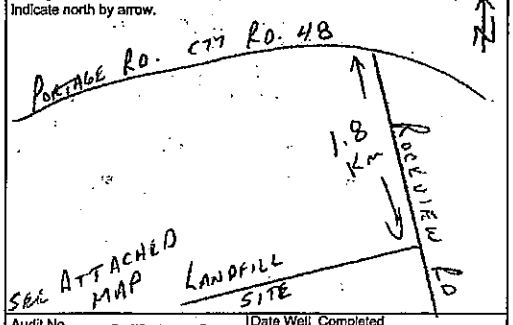
☐ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☑ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

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



Audit No. Z 37102

Date Well Completed: YYYY 05 MM 12 DD 16

Was the well owner's information package delivered? ☐ Yes ☑ No

Date Delivered: YYYY MM DD

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
ALL TERRAIN DRILLING LIMITED	1129

Business Address (street name, number, city etc.): 3-661 COLBY DR. WATERLOO ONT N2V1C2

Name of Well Technician (last name, first name)	Well Technician's Licence No.
GRANT DON / POLLICE MIKE	268

Signature of Technician/Contractor: X

Date Submitted: YYYY 06 MM 01 DD 27

Ministry Use Only

Data Source	Contractor
Date Received YYYY MM DD	Date of Inspection YYYY MM DD
Remarks	Well Record Number

Peterborough
Barrie
Oshawa
T: 866-217-7900
www.cambium-inc.com

Log of Borehole: MW 33-I

Client: City of Kawartha Lakes
Project Name: Monitoring Well Installation
Project No.: 5210-001
Contractor: Canadian Environmental Drilling
Method: 8' Hollow Stem and 4.5' Air Hammer
Date Completed: September 6, 2016
Location: Eldon WDS
UTM: -
Elevation: -

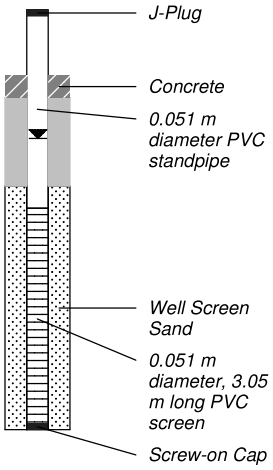
SUBSURFACE PROFILE			SAMPLE					
Depth (ft)	Depth (m)	Lithology	Description	Number	Type	% Recovery	SPT (n)/RQD	Well Installation	Remarks
-5	-1								
0	0		Native Soil: Peat topsoil and boulders/cobbles	1	SS	33	7	J-Plug; Concrete	Well installed with lockable casing and sample tubing
5	1			2	SS	42	9		
	2		Fine Sand: Brown, fine sand with trace silt, moist, soft.	3	SS	71	9		
				4	SS	79	10		
10	3		Silt: Grey silt with some fine sand and clay Dry to moist from 0.76 mBGS to 3.05 mBGS Moist to saturated from3.05 mBGS to 6.10 mBGS Some red staining between 0.76 mBGS and 1.37 mBGS Soft to firm	5	SS	100	4		
	4								
15	5			6	SS	100	14		
20	6			-	SS	0	9	0.038 m diameter PVC standpipe; Bentonite Chips	
	7								
25	8		Sand: Grey fine to medium sand, saturated, loose	7	SS	100	32		
30	9			8	SS	100	8		Water level= 8.55 mBGS (9.43 mTOP)
35	11			9	SS	100	11		
40	12								
45	13		Limestone: Limestone Bedrock encountered at 12.5 mBGS						
	14								
50	15		Borehole terminated at 15.85 mBGS in Limestone Bedrock					Well Screen Sand; 0.038 m diameter, 3.05 m long PVC screen	Well depth = 15.42 mBGS (16.31 mTOP)
	16								
55									

Logged By: Cameron M.
Input By: Matt C.

Peterborough
Barrie
Oshawa
T: 866-217-7900
www.cambium-inc.com

Log of Borehole: MW 33-II

Client: City of Kawartha Lakes
Project Name: Monitoring Well Installation
Project No.: 5210-001
Contractor: Canadian Environmental Drilling
Method: 8' Hollow Stem and 4.5' Air Hammer
Date Completed: September 6, 2016
Location: Eldon WDS
UTM: -
Elevation: -

SUBSURFACE PROFILE			SAMPLE					
Depth (ft)	Depth (m)	Lithology	Description	Number	Type	% Recovery	SPT (n)/RQD	Well Installation	Remarks
-5	-1								
0	0		Native Soil: Peat topsoil and boulders/cobbles	1	SS	33	7		Well installed with lockable casing and sample tubing
5	1		Fine Sand: Brown, fine sand with trace silt, moist, soft.	2	SS	42	9		
	2			3	SS	71	9		Water level= 0.87 mBGS (1.77 mTOP) on Sept 7, 2016
10	3		Silt: Grey silt with some fine sand and clay Dry to moist from 0.76 mBGS to 3.05 mBGS Moist to saturated from3.05 mBGS to 6.10 mBGS Some red staining between 0.76 mBGS and 1.37 mBGS Soft to firm	4	SS	79	10		
	4			5	SS	100	4		
15	5			6	SS	100	14		Well depth = 4.88 mBGS (5.79 mTOP)
20	6								
	7								
25	8		Borehole terminated at 4.88 mBGS in silt						
30	9								
	10								
35	11								
40	12								
	13								
45	14								
50	15								
	16								
55									

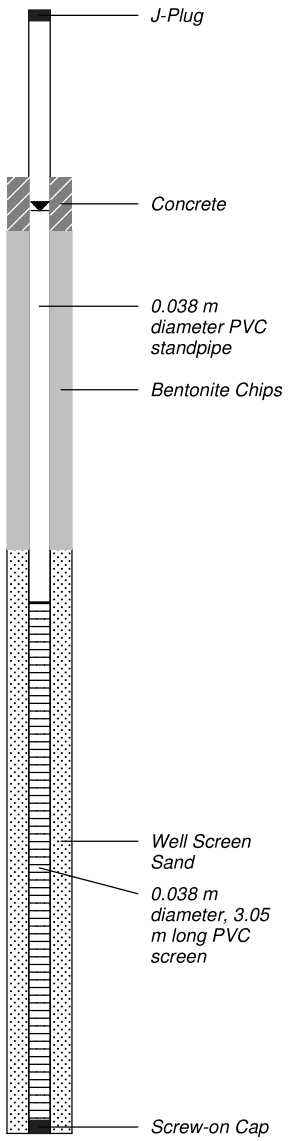
Logged By: Cameron M. **Input By:** Matt C.

Peterborough
Barrie
Oshawa
T: 866-217-7900
www.cambium-inc.com

Log of Borehole: MW 34-I

Client: City of Kawartha Lakes
Project Name: Monitoring Well Installation
Project No.: 5210-001
Contractor: Canadian Environmental Drilling
Method: 8' Hollow Stem and 4.5' Air Hammer
Date Completed: September 7, 2016
Location: Eldon WDS
UTM: -
Elevation: -

SUBSURFACE PROFILE			SAMPLE					
Depth (ft)	Depth (m)	Lithology	Description	Number	Type	% Recovery	SPT (n)/RQD	Well Installation	Remarks
-5									
	-1								
0	0		Native Soil: Organics	1	SS	62.5			Well installed with lockable casing and sample tubing
			Silty Sand: Brown silty fine sand, moist to saturated, soft to firm						Water level= 0.19 mBGS (1.15 mTOP) on Sept 7, 2016
	1			2	SS	25			
5			Sand and Silt: Grey fine sand and silt, moist, soft						
	2		Limestone: Limestone Bedrock encountered at 1.07 mBGS						
10	3								
	4								
15									
	5		Borehole terminated at 5.49 mBGS in Limestone Bedrock						Well depth = 5.18 mBGS (6.62 mTOP)
	6								
20									



Logged By: Cameron M.
Input By: Matt C.

MW-35

BOREHOLE NO. BH18-1

PROJECT NAME: CITY OF KAWARTHA LAKES - ELDON LANDFILL

PROJECT NO.: 171-00763-00

CLIENT: CITY OF KAWARTHA LAKES

DATE COMPLETED: Feb 05, 2018

BOREHOLE TYPE: DIRECT PUSH/ 210 mm HOLLOW STEM AUGER

SUPERVISOR: TB

GROUND ELEVATION: NOT SURVEYED

REVIEWER: JSA

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION "N" VALUE 10 20 30 / SHEAR STRENGTH	WATER CONTENT % 10 20 30 / W_P W_L	REMARKS
0.0	**PEAT:** Black fiberous PEAT, some sand, some silt, wet to saturated										Monitoring well installed with 50 mm inner diameter, schedule 40 PVC risers, with a 1.53 m length No. 10 screen size well screen. Groundwater level measured at 0.4 m below ground surface in monitoring well on completion of well installation.
0.8	**CLAYEY SAND:** Grey CLAYEY SAND, some silt, WTPL			DP1							
1.0											
2.0				DP2							
2.4	Borehole terminated at 2.4 m below ground surface in CLAYEY SAND.										
3.0											
4.0											

WSP GEOLOGIC (METRIC) ELDON BOREHOLE LOGS.GPJ JAGGER HIMS BASIC.GDT 2/6/18

MW-36

BOREHOLE NO. BH18-2

PROJECT NAME: CITY OF KAWARTHA LAKES - ELDON LANDFILL

PROJECT NO.: 171-00763-00

CLIENT: CITY OF KAWARTHA LAKES

DATE COMPLETED: Feb 05, 2018

BOREHOLE TYPE: DIRECT PUSH/ 210 mm HOLLOW STEM AUGER

SUPERVISOR: TB

GROUND ELEVATION: NOT SURVEYED

REVIEWER: JSA

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION 'N' VALUE 10 20 30 / SHEAR STRENGTH	WATER CONTENT % 10 20 30 / Wp Wl	REMARKS
0.0	**PEAT:** Black fiberous PEAT, some sand, some silt, wet to saturated			DP1							Monitoring well installed with 50 mm inner diameter, schedule 40 PVC risers, with a 1.53 m length No. 10 screen size well screen. Groundwater level measured at 0.1 m below ground surface in monitoring well on completion of well installation.
0.9	**CLAYEY SAND:** Grey CLAYEY SAND, some silt, WTPL			DP2							
1.0											
2.0											
2.6	Borehole terminated at 2.6 m below ground surface in CLAYEY SAND.										
3.0											
4.0											

MW-37

BOREHOLE NO. BH18-3

PROJECT NAME: CITY OF KAWARTHA LAKES - ELDON LANDFILL
PROJECT NO.: 171-00763-00
CLIENT: CITY OF KAWARTHA LAKES
DATE COMPLETED: Feb 05, 2018
BOREHOLE TYPE: DIRECT PUSH/ 210 mm HOLLOW STEM AUGER
SUPERVISOR: TB
GROUND ELEVATION: NOT SURVEYED
REVIEWER: JSA

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION "N" VALUE 10 20 30 / SHEAR STRENGTH	WATER CONTENT % 10 20 30 / Wp Wl	REMARKS
0.0	**TOPSOIL:** Black silty sand TOPSOIL, some organics (rootlets, fiberous, woody), wet										Monitoring well installed with 50 mm inner diameter, schedule 40 PVC risers, with a 1.53 m length No. 10 screen size well screen.
0.4	**CLAYEY SAND:** Brown to grey CLAYEY SAND, some silt, WTPL			DP1							
1.0											Groundwater level measured at 1.4 m below ground surface in monitoring well on completion of well installation.
				DP2							
2.0											
2.3	Borehole terminated at 2.3 m below ground surface in CLAYEY SAND.										
3.0											
4.0											

Log of Borehole MW201

Project No. MRK-00256269-A0

Drawing No. 8

Project: City of Kawartha Landfill Sites

Sheet No. 1 of 1

Location: Various Landfill Sites, Kawartha Lakes

Eldon Landfill

Date Drilled: October 18, 2019

Drill Type: CME-75 Track Mount

Datum:

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH	N Value (20 40 60)	Combustible Vapour Reading (ppm) (25 50 75)	SAMPLES	% RECOV	SAMPLE ID	ANALYSIS
		Brown silty sand **TOPSOIL**, some rootlets, moist, no odour, no staining.	267.69 / ~267.4	0				60	SS1	
		Brown sandy **SILT**, trace gravel, moist, no odour, no staining.	~266.2	1				20	SS2	
		Brown **SAND**, some gravel and cobbles, wet, no odour, no staining.	~264.5	2				80	SS3	
		LIMESTONE BEDROCK	~264.2	3	3 inches			60	SS4	
				4				20	SS5	
		End of Test hole at 3.51 mbgs.		5						
				6						
				7						
				8						
				9						
				10						
				11						
				12						

ENVIRONMENTAL-EXP TESTHOLE LOGS.GPJ 1/17/20

Time	Water Level (m)	Depth to Cave (m)

exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

APPENDIX C

Ground Water Elevation Tables

Summary of Groundwater Elevations

Monitor No.	Ground Elevation (mASL)	Top of Pipe Elevation (mASL)	06-May-08		14-Aug-08		28-May-09		07-Aug-09		05-Oct-09		08-Jun-10		06-Oct-10	
			Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL
7	272.19	273.10	6.1	267.0	6.4	266.8	6.2	266.9	6.5	266.6	6.7	266.4	6.4	266.8	6.4	266.7
8	270.87	271.65	4.4	267.3	4.7	267.0	4.6	267.1	4.9	266.7	5.1	266.6	4.7	267.0	4.8	266.9
9	266.20	267.04	1.1	266.0	1.0	266.1	1.0	266.1	1.2	265.9	1.2	265.9	1.0	266.0	1.0	266.0
10	270.69	271.58	1.7	269.8	2.0	269.5	2.1	269.4	2.3	269.2	2.2	269.3	1.9	269.7	2.1	269.4
11-I	272.10	272.88	9.1	263.8	9.8	263.1	7.2	265.8	5.3	267.6	8.8	264.1	5.0	267.9	8.6	264.3
11-II	*272.12*	*272.92*	*4.7*	*268.3*	-	-	*4.8*	*268.1*	*5.3*	*267.7*	*5.7*	*267.3*	*5.1*	*267.9*	*5.2*	*267.8*
12	*267.91*	*268.73*	*4.8*	*267.8*	*5.3*	*267.4*	*5.0*	*267.6*	*5.5*	*267.2*	*5.9*	*266.8*	*5.3*	*267.4*	*5.4*	*267.3*
13-I	267.00	268.42	1.8	266.6	1.5	266.9	1.3	267.2	1.8	266.6	-	-	1.4	267.0	1.5	266.9
13-II	267.86	268.62	1.3	267.3	1.6	267.0	1.4	267.2	2.0	266.6	-	-	1.5	267.1	1.7	266.9
14-I	*278.90*	*279.59*	9.1	267.9	9.4	267.6	9.9	267.1	10.4	266.6	-	-	10.1	266.9	10.2	266.8
14-II	*278.95*	*279.99*	*Blocked - Needs Repair*		-	-	*10.5*	*267.1*	*11.0*	*266.6*	-	-	*10.6*	*266.9*	*10.7*	*266.9*
14-III	279.05	280.03	9.7	268.0	10.0	267.7	10.6	267.1	11.1	266.6	11.1	266.6	10.7	266.9	10.8	266.8
16-I	272.63	273.50	5.8	267.3	6.2	266.9	6.0	267.1	6.4	266.7	6.6	266.6	6.2	266.9	6.3	266.9
16-II	272.64	273.03	6.1	267.1	6.2	267.0	6.0	267.2	6.4	266.8	6.6	266.6	6.2	267.0	6.2	267.0
17-I	*271.57*	*272.06*	*5.7*	*266.7*	*6.0*	*266.4*	*5.8*	*266.5*	*6.1*	*266.2*	-	-	*5.9*	*266.4*	*5.5*	*266.8*
17-II	271.78	272.63	5.7	267.1	6.0	266.8	5.8	266.9	6.2	266.6	-	-	6.0	266.8	6.1	266.7
19	269.40	270.22	3.4	266.9	3.6	266.7	3.5	266.8	3.8	266.5	-	-	3.6	266.7	3.7	266.6
25-I	*266.52*	*267.46*	*0.8*	*266.8*	*0.8*	*266.7*	*0.8*	*266.7*	*1.0*	*266.5*	-	-	*0.9*	*266.7*	*0.9*	*266.6*
25-II	*266.66*	*267.69*	*0.9*	*266.8*	*1.1*	*266.6*	*1.0*	*266.8*	*1.3*	*266.5*	-	-	*1.1*	*266.6*	*1.2*	*266.6*
26-I	266.80	267.31	1.1	266.3	1.1	266.3	1.0	266.4	1.3	266.1	-	-	1.2	266.2	1.1	266.3
26-II	*266.92*	*267.26*	*0.6*	*266.8*	*0.7*	*266.6*	*0.7*	*266.6*	*0.8*	*266.5*	-	-	*0.7*	*266.7*	*0.7*	*266.7*
26-III	266.88	267.20	0.6	266.7	0.7	266.6	0.7	266.6	0.8	266.5	-	-	0.6	266.7	0.6	266.7
27-I	265.95	266.87	1.6	265.4	1.7	265.2	1.6	265.4	1.8	265.2	-	-	1.7	265.2	1.7	265.3
27-II	265.94	266.86	1.0	265.9	1.1	265.8	1.2	265.8	1.4	265.5	-	-	1.0	265.9	1.2	265.7
29-I	265.33	266.29	0.5	265.9	0.7	265.7	0.7	265.7	0.9	265.5	-	-	0.7	265.7	0.6	265.9
29-II	*265.34*	*266.17*	*1.2*	*265.1*	*0.9*	*265.4*	*0.9*	*265.4*	*1.1*	*265.2*	*1.0*	*265.3*	*0.8*	*265.5*	*0.9*	*265.4*
29-III	265.34	266.30	1.0	265.4	1.2	265.3	1.1	265.3	1.3	265.1	1.2	265.3	1.1	265.4	1.1	265.4
30-I	266.85	268.00	1.0	266.6	1.1	266.5	2.1	265.5	1.3	266.3	-	-	1.0	266.6	1.1	266.5
31-I	266.26	267.64	1.0	267.0	1.3	266.7	1.5	266.6	1.2	266.8	-	-	1.1	267.0	1.2	266.9
32-I	266.92	268.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33-I	267.66	268.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33-II	267.66	268.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	266.06	266.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	266.61	267.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	265.34	266.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	265.15	266.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-
201	*267.69*	*268.41*	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

1. Shaded cells indicate monitors located in the bedrock.
2. Italicized cells indicate monitors located in the deep overburden.
3. Unshaded and italicized cells indicate monitors located in the shallow overburden.
4. "-" measurement not obtained.
5. MASL - metres above sea level
6. MBTOP - metres below top of pipe

Summary of Groundwater Elevations

Monitor No.	Ground Elevation (mASL)	Top of Pipe Elevation (mASL)	12-May-11		08-Nov-11		18-Apr-12		06-Jun-13		29-Oct-13		01-May-14		24-Sep-14	
			Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL
7	272.19	273.10	6.2	267.0	6.5	266.7	6.29	266.8	6.27	266.9	6.43	266.7	6.04	267.1	6.70	266.4
8	270.87	271.65	4.5	267.2	4.8	266.9	4.64	267.0	4.63	267.0	4.79	266.9	4.31	267.4	5.09	266.6
9	266.20	267.04	1.0	266.1	1.0	266.0	1.02	266.0	0.77	266.3	0.72	266.3	0.80	266.3	1.10	266.0
10	270.69	271.58	2.1	269.4	2.1	269.4	2.32	269.2	2.04	269.5	1.83	269.7	1.58	269.9	2.45	269.1
11-I	272.10	272.88	6.3	266.6	6.9	266.0	6.74	266.2	5.22	267.7	6.01	266.9	5.44	267.5	5.45	267.5
11-II	*272.12*	*272.92*	*4.8*	*268.2*	*5.2*	*267.8*	*4.94*	*268.0*	*4.94*	*268.0*	*5.23*	*267.7*	*4.61*	*268.3*	*5.64*	*267.3*
12	*267.91*	*268.73*	*5.0*	*267.7*	*5.5*	*267.2*	*5.16*	*267.5*	*5.15*	*267.5*	*5.37*	*267.3*	*4.78*	*267.9*	*5.71*	*266.9*
13-I	267.00	268.42	1.2	267.2	1.5	266.9	1.36	267.1	1.32	267.1	1.49	266.9	1.02	267.4	1.79	266.6
13-II	267.86	268.62	1.4	267.2	1.7	266.9	1.52	267.1	1.51	267.1	1.66	267.0	1.25	267.4	1.96	266.7
14-I	*278.90*	*279.59*	9.9	267.2	11.3	265.8	10.52	266.5	11.00	266.0	12.14	264.9	-	-	12.30	264.7
14-II	*278.95*	*279.99*	*10.4*	*267.2*	*11.8*	*265.8*	*11.57*	*266.0*	*11.56*	*266.0*	*11.71*	*265.9*	*11.24*	*266.3*	*12.01*	*265.6*
14-III	279.05	280.03	10.5	267.1	11.9	265.8	11.52	266.1	11.06	266.6	11.83	265.8	11.34	266.3	12.11	265.5
16-I	272.63	273.50	6.0	267.2	6.3	266.8	6.09	267.0	6.07	267.0	6.29	266.8	5.78	267.3	6.57	266.5
16-II	272.64	273.03	6.0	267.2	6.3	266.9	6.11	267.0	6.09	267.1	6.27	266.9	5.79	267.4	6.56	266.6
17-I	*271.57*	*272.06*	*5.2*	*267.1*	*5.5*	*266.8*	*5.35*	*267.0*	*5.33*	*267.0*	*5.49*	*266.8*	*5.08*	*267.2*	*5.76*	*266.6*
17-II	271.78	272.63	5.8	267.0	6.1	266.7	5.90	266.9	5.89	266.9	6.05	266.7	5.65	267.1	6.32	266.5
19	269.40	270.22	3.4	266.8	3.7	266.6	3.54	266.7	3.54	266.7	3.65	266.6	3.31	267.0	3.93	266.3
25-I	*266.52*	*267.46*	*0.7*	*266.9*	*0.9*	*266.6*	*0.77*	*266.8*	*0.77*	*266.8*	*0.87*	*266.7*	*0.52*	*267.0*	*1.15*	*266.4*
25-II	*266.66*	*267.69*	*0.9*	*266.8*	*1.2*	*266.6*	*1.02*	*266.7*	*1.02*	*266.7*	*1.11*	*266.6*	*0.75*	*267.0*	*1.37*	*266.4*
26-I	266.80	267.31	1.0	266.4	1.1	266.3	1.06	266.3	1.10	266.3	1.15	266.2	0.86	266.5	1.36	266.0
26-II	*266.92*	*267.26*	*0.5*	*266.9*	*0.7*	*266.6*	*0.58*	*266.8*	*0.56*	*266.8*	*0.66*	*266.7*	*0.33*	*267.0*	*0.92*	*266.4*
26-III	266.88	267.20	0.4	266.9	0.6	266.6	0.52	266.8	0.50	266.8	0.59	266.7	0.27	267.0	0.86	266.4
27-I	265.95	266.87	1.6	265.4	1.7	265.2	1.74	265.2	1.16	265.8	1.87	265.1	1.52	265.5	2.10	264.9
27-II	265.94	266.86	1.1	265.9	1.2	265.8	1.13	265.8	1.16	265.8	1.20	265.8	1.01	265.9	1.44	265.5
29-I	265.33	266.29	0.5	266.0	0.6	265.9	0.61	265.8	0.64	265.8	0.63	265.8	0.53	265.9	0.80	265.6
29-II	*265.34*	*266.17*	*0.8*	*265.5*	*0.9*	*265.4*	*0.91*	*265.4*	*0.91*	*265.4*	*0.88*	*265.4*	*0.81*	*265.5*	*1.07*	*265.2*
29-III	265.34	266.30	1.0	265.4	1.0	265.4	1.06	265.4	1.07	265.4	1.03	265.4	1.00	265.4	1.28	265.2
30-I	266.85	268.00	1.0	266.6	1.1	266.5	1.04	266.5	1.05	266.5	1.02	266.6	0.98	266.6	1.35	266.2
31-I	266.26	267.64	1.1	266.9	1.2	266.8	1.16	266.9	1.16	266.9	1.14	266.9	1.02	267.0	1.38	266.6
32-I	266.92	268.13	-	-	-	-	-	-	1.37	266.5	1.31	266.6	1.27	266.6	1.70	266.2
33-I	267.66	268.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33-II	267.66	268.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	266.06	266.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	266.61	267.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	265.34	266.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	265.15	266.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-
201	*267.69*	*268.41*	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

1. Shaded cells indicate monitors located in the bedrock.
2. Italicized cells indicate monitors located in the deep overburden.
3. Unshaded and italicized cells indicate monitors located in the shallow overburden.
4. "-" measurement not obtained.
5. MASL - metres above sea level
6. MBTOP - metres below top of pipe

Summary of Groundwater Elevations

Monitor No.	Ground Elevation (mASL)	Top of Pipe Elevation (mASL)	27-Apr-15		05-Oct-15		25-Apr-16 / 26-Apr-16		19-Oct-16 / 20-Oct-16		12-Apr-17		5-Oct-17 / 6-Oct-17		10-Apr-18 / 11-Apr-18	
			Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL
7	272.19	273.10	6.19	266.94	6.73	266.40	6.11	267.02	6.97	266.16	6.11	267.02	7.05	266.08	6.20	266.93
8	270.87	271.65	4.57	267.10	5.13	266.54	4.42	267.25	5.39	266.28	4.35	267.32	5.13	266.54	4.52	267.15
9	266.20	267.04	1	266.13	1.17	265.96	0.99	266.14	1.10	266.03	0.98	266.15	1.16	265.97	1.10	266.03
10	270.69	271.58	1.76	269.74	2.38	269.12	1.86	269.64	2.43	269.07	1.49	270.01	2.56	268.94	1.67	269.83
11-I	272.10	272.88	4.82	268.09	5.57	267.34	4.68	268.23	5.86	267.05	4.68	268.23	5.50	267.41	4.78	268.13
11-II	*272.12*	*272.92*	*4.86*	*268.10*	*5.61*	*267.35*	*4.73*	*268.23*	*5.89*	*267.07*	*4.68*	*268.28*	*5.54*	*267.42*	*4.83*	*268.13*
12	*267.91*	*268.73*	*4.95*	*267.60*	*5.67*	*266.88*	*4.89*	*267.66*	*5.94*	*266.61*	*4.75*	*267.80*	*5.64*	*266.91*	*4.92*	*267.63*
13-I	267.00	268.42	1.23	267.19	1.83	266.59	1.13	267.29	2.09	266.33	1.08	267.34	1.83	266.59	1.22	267.20
13-II	267.86	268.62	1.4	267.22	2.00	266.62	1.33	267.29	2.24	265.53	1.26	267.36	1.99	266.63	1.40	267.22
14-I	*278.90*	*279.59*	11.8	267.79	13.10	266.49	12.46	267.13	6.58	273.01	12.98	266.61	12.95	266.64	9.15	270.44
14-II	*278.95*	*279.99*	*11.45*	*268.00*	*12.97*	*266.48*	*12.28*	*267.71*	*9.07*	*270.92*	*12.23*	*267.76*	*12.96*	*267.03*	*8.20*	*271.79*
14-III	279.05	280.03	11.56	268.00	13.09	266.47	12.40	267.63	13.34	266.69	12.34	267.69	13.07	266.96	12.95	267.08
16-I	272.63	273.50	5.98	267.14	6.58	266.54	5.89	267.23	6.82	266.30	well destroyed		well destroyed		well destroyed	
16-II	272.64	273.03	5.99	267.17	6.58	266.58	5.90	267.26	6.84	266.32	5.86	267.30	6.63	266.53	6.00	267.16
17-I	*271.57*	*272.06*	*5.23*	267.08	*5.79*	266.52	*5.16*	267.15	*6.03*	266.28	*5.13*	267.18	*6.92*	265.39		272.31
17-II	271.78	272.63	-	-	6.35	266.41	5.72	267.04	6.58	266.18	5.68	267.08	6.38	266.38	5.79	266.97
19	269.40	270.22	3.45	266.82	3.96	266.31	3.36	266.91	4.18	266.09	3.33	266.94	3.96	266.31	3.44	266.83
25-I	*266.52*	*267.46*	*0.68*	*266.85*	*1.19*	266.34	*0.57*	266.96	*1.39*	266.14	*0.57*	266.96	*1.18*	266.35	*0.67*	266.86
25-II	*266.66*	*267.69*	*0.92*	*266.83*	*1.42*	266.33	*0.80*	266.95	*1.61*	266.14	*0.81*	266.94	*1.40*	266.35	*0.90*	266.85
26-I	266.80	267.31	1.01	266.38	1.43	265.96	0.95	266.44	1.61	265.78	1.02	266.37	1.41	265.98	0.99	266.40
26-II	*266.92*	*267.26*	*0.47*	*266.87*	*0.96*	266.38	*0.37*	266.97	*1.18*	266.16	*0.38*	266.96	*0.96*	266.38	*0.47*	266.87
26-III	266.88	267.20	0.42	266.87	0.90	266.39	0.31	266.98	1.12	266.17	0.32	266.97	0.90	266.39	0.42	266.87
27-I	265.95	266.87	1.62	265.37	1.92	265.07	1.60	265.39	2.23	264.76	1.70	265.29	1.96	265.03	1.70	265.29
27-II	265.94	266.86	1.07	265.89	1.49	265.47	1.05	265.91	1.63	265.33	1.05	265.91	1.46	265.50	1.07	265.89
29-I	265.33	266.29	0.57	265.86	0.85	265.58	0.49	265.94	1.05	265.38	1.53	264.90	0.86	265.57	0.70	265.73
29-II	*265.34*	*266.17*	*0.87*	*265.43*	*1.32*	*264.98*	*0.85*	*265.45*	*1.30*	*265.00*	*0.85*	*265.45*	*1.15*	*265.15*	*0.88*	*265.42*
29-III	265.34	266.30	1.03	265.40	1.25	265.18	1.03	265.40	1.43	265.00	1.13	265.30	1.26	265.17	1.02	265.41
30-I	266.85	268.00	1.02	266.56	1.41	266.17	1.00	266.58	1.74	265.84	0.98	266.60	1.52	266.06	1.17	266.41
31-I	266.26	267.64	1.14	266.87	1.39	266.62	1.14	266.87	1.64	266.37	1.13	266.88	1.46	266.55	1.26	266.75
32-I	266.92	268.13	1.13	266.76	1.48	266.41	1.17	266.72	1.86	266.03	1.17	266.72	1.59	266.30	1.22	266.67
33-I	267.66	268.48	-	-	-	-	-	-	10.56	257.95	3.15	265.36	1.99	266.52	3.04	265.47
33-II	267.66	268.46	-	-	-	-	-	-	1.80	266.71	0.70	267.81	1.51	267.00	0.82	267.69
34	266.06	266.94	-	-	-	-	-	-	0.34	266.60	0.00	266.94	0.10	266.84	0.20	266.74
35	266.61	267.46	-	-	-	-	-	-	-	-	-	-	-	-	1.11	266.35
36	265.34	266.23	-	-	-	-	-	-	-	-	-	-	-	-	1.13	265.10
37	265.15	266.19	-	-	-	-	-	-	-	-	-	-	-	-	1.27	264.92
201	*267.69*	*268.41*	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

1. Shaded cells indicate monitors located in the bedrock.
2. Italicized cells indicate monitors located in the deep overburden.
3. Unshaded and italicized cells indicate monitors located in the shallow overburden.
4. "-" measurement not obtained.
5. MASL - metres above sea level
6. MBTOP - metres below top of pipe

Summary of Groundwater Elevations

Monitor No.	Ground Elevation (mASL)	Top of Pipe Elevation (mASL)	1-Oct-18 / 2-Oct-18		22-Apr-19 / 23-Apr-19		8-Oct-19 / 9-Oct-19		13-Apr-20		20-Apr-22		12-Oct-22		19-Apr-23	
			Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL
7	272.19	273.10	6.89	266.24	6.01	267.09	6.85	266.25	6.00	267.10	6.15	266.95	6.90	266.20	6.06	267.04
8	270.87	271.65	5.28	266.39	4.26	267.39	5.25	266.40	4.26	267.39	4.49	267.16	5.29	266.36	4.45	267.20
9	266.20	267.04	1.30	265.83	1.05	265.99	1.04	266.00	1.12	265.92	0.94	266.10	1.19	265.85	0.97	266.07
10	270.69	271.58	2.50	269.00	1.43	270.15	2.41	269.17	1.59	269.99	1.66	269.92	2.46	269.12	1.71	269.87
11-I	272.10	272.88	3.68	269.23	4.70	268.18	5.67	267.21	4.67	268.21	4.78	268.10	5.74	267.14	4.79	268.09
11-II	*272.12*	*272.92*	*5.77*	*267.19*	*4.75*	*268.17*	*5.71*	*267.21*	*4.70*	*268.22*	*4.82*	*268.10*	*5.77*	*267.15*	*4.76*	*268.16*
12	*267.91*	*268.73*	*2.00*	*270.55*	*1.04*	*267.69*	*2.00*	*266.73*	*1.20*	*267.53*	*1.12*	*267.61*	*2.06*	*266.67*	*1.07*	*267.66*
13-I	267.00	268.42	1.14	267.28	1.00	267.42	1.96	266.46	0.99	267.43	1.18	267.24	2.00	266.42	1.06	267.36
13-II	267.86	268.62	2.10	266.52	1.18	267.44	2.13	266.49	1.17	267.45	1.35	267.27	2.15	266.47	1.24	267.38
14-I	*278.90*	*279.59*	14.21	265.38	12.48	267.11	13.66	265.93	12.52	267.07	Blocked		13.90	265.69	Blocked	
14-II	*278.95*	*279.99*	*12.58*	*267.41*	*12.68*	*267.31*	*13.62*	*266.37*	*12.67*	*267.32*	*13.16*	*266.83*	*14.01*	*265.98*	*13.09*	*266.90*
14-III	279.05	280.03	13.68	266.35	12.75	267.28	13.66	266.37	12.35	267.68	Blocked		14.14	265.89	Blocked	
16-I	272.63	273.50	1.17	271.95	well destroyed		well destroyed		6.20	267.30	6.40	267.10	7.19	266.31	6.27	267.23
16-II	272.64	273.03	6.72	266.44	5.80	267.23	6.67	266.36	5.70	267.33	5.93	267.10	6.73	266.30	5.81	267.22
17-I	*271.57*	*272.06*	5.95	266.36	*5.04*	267.02	5.90	266.16	*5.10*	266.96	*5.09*	266.97	*5.85*	266.21	*5.00*	267.06
17-II	271.78	272.63	6.50	266.26	5.59	267.04	6.46	266.17	5.59	267.04	5.64	266.99	6.37	266.26	5.54	267.09
19	269.40	270.22	4.08	266.19	3.27	266.95	4.07	266.15	3.27	266.95	3.42	266.80	4.12	266.10	3.34	266.88
25-I	*266.52*	*267.46*	1.35	266.18	*0.50*	266.96	1.30	266.16	*0.50*	266.96	*0.64*	266.82	*1.35*	266.11	*0.56*	266.90
25-II	*266.66*	*267.69*	1.39	266.36	*0.74*	266.95	1.52	266.17	*0.68*	267.01	*0.85*	266.84	*1.56*	266.13	*0.78*	266.91
26-I	266.80	267.31	1.47	265.92	0.87	266.44	1.59	265.72	0.85	266.46	1.02	266.29	1.54	265.77	0.98	266.33
26-II	*266.92*	*267.26*	1.06	266.28	*0.33*	266.93	1.10	266.16	*0.32*	266.94	*0.43*	266.83	*1.13*	266.13	*0.38*	266.88
26-III	266.88	267.20	0.97	266.32	0.27	266.93	1.05	266.15	0.20	267.00	0.39	266.81	1.07	266.13	0.36	266.84
27-I	265.95	266.87	2.28	264.71	1.37	265.50	2.30	264.57	1.40	265.47	1.76	265.11	2.08	264.79	1.67	265.20
27-II	265.94	266.86	1.65	265.31	1.04	265.82	1.50	265.36	1.02	265.84	1.06	265.80	1.65	265.21	1.06	265.80
29-I	265.33	266.29	1.14	265.29	0.40	265.89	1.01	265.28	0.30	265.99	0.56	265.73	0.90	265.39	0.56	265.73
29-II	*265.34*	*266.17*	*1.55*	*264.75*	*0.90*	*265.27*	*1.56*	*264.61*	*0.86*	*265.31*	*0.86*	*265.31*	*1.31*	*264.86*	*0.87*	*265.30*
29-III	265.34	266.30	1.62	264.81	1.10	265.20	1.56	264.74	1.05	265.25	1.10	265.20	1.47	264.83	1.07	265.23
30-I	266.85	268.00	1.52	266.06	0.98	267.02	1.60	266.40	1.04	266.96	1.02	266.98	1.65	266.35	1.02	266.98
31-I	266.26	267.64	1.49	266.52	1.10	266.54	1.70	265.94	1.14	266.50	1.15	266.49	1.63	266.01	0.83	266.81
32-I	266.92	268.13	1.70	266.19	1.24	266.89	1.90	266.23	1.24	266.89	1.31	266.82	1.87	266.26	Destroyed	
33-I	267.66	268.48	4.10	264.41	2.78	265.70	4.38	264.10	3.97	264.51	3.90	264.58	4.86	263.62	4.32	264.16
33-II	267.66	268.46	1.78	266.73	well damaged		well damaged		well damaged		0.85	267.61	1.61	266.85	0.66	267.80
34	266.06	266.94	0.16	266.78	0.00	266.94	0.34	266.60	0.00	266.94	2.11	264.83	0.46	266.48	0.00	266.94
35	266.61	267.46	1.20	266.26	1.00	266.46	1.39	266.07	1.00	266.46	1.03	266.43	1.39	266.07	1.03	266.43
36	265.34	266.23	1.52	264.71	0.95	265.28	1.47	264.76	1.00	265.23	1.06	265.17	1.48	264.75	1.03	265.20
37	265.15	266.19	1.48	264.71	0.88	265.31	1.49	264.70	0.99	265.20	1.07	265.12	1.49	264.70	1.03	265.16
201	*267.69*	*268.41*	-	-	-	-	-	-	*1.3*	*267.11*	*1.44*	*266.97*	*2.10*	*266.31*	*1.37*	*267.04*

Notes:

1. Shaded cells indicate monitors located in the bedrock.
2. Italicized cells indicate monitors located in the deep overburden.
3. Unshaded and italicized cells indicate monitors located in the shallow overburden.
4. "-" measurement not obtained.
5. MASL - metres above sea level
6. MBTOP - metres below top of pipe

Summary of Groundwater Elevations

Monitor No.	Ground Elevation (mASL)	Top of Pipe Elevation (mASL)	12-Oct-23		16-Apr-24		10-Oct-24		16-Apr-25		30-Sep-25	
			Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL	Water Level (mbtop)	mASL
7	272.19	273.10	6.57	266.53	6.06	267.04	6.71	266.39	5.93	267.17	7.04	266.06
8	270.87	271.65	4.97	266.68	3.13	268.52	5.11	266.54	4.19	267.46	5.45	266.20
9	266.20	267.04	1.00	266.04	0.75	266.29	1.09	265.95	0.78	266.26	1.72	265.32
10	270.69	271.58	1.90	269.68	1.5	270.08	2.4	269.18	1.7	269.88	2.73	268.85
11-I	272.10	272.88	5.41	267.47	4.78	268.10	5.55	267.33	4.66	268.22	5.94	266.94
11-II	*272.12*	*272.92*	*5.37*	*267.55*	4.75	268.17	5.5	267.42	4.63	268.29	5.91	267.01
12	*267.91*	*268.73*	*1.69*	*267.04*	1.07	267.66	2.11	266.62	0.97	267.76	2.22	266.51
13-I	267.00	268.42	1.65	266.77	1.07	267.35	2.11	266.31	0.9	267.52	2.17	266.25
13-II	267.86	268.62	1.80	266.82	1.33	267.29	2.15	266.47	1.13	267.49	2.32	266.30
14-I	*278.90*	*279.59*	Blocked		-		11.38	268.21	Blocked		14.16	265.43
14-II	*278.95*	*279.99*	*13.66*	*266.33*	*13.1*	*266.89*	*13.67*	266.32	*12.94*	267.05	*14.16*	265.83
14-III	279.05	280.03	Blocked		*Damaged*		*Dry*		*Damaged*		*Damaged*	
16-I	272.63	273.50	6.86	266.64	6.3	267.20	7.11	266.39	6.12	267.38	7.35	266.15
16-II	272.64	273.03	6.40	266.63	4.73	268.30	6.82	266.21	5.66	267.37	6.88	266.15
17-I	*271.57*	*272.06*	*5.51*	266.55	*5*	267.06	*4.62*	267.44	*4.86*	267.20	*6*	266.06
17-II	271.78	272.63	5.76	266.87	5.5	267.13	4.94	267.69	5.4	267.23	6.55	266.08
19	269.40	270.22	3.79	266.43	3.34	266.88	3.98	266.24	3.23	266.99	4.27	265.95
25-I	*266.52*	*267.46*	*1.02*	266.44	*0.33*	267.13	*1.14*	266.32	*0.46*	267.00	*1.5*	265.96
25-II	*266.66*	*267.69*	*1.24*	266.45	*0.77*	266.92	*1.4*	266.29	*0.68*	267.01	*1.72*	265.97
26-I	266.80	267.31	1.21	266.10	0.96	266.35	1.74	265.57	0.89	266.42	1.8	265.51
26-II	*266.92*	*267.26*	*0.81*	266.45	*0.38*	266.88	*0.95*	266.31	*0.31*	266.95	*1.3*	265.96
26-III	266.88	267.20	0.78	266.42	0.32	266.88	0.81	266.39	0.25	266.95	1.23	265.97
27-I	265.95	266.87	1.93	264.94	1.71	265.16	2	264.87	1.55	265.32	2.67	264.20
27-II	265.94	266.86	1.28	265.58	1.04	265.82	1.48	265.38	1.02	265.84	1.81	265.05
29-I	265.33	266.29	0.70	265.59	0.51	265.78	*1.05*	265.24	0.43	265.86	1.24	265.05
29-II	*265.34*	*266.17*	*1.00*	*265.17*	*0.85*	265.32	1.21	264.96	*0.81*	265.36	*1.72*	264.45
29-III	265.34	266.30	1.15	265.15	1.05	265.25	1.23	265.07	1.02	265.28	1.86	264.44
30-I	266.85	268.00	1.14	266.86	1.1	266.90	1.42	266.58	1	267.00	1.8	266.20
31-I	266.26	267.64	1.00	266.64	0.83	266.81	1.23	266.41	0.8	266.84	1.46	266.18
32-I	266.92	268.13	Destroyed		Destroyed		Destroyed		0.86	267.27	1.7	266.43
33-I	267.66	268.48	4.49	263.99	3.33	265.15	4.1	264.38	3.39	265.09	4.53	263.95
33-II	267.66	268.46	1.19	267.27	0.66	267.80	2.25	266.21	0.58	267.88	1.77	266.69
34	266.06	266.94	0.00	266.94	0.07	266.87	0.51	266.43	-0.98	267.92	0.61	266.33
35	266.61	267.46	1.17	266.29	1.02	266.44	1.23	266.23	1.02	266.44	1.53	265.93
36	265.34	266.23	1.20	265.03	1.03	265.20	1.32	264.91	0.97	265.26	1.84	264.39
37	265.15	266.19	1.27	264.92	1.1	265.09	1.36	264.83	0.98	265.21	1.87	264.32
201	*267.69*	*268.41*	*1.78*	*266.63*	1.38	267.03	1.42	266.99	1.26	267.15	2.25	266.16

Notes:

1. Shaded cells indicate monitors located in the bedrock.
2. Italicized cells indicate monitors located in the deep overburden.
3. Unshaded and italicized cells indicate monitors located in the shallow overburden.
4. "-" measurement not obtained.
5. MASL - metres above sea level
6. MBTOP - metres below top of pipe

APPENDIX D

Laboratory Certificates of Analysis

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 25-010266 - 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: Kayla Pantaleo

DATE RECEIVED: 2025-Apr-17
DATE REPORTED: 2025-May-05
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Eldon Landfill
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	20	OTTAWA	PCURIEL	2025-Apr-24	A-IC-01	SM 4110B
COD (Liquid)	20	KINGSTON	MWILSON	2025-Apr-30	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	20	OTTAWA	SBOUDREAU	2025-Apr-23	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
DOC (Liquid)	20	OTTAWA	SLOZO	2025-May-01	C-OC-01	EPA 415.2
Ion Balance (Calc.)	20	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	20	OTTAWA	STAILLON	2025-Apr-28	D-CRVI-01	MECP E3056
ICP/MS (Liquid)	20	OTTAWA	TPRICE	2025-Apr-25	D-ICPMS-01	EPA 200.8
ICP/OES (Liquid)	20	OTTAWA	AOZKAYMAK	2025-Apr-24	D-ICP-01	SM 3120B
Mercury (Liquid)	20	OTTAWA	TBENNETT	2025-Apr-28	D-HG-02	SM 3112B
Ammonia (Liquid)	20	KINGSTON	VHAMMOND	2025-May-01	NH3-001	SM 4500NH3
Phenols (Liquid)	20	KINGSTON	EHINCH	2025-Apr-29	PHEN-01	MECP E3179
TP & TKN (Liquid)	20	KINGSTON	YLIEN	2025-Apr-30	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	JEVANS	2025-Apr-26	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 *

Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received and relate only to the items tested. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

		Client I.D.	7	10	11-I	11-II	12
		Sample I.D.	25-010266-1	25-010266-2	25-010266-3	25-010266-4	25-010266-5
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	223	245	266	206	202
TDS (Calc. from Cond.)	mg/L	3	279	1180	376	225	220
Conductivity @25°C	uS/cm	1	539	2130	722	436	427
pH @25°C	pH units	-	7.50	7.57	7.52	7.56	7.71
Fluoride	mg/L	0.1	<0.1	<0.7	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	14.5	511	67.9	5.5	5.7
Nitrate (N)	mg/L	0.05	4.72	0.58	0.19	1.57	1.55
Nitrite (N)	mg/L	0.05	0.09	<0.40	<0.05	<0.05	<0.05
Sulphate	mg/L	1	17	22	7	9	9
Phosphorus (Total)	mg/L	0.01	0.03	0.24	1.65	0.08	0.06
Total Kjeldahl Nitrogen	mg/L	0.1	0.6	1.4	2.0	0.5	0.3
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.16	0.70	0.28	<0.05	<0.05
Ammonia (N)-unionized	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	3.0	1.0	14.1	1.5	1.5
Phenolics	mg/L	0.001	0.002	0.003	0.068	0.001	0.002
COD	mg/L	5	12	49	195	7	5
Hardness (as CaCO3)	mg/L	0.02	227	489	218	212	211
Aluminum	mg/L	0.01	0.02	0.07	0.16	0.02	0.02
Barium	mg/L	0.001	0.083	0.072	0.061	0.042	0.038
Boron	mg/L	0.005	0.040	0.158	0.129	0.007	0.006
Calcium	mg/L	0.02	76.8	124	62.1	71.9	71.0

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		Client I.D.	7	10	11-I	11-II	12
		Sample I.D.	25-010266-1	25-010266-2	25-010266-3	25-010266-4	25-010266-5
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Iron	mg/L	0.005	<0.005	0.092	0.049	<0.005	<0.005
Magnesium	mg/L	0.02	8.48	43.6	15.2	7.94	8.07
Manganese	mg/L	0.001	<0.001	0.002	0.042	<0.001	<0.001
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	1.7	8.1	5.0	0.7	0.7
Sodium	mg/L	0.2	5.8	203	67.7	3.2	3.1
Strontium	mg/L	0.001	0.106	3.22	0.923	0.125	0.118
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	<0.0001
Arsenic	mg/L	0.0001	<0.0001	<0.0001	0.0006	<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	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0002	0.0002	0.0004	0.0001	<0.0001
Copper	mg/L	0.0001	0.0015	0.0005	0.0005	0.0005	0.0005
Lead	mg/L	0.00002	<0.00002	<0.00002	0.00052	<0.00002	<0.00002
Molybdenum	mg/L	0.0001	0.0004	0.0003	0.0004	0.0001	0.0001
Nickel	mg/L	0.0002	0.0008	0.0007	0.0013	0.0005	0.0006
Selenium	mg/L	0.001	<0.001	0.002	<0.001	<0.001	<0.001

Michelle Dubien
Data Specialist

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		Client I.D.	7	10	11-I	11-II	12
		Sample I.D.	25-010266-1	25-010266-2	25-010266-3	25-010266-4	25-010266-5
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	Units	R.L.	-	-	-	-	-
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	0.00065	0.00040	0.00093	0.00037	0.00031
Vanadium	mg/L	0.0001	0.0002	<0.0001	0.0001	0.0003	0.0002
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	-	5.55	19.8	7.39	4.58	4.50
Cation Sum	meq/L	-	4.83	18.9	7.45	4.40	4.36
% Difference	%	-	6.99	2.40	0.389	1.98	1.54
Ion Ratio	-	-	1.15	1.05	0.992	1.04	1.03
Sodium Adsorption Ratio	-	-	0.166	4.00	1.99	0.0958	0.0928
TDS (Ion Sum Calc)	mg/L	1	279	1060	386	229	226
TDS(calc.)/EC(actual)	-	-	0.517	0.499	0.534	0.525	0.529
Conductivity Calc	µmho/cm	-	495	1970	708	422	418
Conductivity Calc / Conductivity	-	-	0.918	0.927	0.981	0.968	0.979
Langelier Index(25°C)	-	-	0.291	0.541	0.285	0.298	0.434
Saturation pH (25°C)	-	-	7.21	7.03	7.24	7.26	7.28
pH (Client Data)	pH units	-	8.08	7.26	7.59	7.02	7.85
Temperature (Client Data)	°C	-	7.4	5.1	3.8	7.0	5.7

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		Client I.D.	13-I	13-II	14-II	16-I	16-II
		Sample I.D.	25-010266-6	25-010266-7	25-010266-8	25-010266-9	25-010266-10
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	Units	R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	223	1470	775	295	276
TDS (Calc. from Cond.)	mg/L	3	238	1770	962	493	330
Conductivity @25°C	uS/cm	1	461	3170	1750	929	635
pH @25°C	pH units	-	7.83	7.16	7.29	7.54	7.49
Fluoride	mg/L	0.1	<0.1	<0.7	<0.7	<0.1	<0.1
Chloride	mg/L	0.5	6.7	141	90.7	74.4	13.3
Nitrate (N)	mg/L	0.05	0.82	<0.40	<0.40	2.10	2.15
Nitrite (N)	mg/L	0.05	<0.05	<0.40	<0.40	0.07	<0.05
Sulphate	mg/L	1	15	86	46	67	24
Phosphorus (Total)	mg/L	0.01	0.02	12.0	0.06	2.95	0.50
Total Kjeldahl Nitrogen	mg/L	0.1	0.2	146	26.7	5.2	0.4
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	<0.05	134	29.1	0.34	0.10
Ammonia (N)-unionized	mg/L	0.01	<0.01			<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	1.5	31.2	13.0	2.3	1.7
Phenolics	mg/L	0.001	<0.001	0.004	0.004	<0.001	<0.001
COD	mg/L	5	<5	295	66	182	58
Hardness (as CaCO3)	mg/L	0.02	223	772	588	358	272
Aluminum	mg/L	0.01	0.02	0.08	0.07	0.05	0.05
Barium	mg/L	0.001	0.091	0.301	0.622	0.110	0.094
Boron	mg/L	0.005	0.028	1.65	2.13	0.273	0.110
Calcium	mg/L	0.02	62.1	237	189	114	91.9

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		Client I.D.	13-I	13-II	14-II	16-I	16-II
		Sample I.D.	25-010266-6	25-010266-7	25-010266-8	25-010266-9	25-010266-10
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Iron	mg/L	0.005	0.005	7.44	0.569	0.063	0.051
Magnesium	mg/L	0.02	16.6	43.7	28.2	18.0	10.2
Manganese	mg/L	0.001	0.037	0.373	3.16	0.197	0.018
Phosphorus	mg/L	0.1	<0.1	0.2	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	1.7	89.4	25.0	22.2	28.7
Sodium	mg/L	0.2	5.4	187	101	40.3	7.9
Strontium	mg/L	0.001	0.676	1.16	0.598	0.800	0.184
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	0.0003	0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001	<0.0001	0.0010	0.0003	<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	<0.001	0.002	<0.001	0.007	<0.001
Cobalt	mg/L	0.0001	0.0004	0.0039	0.0236	0.0002	0.0002
Copper	mg/L	0.0001	0.0003	0.0001	0.0058	0.0015	0.0014
Lead	mg/L	0.00002	0.00002	<0.00004	0.00008	<0.00002	0.00008
Molybdenum	mg/L	0.0001	0.0002	0.0002	0.0002	0.0005	0.0005
Nickel	mg/L	0.0002	0.0008	0.0063	0.0231	0.0016	0.0006
Selenium	mg/L	0.001	0.001	0.002	0.001	0.001	<0.001

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		Client I.D.	13-I	13-II	14-II	16-I	16-II
		Sample I.D.	25-010266-6	25-010266-7	25-010266-8	25-010266-9	25-010266-10
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	Units	R.L.	-	-	-	-	-
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	0.00103	0.00026	0.00211	0.00062	0.00054
Vanadium	mg/L	0.0001	0.0003	0.0030	0.0010	0.0002	0.0002
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	-	5.03	35.2	19.0	9.54	6.55
Cation Sum	meq/L	-	4.76	26.3	16.9	8.21	6.51
% Difference	%	-	2.77	14.5	5.69	7.49	0.295
Ion Ratio	-	-	1.06	1.34	1.12	1.16	1.01
Sodium Adsorption Ratio	-	-	0.157	2.92	1.81	0.586	0.210
TDS (Ion Sum Calc)	mg/L	1	245	1670	948	495	351
TDS(calc.)/EC(actual)	-	-	0.532	0.528	0.541	0.533	0.553
Conductivity Calc	µmho/cm	-	453	2390	1520	859	620
Conductivity Calc / Conductivity	-	-	0.984	0.754	0.868	0.925	0.976
Langelier Index(25°C)	-	-	0.539	1.19	0.953	0.578	0.442
Saturation pH (25°C)	-	-	7.29	5.97	6.34	6.96	7.05
pH (Client Data)	pH units	-	8.17	7.21	7.62	7.80	7.85
Temperature (Client Data)	°C	-	6.1	5.5	8.0	7.0	6.0

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		Client I.D.	17-I	17-II	19	25-I	25-II
		Sample I.D.	25-010266-11	25-010266-12	25-010266-13	25-010266-14	25-010266-15
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	Units	R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	809	407	237	522	814
TDS (Calc. from Cond.)	mg/L	3	924	468	254	706	980
Conductivity @25°C	uS/cm	1	1690	884	491	1300	1790
pH @25°C	pH units	-	7.43	7.67	7.60	7.27	7.28
Fluoride	mg/L	0.1	<0.7	<0.1	<0.1	<0.1	<0.7
Chloride	mg/L	0.5	71.8	17.0	8.5	101	112
Nitrate (N)	mg/L	0.05	0.52	0.30	1.57	<0.05	<0.40
Nitrite (N)	mg/L	0.05	<0.40	0.08	<0.05	<0.05	<0.40
Sulphate	mg/L	1	34	32	18	36	25
Phosphorus (Total)	mg/L	0.01	0.10	0.21	0.09	0.19	0.39
Total Kjeldahl Nitrogen	mg/L	0.1	4.8	13.0	0.2	0.5	2.4
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	3.82	11.4	0.06	0.09	1.26
Ammonia (N)-unionized	mg/L	0.01	<0.01		<0.01	<0.01	0.02
Dissolved Organic Carbon	mg/L	0.8	24.0	7.3	2.2	4.9	12.8
Phenolics	mg/L	0.001	0.002	<0.001	<0.001	0.002	0.002
COD	mg/L	5	99	43	18	31	70
Hardness (as CaCO3)	mg/L	0.02	702	353	241	544	793
Aluminum	mg/L	0.01	0.06	0.04	0.02	0.04	0.07
Barium	mg/L	0.001	0.525	0.317	0.057	0.213	0.335
Boron	mg/L	0.005	2.73	0.656	0.080	0.456	1.01
Calcium	mg/L	0.02	224	114	80.9	160	243

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		Client I.D.	17-I	17-II	19	25-I	25-II
		Sample I.D.	25-010266-11	25-010266-12	25-010266-13	25-010266-14	25-010266-15
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Iron	mg/L	0.005	2.15	6.48	<0.005	1.23	0.112
Magnesium	mg/L	0.02	34.8	16.4	9.47	35.2	45.2
Manganese	mg/L	0.001	1.78	1.34	<0.001	0.142	1.62
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	12.3	15.5	1.3	2.9	3.3
Sodium	mg/L	0.2	95.5	21.2	5.0	66.0	124
Strontium	mg/L	0.001	0.734	0.387	0.145	0.764	0.650
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	0.0001
Arsenic	mg/L	0.0001	0.0006	0.0014	<0.0001	<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	0.0185	0.0038	0.0001	0.0006	0.0167
Copper	mg/L	0.0001	0.0044	0.0005	0.0008	0.0009	0.0092
Lead	mg/L	0.00002	0.00004	0.00003	0.00002	0.00004	0.00004
Molybdenum	mg/L	0.0001	0.0007	0.0004	0.0001	0.0002	0.0002
Nickel	mg/L	0.0002	0.0144	0.0056	0.0008	0.0140	0.0255
Selenium	mg/L	0.001	0.002	<0.001	<0.001	0.001	0.002

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		Client I.D.	17-I	17-II	19	25-I	25-II
		Sample I.D.	25-010266-11	25-010266-12	25-010266-13	25-010266-14	25-010266-15
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	Units	R.L.	-	-	-	-	-
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	0.00269	0.00069	0.00037	0.00073	0.00192
Vanadium	mg/L	0.0001	0.0007	0.0002	0.0002	0.0003	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	-	19.0	9.30	5.47	14.0	19.9
Cation Sum	meq/L	-	18.7	8.77	5.07	13.9	21.4
% Difference	%	-	0.701	2.98	3.81	0.436	3.51
Ion Ratio	-	-	1.01	1.06	1.08	1.01	0.932
Sodium Adsorption Ratio	-	-	1.57	0.491	0.141	1.23	1.91
TDS (Ion Sum Calc)	mg/L	1	965	470	273	716	1040
TDS(calc.)/EC(actual)	-	-	0.572	0.531	0.556	0.549	0.584
Conductivity Calc	µmho/cm	-	1560	790	493	1240	1730
Conductivity Calc / Conductivity	-	-	0.926	0.893	1.01	0.952	0.968
Langelier Index(25°C)	-	-	1.18	0.874	0.441	0.709	1.06
Saturation pH (25°C)	-	-	6.25	6.80	7.16	6.56	6.22
pH (Client Data)	pH units	-	7.24	7.56	8.27	7.61	8.07
Temperature (Client Data)	°C	-	7.9	6.4	7.7	7.5	6.6

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		Client I.D.	26-I	26-II	26-III	27-I	27-II
		Sample I.D.	25-010266-16	25-010266-17	25-010266-18	25-010266-19	25-010266-20
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	257	405	789	190	227
TDS (Calc. from Cond.)	mg/L	3	485	533	929	2300	259
Conductivity @25°C	uS/cm	1	915	999	1700	4080	500
pH @25°C	pH units	-	7.94	7.67	7.55	7.93	7.83
Fluoride	mg/L	0.1	<0.1	<0.1	<0.7	<0.7	<0.1
Chloride	mg/L	0.5	132	59.0	102	1160	8.4
Nitrate (N)	mg/L	0.05	<0.05	0.42	<0.40	<0.40	1.62
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.40	<0.40	<0.05
Sulphate	mg/L	1	6	44	13	<2	17
Phosphorus (Total)	mg/L	0.01	0.01	0.04	1.14	<0.01	0.14
Total Kjeldahl Nitrogen	mg/L	0.1	1.7	0.3	1.1	3.4	0.2
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	1.59	<0.05	0.07	2.62	0.06
Ammonia (N)-unionized	mg/L	0.01	0.09	<0.01	<0.01	0.03	<0.01
Dissolved Organic Carbon	mg/L	0.8	1.4	5.3	12.9	<0.8	1.9
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5	14	24	97	94	18
Hardness (as CaCO3)	mg/L	0.02	216	432	796	346	241
Aluminum	mg/L	0.01	0.01	0.04	0.06	0.02	0.02
Barium	mg/L	0.001	0.019	0.172	0.340	0.049	0.061
Boron	mg/L	0.005	0.501	0.283	0.310	1.18	0.063
Calcium	mg/L	0.02	44.0	132	216	73.8	80.4

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		Client I.D.	26-I	26-II	26-III	27-I	27-II
		Sample I.D.	25-010266-16	25-010266-17	25-010266-18	25-010266-19	25-010266-20
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Iron	mg/L	0.005	0.019	<0.005	3.31	0.104	<0.005
Magnesium	mg/L	0.02	25.8	25.0	62.2	39.4	9.58
Manganese	mg/L	0.001	0.002	0.659	2.17	0.002	<0.001
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	10.9	1.6	2.5	17.5	1.4
Sodium	mg/L	0.2	91.5	42.3	64.3	624	4.7
Strontium	mg/L	0.001	2.30	0.337	0.604	4.70	0.144
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	<0.0001
Arsenic	mg/L	0.0001	<0.0001	<0.0001	0.0005	<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	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	<0.0001	0.0054	0.0267	0.0001	0.0001
Copper	mg/L	0.0001	0.0001	0.0061	0.0018	0.0004	0.0008
Lead	mg/L	0.00002	<0.00002	<0.00002	<0.00002	<0.00004	<0.00002
Molybdenum	mg/L	0.0001	<0.0001	0.0004	0.0004	<0.0001	0.0001
Nickel	mg/L	0.0002	0.0007	0.0064	0.0098	0.0006	0.0008
Selenium	mg/L	0.001	0.002	0.001	0.001	<0.001	<0.001

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		Client I.D.	26-I	26-II	26-III	27-I	27-II
		Sample I.D.	25-010266-16	25-010266-17	25-010266-18	25-010266-19	25-010266-20
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	Units	R.L.	-	-	-	-	-
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	0.00496	0.0116	0.00012	0.00042
Vanadium	mg/L	0.0001	<0.0001	0.0003	0.0004	<0.0001	0.0002
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	-	8.99	10.7	18.9	36.6	5.24
Cation Sum	meq/L	-	8.63	10.5	19.0	33.9	5.05
% Difference	%	-	2.05	0.831	0.356	3.84	1.84
Ion Ratio	-	-	1.04	1.02	0.993	1.08	1.04
Sodium Adsorption Ratio	-	-	2.71	0.886	0.991	14.2	0.131
TDS (Ion Sum Calc)	mg/L	1	465	550	939	2020	265
TDS(calc.)/EC(actual)	-	-	0.508	0.550	0.554	0.494	0.529
Conductivity Calc	µmho/cm	-	869	963	1580	3660	483
Conductivity Calc / Conductivity	-	-	0.950	0.964	0.932	0.897	0.966
Langelier Index(25°C)	-	-	0.531	0.925	1.28	0.555	0.659
Saturation pH (25°C)	-	-	7.41	6.75	6.27	7.38	7.17
pH (Client Data)	pH units	-	8.55	7.83	7.85	7.87	8.20
Temperature (Client Data)	°C	-	8.5	7.7	7.3	7.3	6.8

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Data Specialist

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		Client I.D.	14-II
		Sample I.D.	25-010266-8
		Date Collected	2025-04-16
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.	14-II
		Sample I.D.	25-010266-8
		Date Collected	2025-04-16
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	2	<2
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

Elevated RLs due to sample matrix interferences
TKN and ammonia are within acceptable analytical limits

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 25-010292 - 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: Kayla Pantaleo

DATE RECEIVED: 2025-Apr-16
DATE REPORTED: 2025-May-01
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Eldon Landfill
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	17	OTTAWA	PCURIEL	2025-Apr-24	A-IC-01	SM 4110B
COD (Liquid)	17	KINGSTON	MWILSON	2025-Apr-29	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	17	OTTAWA	SBOUDREAU	2025-Apr-23	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
DOC (Liquid)	17	OTTAWA	SLOZO	2025-Apr-30	C-OC-01	EPA 415.2
Ion Balance (Calc.)	17	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	17	OTTAWA	STAILLON	2025-Apr-28	D-CRVI-01	MECP E3056
ICP/MS (Liquid)	17	OTTAWA	TPRICE	2025-Apr-25	D-ICPMS-01	EPA 200.8
ICP/OES (Liquid)	17	OTTAWA	AOZKAYMAK	2025-Apr-24	D-ICP-01	SM 3120B
Mercury (Liquid)	17	OTTAWA	TBENNETT	2025-Apr-28	D-HG-02	SM 3112B
Ammonia (Liquid)	17	KINGSTON	DCASSIDY	2025-Apr-29	NH3-001	SM 4500NH3
Phenols (Liquid)	17	KINGSTON	EHINCH	2025-Apr-28	PHEN-01	MECP E3179
TP & TKN (Liquid)	17	KINGSTON	YLIEN	2025-Apr-29	TPTKN-001	MECP E3516.2

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

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		Client I.D.	29-I	29-II	29-III	30	31
		Sample I.D.	25-010292-1	25-010292-2	25-010292-3	25-010292-4	25-010292-5
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	225	435	341	219	944
TDS (Calc. from Cond.)	mg/L	3	617	500	390	288	1230
Conductivity @25°C	uS/cm	1	1150	941	746	556	2220
pH @25°C	pH units	-	8.28	7.78	7.92	7.93	7.38
Fluoride	mg/L	0.1	2.1	<0.1	<0.1	<0.1	<0.7
Chloride	mg/L	0.5	250	36.4	26.7	47.5	221
Nitrate (N)	mg/L	0.05	<0.05	<0.05	<0.05	0.12	<0.40
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.40
Sulphate	mg/L	1	<1	42	36	11	51
Phosphorus (Total)	mg/L	0.01	0.48	15.3	0.98	0.58	4.71
Total Kjeldahl Nitrogen	mg/L	0.1	1.5	1.5	0.3	0.9	10.7
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	1.09	0.08	0.09	0.16	2.61
Ammonia (N)-unionized	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	0.03
Dissolved Organic Carbon	mg/L	0.8	<0.8	3.5	3.1	9.2	14.4
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5	45	209	50	85	513
Hardness (as CaCO3)	mg/L	0.02	39.6	449	366	250	886
Aluminum	mg/L	0.01	<0.01	0.04	0.09	0.02	0.07
Barium	mg/L	0.001	0.015	0.182	0.151	0.126	0.677
Boron	mg/L	0.005	1.47	0.217	0.053	0.081	0.457
Calcium	mg/L	0.02	8.04	142	115	69.2	227

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		Client I.D.	29-I	29-II	29-III	30	31
		Sample I.D.	25-010292-1	25-010292-2	25-010292-3	25-010292-4	25-010292-5
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	Units	R.L.	-	-	-	-	-
Iron	mg/L	0.005	0.011	1.29	0.830	1.17	6.11
Magnesium	mg/L	0.02	4.74	23.2	18.8	18.8	77.2
Manganese	mg/L	0.001	<0.001	0.036	0.088	0.059	0.090
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	5.7	2.1	1.7	1.9	10.2
Sodium	mg/L	0.2	209	23.3	9.7	10.3	158
Strontium	mg/L	0.001	0.536	0.331	0.273	0.691	2.62
Tin	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005	<0.005	<0.005	0.006	<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	0.0001
Arsenic	mg/L	0.0001	<0.0001	0.0005	0.0001	0.0001	0.0008
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	<0.0001	0.0004	0.0006	0.0001	0.0012
Copper	mg/L	0.0001	<0.0001	0.0004	0.0005	0.0003	0.0003
Lead	mg/L	0.00002	0.00002	0.00004	0.00008	0.00005	0.00006
Molybdenum	mg/L	0.0001	<0.0001	0.0003	0.0001	<0.0001	0.0002
Nickel	mg/L	0.0002	<0.0002	0.0055	0.0024	0.0005	0.0077
Selenium	mg/L	0.001	0.004	<0.001	<0.001	0.001	0.002

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		Client I.D.	29-I	29-II	29-III	30	31
		Sample I.D.	25-010292-1	25-010292-2	25-010292-3	25-010292-4	25-010292-5
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
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	0.00276	0.00019	<0.00005	<0.00005
Vanadium	mg/L	0.0001	<0.0001	0.0001	0.0003	0.0002	0.0022
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	-	11.7	10.6	8.32	5.96	26.2
Cation Sum	meq/L	-	10.0	10.1	7.82	5.57	25.2
% Difference	%	-	7.45	2.31	3.09	3.33	1.84
Ion Ratio	-	-	1.16	1.05	1.06	1.07	1.04
Sodium Adsorption Ratio	-	-	14.5	0.478	0.221	0.284	2.30
TDS (Ion Sum Calc)	mg/L	1	614	531	414	292	1320
TDS(calc.)/EC(actual)	-	-	0.536	0.564	0.555	0.525	0.593
Conductivity Calc	µmho/cm	-	1140	921	735	554	2110
Conductivity Calc / Conductivity	-	-	0.993	0.978	0.986	0.997	0.952
Langelier Index(25°C)	-	-	0.0656	1.11	1.05	0.668	1.20
Saturation pH (25°C)	-	-	8.21	6.67	6.87	7.26	6.18
pH (Client Data)	pH units	-	7.17	7.47	7.74	8.05	7.70
Temperature (Client Data)	°C	-	5.7	5.6	5.3	5.0	11.1

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		Client I.D.	32	33-I	33-II	34	35
		Sample I.D.	25-010292-6	25-010292-7	25-010292-8	25-010292-9	25-010292-10
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	278	288	237	278	577
TDS (Calc. from Cond.)	mg/L	3	276	908	238	1610	706
Conductivity @25°C	uS/cm	1	533	1660	461	2880	1300
pH @25°C	pH units	-	7.71	8.03	7.98	7.97	7.66
Fluoride	mg/L	0.1	<0.1	1.7	<0.1	0.6	<0.1
Chloride	mg/L	0.5	2.5	421	2.8	898	91.6
Nitrate (N)	mg/L	0.05	0.23	<0.05	0.42	<0.05	0.05
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1	12	<1	11	8	30
Phosphorus (Total)	mg/L	0.01	23.5	0.08	12.8	0.14	7.66
Total Kjeldahl Nitrogen	mg/L	0.1	5.6	1.7	1.2	2.3	2.4
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.22	1.20	0.11	1.84	0.10
Ammonia (N)-unionized	mg/L	0.01	<0.01	0.02	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	6.7	<0.8	1.6	<0.8	7.7
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5	538	38	223	42	207
Hardness (as CaCO3)	mg/L	0.02	255	158	232	314	583
Aluminum	mg/L	0.01	0.06	0.01	0.02	0.01	0.06
Barium	mg/L	0.001	0.019	0.025	0.051	0.075	0.223
Boron	mg/L	0.005	0.021	2.19	0.009	1.30	0.122
Calcium	mg/L	0.02	96.5	31.4	79.2	56.2	165

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		Client I.D.	32	33-I	33-II	34	35
		Sample I.D.	25-010292-6	25-010292-7	25-010292-8	25-010292-9	25-010292-10
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Iron	mg/L	0.005	0.097	0.074	<0.005	0.874	0.085
Magnesium	mg/L	0.02	3.39	19.3	8.23	42.2	41.8
Manganese	mg/L	0.001	0.164	0.005	0.005	0.014	2.00
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	0.9	9.8	0.9	10.8	2.7
Sodium	mg/L	0.2	10.6	260	2.6	433	50.0
Strontium	mg/L	0.001	0.270	1.84	0.177	3.27	0.868
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	0.0002	<0.0001	<0.0001	<0.0001	0.0004
Arsenic	mg/L	0.0001	0.0003	0.0011	0.0001	0.0015	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	0.000199
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0003	<0.0001	0.0002	0.0001	0.0133
Copper	mg/L	0.0001	0.0015	0.0003	0.0006	0.0002	0.0061
Lead	mg/L	0.00002	0.00010	0.00002	<0.00002	<0.00004	0.00005
Molybdenum	mg/L	0.0001	0.0017	0.0072	0.0002	0.0004	0.0002
Nickel	mg/L	0.0002	0.0007	0.0003	0.0008	0.0005	0.0145
Selenium	mg/L	0.001	<0.001	0.005	0.002	0.010	0.001

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		Client I.D.	32	33-I	33-II	34	35
		Sample I.D.	25-010292-6	25-010292-7	25-010292-8	25-010292-9	25-010292-10
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Silver	mg/L	0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001
Thallium	mg/L	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00008
Uranium	mg/L	0.00005	0.00133	0.00026	0.00292	0.00005	0.00652
Vanadium	mg/L	0.0001	0.0009	<0.0001	0.0006	<0.0001	0.0008
Chromium (VI)	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002	0.00002	0.00003	<0.00002	0.00002	0.00002
Anion Sum	meq/L	-	5.90	17.7	5.06	31.1	14.7
Cation Sum	meq/L	-	5.60	14.8	4.77	25.5	14.0
% Difference	%	-	2.66	9.12	2.99	9.85	2.55
Ion Ratio	-	-	1.05	1.20	1.06	1.22	1.05
Sodium Adsorption Ratio	-	-	0.289	9.00	0.0736	10.6	0.902
TDS (Ion Sum Calc)	mg/L	1	295	916	248	1620	729
TDS(calc.)/EC(actual)	-	-	0.553	0.552	0.539	0.561	0.559
Conductivity Calc	µmho/cm	-	526	1690	455	2940	1260
Conductivity Calc / Conductivity	-	-	0.986	1.02	0.986	1.02	0.963
Langelier Index(25°C)	-	-	0.696	0.484	0.821	0.652	1.15
Saturation pH (25°C)	-	-	7.01	7.55	7.16	7.32	6.51
pH (Client Data)	pH units	-	7.91	8.17	7.85	7.62	7.69
Temperature (Client Data)	°C	-	4.1	5.9	6.0	4.5	9.7

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		Client I.D.	36	37	201	DUP	DUP-1
		Sample I.D.	25-010292-11	25-010292-12	25-010292-13	25-010292-14	25-010292-15
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	268	372	221	204	271
TDS (Calc. from Cond.)	mg/L	3	276	384	239	221	274
Conductivity @25°C	uS/cm	1	532	736	463	428	529
pH @25°C	pH units	-	7.88	7.67	7.99	8.03	7.73
Fluoride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	10.9	10.7	9.4	6.6	10.8
Nitrate (N)	mg/L	0.05	0.16	0.51	1.51	1.74	0.16
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1	22	35	13	10	22
Phosphorus (Total)	mg/L	0.01	12.8	1.56	3.48	0.07	13.1
Total Kjeldahl Nitrogen	mg/L	0.1	6.9	2.7	0.7	0.2	7.1
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.16	0.39	0.10	<0.05	0.16
Ammonia (N)-unionized	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	12.8	47.7	2.0	1.4	12.6
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5	483	199	82	6	485
Hardness (as CaCO3)	mg/L	0.02	254	399	242	208	253
Aluminum	mg/L	0.01	0.06	0.06	0.55	0.02	0.06
Barium	mg/L	0.001	0.117	0.132	0.068	0.038	0.118
Boron	mg/L	0.005	0.074	0.015	0.041	0.007	0.071
Calcium	mg/L	0.02	83.3	144	80.6	69.8	83.3

Michelle Dubien
Data Specialist

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		Client I.D.	36	37	201	DUP	DUP-1
		Sample I.D.	25-010292-11	25-010292-12	25-010292-13	25-010292-14	25-010292-15
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Iron	mg/L	0.005	0.824	1.08	0.693	<0.005	0.810
Magnesium	mg/L	0.02	11.1	9.27	9.78	8.04	11.0
Manganese	mg/L	0.001	0.055	0.210	0.053	<0.001	0.054
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	2.1	1.3	1.6	0.7	2.1
Sodium	mg/L	0.2	7.8	10.2	4.1	3.1	7.7
Strontium	mg/L	0.001	0.147	0.250	0.136	0.117	0.146
Tin	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005	<0.005	<0.005	0.034	<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	<0.0001
Arsenic	mg/L	0.0001	0.0003	0.0004	0.0001	<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	0.002	0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0003	0.0004	0.0009	0.0001	0.0003
Copper	mg/L	0.0001	0.0007	0.0042	0.0024	0.0005	0.0006
Lead	mg/L	0.00002	0.00007	0.00003	0.00064	<0.00002	0.00007
Molybdenum	mg/L	0.0001	0.0006	0.0010	0.0001	0.0001	0.0006
Nickel	mg/L	0.0002	0.0019	0.0026	0.0015	0.0005	0.0014
Selenium	mg/L	0.001	<0.001	0.001	<0.001	<0.001	<0.001

Michelle Dubien
Data Specialist

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		Client I.D.	36	37	201	DUP	DUP-1
		Sample I.D.	25-010292-11	25-010292-12	25-010292-13	25-010292-14	25-010292-15
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
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	0.00533	0.00197	0.00039	0.00031	0.00536
Vanadium	mg/L	0.0001	0.0006	0.0015	0.0010	0.0002	0.0005
Chromium (VI)	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004
Anion Sum	meq/L	-	6.13	8.49	5.06	4.59	6.18
Cation Sum	meq/L	-	5.51	8.52	5.09	4.30	5.49
% Difference	%	-	5.34	0.206	0.248	3.32	5.84
Ion Ratio	-	-	1.11	0.996	0.995	1.07	1.12
Sodium Adsorption Ratio	-	-	0.213	0.223	0.114	0.0931	0.211
TDS (Ion Sum Calc)	mg/L	1	299	437	259	228	300
TDS(calc.)/EC(actual)	-	-	0.563	0.594	0.558	0.533	0.568
Conductivity Calc	µmho/cm	-	535	764	476	419	536
Conductivity Calc / Conductivity	-	-	1.01	1.04	1.03	0.980	1.01
Langelier Index(25°C)	-	-	0.787	0.937	0.808	0.751	0.641
Saturation pH (25°C)	-	-	7.09	6.73	7.18	7.28	7.09
pH (Client Data)	pH units	-	7.90	7.66	7.74	7.85	7.90
Temperature (Client Data)	°C	-	3.1	3.8	8.5	5.7	3.1

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Data Specialist

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		Client I.D.	DUP-2	DUP-3
		Sample I.D.	25-010292-16	25-010292-17
		Date Collected	2025-04-16	2025-04-16
Parameter	Units	R.L.	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	422	228
TDS (Calc. from Cond.)	mg/L	3	460	282
Conductivity @25°C	uS/cm	1	870	544
pH @25°C	pH units	-	7.85	7.95
Fluoride	mg/L	0.1	<0.1	<0.1
Chloride	mg/L	0.5	21.8	17.1
Nitrate (N)	mg/L	0.05	0.81	5.55
Nitrite (N)	mg/L	0.05	<0.05	0.09
Sulphate	mg/L	1	41	18
Phosphorus (Total)	mg/L	0.01	0.29	0.04
Total Kjeldahl Nitrogen	mg/L	0.1	0.4	0.4
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.07	0.17
Ammonia (N)-unionized	mg/L	0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	3.4	2.7
Phenolics	mg/L	0.001	<0.001	<0.001
COD	mg/L	5	30	5
Hardness (as CaCO3)	mg/L	0.02	416	224
Aluminum	mg/L	0.01	0.05	0.02
Barium	mg/L	0.001	0.105	0.081
Boron	mg/L	0.005	0.416	0.039
Calcium	mg/L	0.02	142	75.8

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		Client I.D.	DUP-2	DUP-3
		Sample I.D.	25-010292-16	25-010292-17
		Date Collected	2025-04-16	2025-04-16
Parameter	Units	R.L.	-	-
Iron	mg/L	0.005	<0.005	<0.005
Magnesium	mg/L	0.02	15.1	8.37
Manganese	mg/L	0.001	0.006	<0.001
Phosphorus	mg/L	0.1	<0.1	<0.1
Potassium	mg/L	0.1	1.4	1.8
Sodium	mg/L	0.2	19.6	5.7
Strontium	mg/L	0.001	0.276	0.106
Tin	mg/L	0.05	<0.05	<0.05
Titanium	mg/L	0.005	<0.005	<0.005
Zinc	mg/L	0.005	<0.005	<0.005
Antimony	mg/L	0.0001	0.0001	<0.0001
Arsenic	mg/L	0.0001	<0.0001	<0.0001
Beryllium	mg/L	0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0007	0.0001
Copper	mg/L	0.0001	0.0025	0.0014
Lead	mg/L	0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.0001	0.0002	0.0003
Nickel	mg/L	0.0002	0.0025	0.0008
Selenium	mg/L	0.001	<0.001	<0.001

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		Client I.D.	DUP-2	DUP-3
		Sample I.D.	25-010292-16	25-010292-17
		Date Collected	2025-04-16	2025-04-16
Parameter	Units	R.L.	-	-
Silver	mg/L	0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005	0.00055	0.00065
Vanadium	mg/L	0.0001	0.0002	0.0002
Chromium (VI)	mg/L	0.01	<0.01	<0.01
Mercury	mg/L	0.00002	0.00004	0.00002
Anion Sum	meq/L	-	9.96	5.82
Cation Sum	meq/L	-	9.21	4.77
% Difference	%	-	3.93	9.95
Ion Ratio	-	-	1.08	1.22
Sodium Adsorption Ratio	-	-	0.417	0.166
TDS (Ion Sum Calc)	mg/L	1	497	289
TDS(calc.)/EC(actual)	-	-	0.572	0.531
Conductivity Calc	µmho/cm	-	855	506
Conductivity Calc / Conductivity	-	-	0.983	0.930
Langelier Index(25°C)	-	-	1.16	0.745
Saturation pH (25°C)	-	-	6.69	7.21
pH (Client Data)	pH units	-	7.44	8.08
Temperature (Client Data)	°C	-	5.4	7.4

Elevated RLs due to sample matrix interferences

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 25-010201 - 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: 2025-Apr-17
DATE REPORTED: 2025-May-05
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Eldon Landfill
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	2	OTTAWA	PCURIEL	2025-Apr-22	A-IC-01	SM 4110B
BOD5 (Liquid)	2	KINGSTON	JWOLFE2	2025-Apr-24	BOD-001	SM 5210B
COD (Liquid)	2	KINGSTON	YLIEN	2025-May-01	COD-001	SM 5220D
Colour (Liquid)	2	OTTAWA	STAILLON	2025-Apr-25	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	2	OTTAWA	SBOUDREAU	2025-Apr-22	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide Total (Liquid)	2	KINGSTON	MCLOSS	2025-Apr-23	CN-001	SM 4500-CN-E
Cyanide WAD (Liquid)	2	KINGSTON	MCLOSS	2025-Apr-24	CN-001	SM 4500-CN-E
DOC (Liquid)	2	OTTAWA	SLOZO	2025-Apr-30	C-OC-01	EPA 415.2
Ion Balance (Calc.)	2	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	2	OTTAWA	STAILLON	2025-Apr-24	D-CRVI-01	MECP E3056
ICP/MS (Liquid)	2	OTTAWA	TPRICE	2025-Apr-23	D-ICPMS-01	EPA 200.8
ICP/OES (Liquid)	2	OTTAWA	AOZKAYMAK	2025-Apr-24	D-ICP-01	SM 3120B
Mercury (Liquid)	2	OTTAWA	TBENNETT	2025-Apr-24	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	2	KINGSTON	DCASSIDY	2025-Apr-30	NH3-001	SM 4500NH3
Phenols (Liquid)	2	KINGSTON	EHINCH	2025-Apr-29	PHEN-01	MECP E3179
Total Organic Carbon (TOC)	2	OTTAWA	SLOZO	2025-Apr-23	C-OC-01	EPA 415.2
TP & TKN (Liquid)	2	KINGSTON	YLIEN	2025-May-02	TPTKN-001	MECP E3516.2
TSS (Liquid)	2	KINGSTON	MCLOSS	2025-Apr-28	TSS-001	SM 2540D
Turbidity (Liquid)	2	OTTAWA	MMIRELLA	2025-Apr-22	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 *

Michelle Dubien
Data Specialist

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		Client I.D.	8	9
		Sample I.D.	25-010201-1	25-010201-2
		Date Collected	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	411	239
TDS (Calc. from Cond.)	mg/L	3	456	238
Conductivity @25°C	uS/cm	1	864	460
pH @25°C	pH units	-	7.75	7.94
Colour	TCU	2	<2	<2
Turbidity	NTU	0.1	177	3140
Fluoride	mg/L	0.1	<0.1	<0.1
Chloride	mg/L	0.5	21.0	4.0
Nitrate (N)	mg/L	0.05	0.77	0.19
Nitrite (N)	mg/L	0.05	<0.05	<0.05
Sulphate	mg/L	1	40	11
BOD5	mg/L	3	<3	<3
Total Suspended Solids	mg/L	3	1930	80400
Phosphorus (Total)	mg/L	0.01	0.29	3.30
Total Kjeldahl Nitrogen	mg/L	0.1	0.4	0.3
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	<0.05	0.10
Ammonia (N)-unionized	mg/L	0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	3.3	1.8
Total Organic Carbon	mg/L	0.8	3.4	1.9
Cyanide (Total)	mg/L	0.005	<0.005	<0.005
Cyanide (WAD)	mg/L	0.005	<0.005	<0.005

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		Client I.D.	8	9
		Sample I.D.	25-010201-1	25-010201-2
		Date Collected	2025-04-16	2025-04-16
Parameter	Units	R.L.	-	-
Phenolics	mg/L	0.001	0.002	0.002
COD	mg/L	5	41	640
Hardness (as CaCO3)	mg/L	0.02	424	240
Aluminum	mg/L	0.01	0.04	0.02
Barium	mg/L	0.001	0.107	0.057
Boron	mg/L	0.005	0.415	0.020
Calcium	mg/L	0.02	145	73.5
Iron	mg/L	0.005	<0.005	<0.005
Magnesium	mg/L	0.02	15.2	13.8
Manganese	mg/L	0.001	0.007	0.008
Phosphorus	mg/L	0.1	<0.1	<0.1
Potassium	mg/L	0.1	1.3	1.1
Sodium	mg/L	0.2	19.8	3.0
Strontium	mg/L	0.001	0.277	0.205
Tin	mg/L	0.05	<0.05	<0.05
Titanium	mg/L	0.005	<0.005	<0.005
Zinc	mg/L	0.005	<0.005	<0.005
Antimony	mg/L	0.0001	0.0001	<0.0001
Arsenic	mg/L	0.0001	<0.0001	<0.0001
Beryllium	mg/L	0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015	<0.000015	<0.000015

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		Client I.D.	8	9
		Sample I.D.	25-010201-1	25-010201-2
		Date Collected	2025-04-16	2025-04-16
Parameter	Units	R.L.	-	-
Chromium	mg/L	0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0007	0.0001
Copper	mg/L	0.0001	0.0028	0.0005
Lead	mg/L	0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.0001	0.0001	0.0002
Nickel	mg/L	0.0002	0.0018	0.0009
Selenium	mg/L	0.001	<0.001	<0.001
Silver	mg/L	0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005	0.00052	0.00095
Vanadium	mg/L	0.0001	0.0002	0.0003
Chromium (VI)	mg/L	0.01	<0.01	<0.01
Mercury	mg/L	0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-	9.69	5.12
Cation Sum	meq/L	-	9.37	4.96
% Difference	%	-	1.69	1.55
Ion Ratio	-	-	1.03	1.03
Sodium Adsorption Ratio	-	-	0.418	0.0830
TDS (Ion Sum Calc)	mg/L	1	492	250
TDS(calc.)/EC(actual)	-	-	0.569	0.544
Conductivity Calc	µmho/cm	-	853	464

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		Client I.D.	8	9
		Sample I.D.	25-010201-1	25-010201-2
		Date Collected	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-
Conductivity Calc / Conductivity	-	-	0.987	1.01
Langelier Index(25°C)	-	-	1.06	0.752
Saturation pH (25°C)	-	-	6.69	7.19
pH (Client Data)	pH units	-	7.44	7.66
Temperature (Client Data)	°C	-	5.4	3.1

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Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 25-010197 - Rev. 0

Report To:
City of Kawartha Lakes
PO Box 9000
322 Kent Street West
Lindsay, ON K9V 4T7

Attention: Kayla Pantaleo

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

DATE RECEIVED: 2025-Apr-17
DATE REPORTED: 2025-May-02
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Eldon Landfill
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	5	OTTAWA	LMACGREGOR	2025-Apr-22	A-IC-01	SM 4110B
BOD5 (Liquid)	5	KINGSTON	DCASSIDY	2025-Apr-23	BOD-001	SM 5210B
COD (Liquid)	5	KINGSTON	YLIEN	2025-May-01	COD-001	SM 5220D
Colour (Liquid)	5	OTTAWA	STAILLON	2025-Apr-25	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	5	OTTAWA	SBOUDREAU	2025-Apr-22	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide Total (Liquid)	5	KINGSTON	MCLOSS	2025-Apr-23	CN-001	SM 4500-CN-E
Cyanide WAD (Liquid)	5	KINGSTON	MCLOSS	2025-Apr-24	CN-001	SM 4500-CN-E
DOC (Liquid)	5	OTTAWA	SLOZO	2025-Apr-30	C-OC-01	EPA 415.2
Ion Balance (Calc.)	5	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	5	OTTAWA	STAILLON	2025-Apr-24	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	5	OTTAWA	TPRICE	2025-Apr-23	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	5	OTTAWA	AOZKAYMAK	2025-Apr-23	D-ICP-01	SM 3120B
ICP/OES (Liquid)	5	OTTAWA	AOZKAYMAK	2025-Apr-24	D-ICP-01	SM 3120B
Mercury (Liquid)	5	OTTAWA	TBENNETT	2025-Apr-25	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	5	KINGSTON	DCASSIDY	2025-Apr-30	NH3-001	SM 4500NH3
Phenols (Liquid)	5	KINGSTON	EHINCH	2025-Apr-29	PHEN-01	MECP E3179
Total Organic Carbon (TOC)	5	OTTAWA	SLOZO	2025-Apr-23	C-OC-01	EPA 415.2
TP & TKN (Liquid)	5	KINGSTON	YLIEN	2025-May-01	TPTKN-001	MECP E3516.2
TSS (Liquid)	5	KINGSTON	MCLOSS	2025-Apr-28	TSS-001	SM 2540D
Turbidity (Liquid)	5	OTTAWA	MMIRELLA	2025-Apr-22	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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		Client I.D.	SW1	SW2B	SW4	SW5	SW6
		Sample I.D.	25-010197-1	25-010197-2	25-010197-3	25-010197-4	25-010197-5
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	156	154	162	167	154
Conductivity @25°C	uS/cm	1	336	329	351	342	350
pH @25°C	pH units	-	8.03	8.08	8.07	8.15	7.97
Colour	TCU	2	46	31	38	14	24
Turbidity	NTU	0.1	0.4	0.3	2.9	0.8	2.4
Fluoride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	8.6	8.3	8.3	5.6	15.1
Nitrate (N)	mg/L	0.05	0.07	<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	6	5	7	8	6
BOD5	mg/L	3	<3	<3	<3	<3	<3
Total Suspended Solids	mg/L	3	5	4	4	4	8
Phosphorus (Total)	mg/L	0.01	0.02	0.02	0.06	0.02	0.03
Total Kjeldahl Nitrogen	mg/L	0.1	0.5	0.4	0.8	0.3	0.4
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.13	<0.05	<0.05	<0.05	<0.05
Ammonia (N)-unionized	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	10.0	7.7	10.4	6.5	8.4
Total Organic Carbon	mg/L	0.8	10.1	7.7	10.5	6.4	8.4
Cyanide (Total)	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
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	0.002

Michelle Dubien
Data Specialist

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		Client I.D.	SW1	SW2B	SW4	SW5	SW6
		Sample I.D.	25-010197-1	25-010197-2	25-010197-3	25-010197-4	25-010197-5
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
COD	mg/L	5	24	22	33	22	20
Aluminum	mg/L	0.01	0.02	0.02	0.02	0.02	0.02
Hardness (as CaCO3)	mg/L	0.02	186	167	173	188	176
Aluminum (Total)	mg/L	0.01	0.04	0.04	0.10	0.04	0.05
Barium (Total)	mg/L	0.001	0.029	0.021	0.042	0.013	0.024
Boron (Total)	mg/L	0.005	0.019	0.010	0.040	0.007	0.019
Calcium (Total)	mg/L	0.02	67.0	60.6	61.2	69.1	63.8
Iron (Total)	mg/L	0.005	0.078	0.059	0.687	0.061	0.149
Magnesium (Total)	mg/L	0.02	4.46	3.76	4.87	3.72	3.95
Manganese (Total)	mg/L	0.001	0.013	0.005	0.028	0.005	0.033
Phosphorus (Total)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium (Total)	mg/L	0.1	1.5	1.0	1.7	0.6	0.7
Sodium (Total)	mg/L	0.2	4.3	3.3	4.9	2.2	5.7
Strontium (Total)	mg/L	0.001	0.134	0.113	0.122	0.117	0.153
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	<0.005	<0.005
Zinc (Total)	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Antimony (Total)	mg/L	0.0001	<0.0001	<0.0001	0.0003	<0.0001	<0.0001
Arsenic (Total)	mg/L	0.0001	0.0002	0.0002	0.0002	0.0001	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	<0.000015	<0.000015

Michelle Dubien
Data Specialist

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		Client I.D.	SW1	SW2B	SW4	SW5	SW6
		Sample I.D.	25-010197-1	25-010197-2	25-010197-3	25-010197-4	25-010197-5
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Chromium (Total)	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Total)	mg/L	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001
Copper (Total)	mg/L	0.0001	0.0006	0.0006	0.0008	0.0004	0.0006
Lead (Total)	mg/L	0.00002	<0.00002	<0.00002	0.00026	<0.00002	0.00006
Molybdenum (Total)	mg/L	0.0001	0.0002	0.0001	0.0003	<0.0001	0.0001
Nickel (Total)	mg/L	0.0002	0.0008	0.0007	0.0009	0.0006	0.0007
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	0.00048	0.00055	0.00126	0.00029	0.00046
Vanadium (Total)	mg/L	0.0001	0.0004	0.0005	0.0007	0.0002	0.0003
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	<0.00002	<0.00002
Anion Sum	meq/L	-	3.50	3.40	3.62	3.67	3.62
Cation Sum	meq/L	-	3.94	3.51	3.75	3.87	3.79
% Difference	%	-	5.94	1.53	1.75	2.63	2.27
Ion Ratio	-	-	0.888	0.970	0.966	0.949	0.956
Sodium Adsorption Ratio	-	-	0.136	0.112	0.163	0.0682	0.187
TDS (Ion Sum Calc)	mg/L	1	186	174	186	190	188
TDS(calc.)/EC(actual)	-	-	0.554	0.529	0.531	0.555	0.536
Conductivity Calc	µmho/cm	-	360	333	352	361	361

Michelle Dubien
Data Specialist

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		Client I.D.	SW1	SW2B	SW4	SW5	SW6
		Sample I.D.	25-010197-1	25-010197-2	25-010197-3	25-010197-4	25-010197-5
		Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
Parameter	**Units**	**R.L.**	-	-	-	-	-
Conductivity Calc / Conductivity	-	-	1.07	1.01	1.00	1.06	1.03
Langelier Index(25°C)	-	-	0.627	0.636	0.643	0.790	0.539
Saturation pH (25°C)	-	-	7.40	7.44	7.43	7.36	7.43
pH (Client Data)	pH units	-	7.99	8.04	8.09	7.66	7.63
Temperature (Client Data)	°C	-	6.2	6.6	5.7	3.6	5.6

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 25-022074 - 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: Kayla Pantaleo

DATE RECEIVED: 2025-Jul-25
DATE REPORTED: 2025-Aug-07
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Eldon Landfill
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	2	OTTAWA	PCURIEL	2025-Jul-30	A-IC-01	SM 4110B
BOD5 (Liquid)	2	KINGSTON	JWOLFE2	2025-Jul-30	BOD-001	SM 5210B
COD (Liquid)	2	KINGSTON	MWILSON	2025-Aug-01	COD-001	SM 5220D
Colour (Liquid)	2	OTTAWA	STAILLON	2025-Jul-30	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	2	OTTAWA	SBOUDREAU	2025-Jul-29	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide Total (Liquid)	2	KINGSTON	MCLOSS	2025-Jul-30	CN-001	SM 4500-CN-E
Cyanide WAD (Liquid)	2	KINGSTON	MCLOSS	2025-Jul-29	CN-001	SM 4500-CN-E
DOC (Liquid)	2	OTTAWA	LMACGREGOR	2025-Jul-30	C-OC-01	EPA 415.2
Ion Balance (Calc.)	2	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	2	OTTAWA	STAILLON	2025-Jul-31	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	2	OTTAWA	AOZKAYMAK	2025-Jul-30	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	2	OTTAWA	SGORMAN	2025-Aug-01	D-ICP-01	SM 3120B
ICP/OES (Liquid)	2	OTTAWA	GFENTON	2025-Jul-30	D-ICP-01	SM 3120B
Mercury (Liquid)	2	OTTAWA	TBENNETT	2025-Jul-30	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	2	KINGSTON	DCASSIDY	2025-Aug-06	NH3-001	SM 4500NH3
Phenols (Liquid)	2	KINGSTON	MCLOSS	2025-Jul-30	PHEN-01	MECP E3179
Total Organic Carbon (TOC)	2	OTTAWA	SLOZO	2025-Jul-30	C-OC-01	EPA 415.2
TP & TKN (Liquid)	2	KINGSTON	YLIEN	2025-Aug-05	TPTKN-001	MECP E3516.2
TSS (Liquid)	2	KINGSTON	KYUILL	2025-Aug-05	TSS-001	SM 2540D
Turbidity (Liquid)	2	OTTAWA	MMIRELLA	2025-Jul-29	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 *

Michelle Dubien
Data Specialist

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		Client I.D.	SW6	DUP
		Sample I.D.	25-022074-1	25-022074-2
		Date Collected	2025-07-22	2025-07-22
Parameter	Units	R.L.	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	319	319
Conductivity @25°C	uS/cm	1	664	668
pH @25°C	pH units	-	8.14	8.15
Colour	TCU	2	54	52
Turbidity	NTU	0.1	2.7	2.4
Fluoride	mg/L	0.1	0.1	0.1
Chloride	mg/L	0.5	22.9	22.6
Nitrate (N)	mg/L	0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05	<0.05	<0.05
Sulphate	mg/L	1	4	4
BOD5	mg/L	3	<3	<3
Total Suspended Solids	mg/L	3	5	17
Phosphorus (Total)	mg/L	0.01	0.07	0.07
Total Kjeldahl Nitrogen	mg/L	0.1	1.5	1.4
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.17	0.16
Ammonia (N)-unionized	mg/L	0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	19.8	23.8
Total Organic Carbon	mg/L	0.8	22.0	22.0
Cyanide (Total)	mg/L	0.005	<0.005	<0.005
Cyanide (WAD)	mg/L	0.005	<0.005	<0.005
Phenolics	mg/L	0.001	<0.001	<0.001

Michelle Dubien
Data Specialist

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		Client I.D.	SW6	DUP
		Sample I.D.	25-022074-1	25-022074-2
		Date Collected	2025-07-22	2025-07-22
Parameter	**Units**	**R.L.**	-	-
COD	mg/L	5	60	61
Aluminum	mg/L	0.01	0.05	0.04
Hardness (as CaCO3)	mg/L	0.02	359	349
Aluminum (Total)	mg/L	0.01	0.08	0.10
Barium (Total)	mg/L	0.001	0.083	0.082
Boron (Total)	mg/L	0.005	0.020	0.020
Calcium (Total)	mg/L	0.02	129	125
Iron (Total)	mg/L	0.005	0.232	0.243
Magnesium (Total)	mg/L	0.02	8.98	8.76
Manganese (Total)	mg/L	0.001	0.145	0.141
Phosphorus (Total)	mg/L	0.1	<0.1	<0.1
Potassium (Total)	mg/L	0.1	1.7	1.7
Sodium (Total)	mg/L	0.2	10.7	10.6
Strontium (Total)	mg/L	0.001	0.293	0.291
Tin (Total)	mg/L	0.05	<0.05	<0.05
Titanium (Total)	mg/L	0.005	<0.005	<0.005
Zinc (Total)	mg/L	0.005	<0.005	<0.005
Antimony (Total)	mg/L	0.0001	0.0005	0.0005
Arsenic (Total)	mg/L	0.0001	0.0005	0.0006
Beryllium (Total)	mg/L	0.0001	<0.0001	<0.0001
Cadmium (Total)	mg/L	0.000015	<0.000015	<0.000015

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		Client I.D.	SW6	DUP
		Sample I.D.	25-022074-1	25-022074-2
		Date Collected	2025-07-22	2025-07-22
Parameter	Units	R.L.	-	-
Chromium (Total)	mg/L	0.001	<0.001	0.001
Cobalt (Total)	mg/L	0.0001	0.0004	0.0004
Copper (Total)	mg/L	0.0001	0.0003	0.0004
Lead (Total)	mg/L	0.00002	0.00006	0.00006
Molybdenum (Total)	mg/L	0.0001	0.0003	0.0003
Nickel (Total)	mg/L	0.0002	0.0006	0.0021
Selenium (Total)	mg/L	0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001	<0.0001	<0.0001
Thallium (Total)	mg/L	0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005	0.00094	0.00106
Vanadium (Total)	mg/L	0.0001	0.0008	0.0009
Chromium (VI)	mg/L	0.001	<0.001	<0.001
Mercury	mg/L	0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-	7.12	7.09
Cation Sum	meq/L	-	7.71	7.49
% Difference	%	-	3.98	2.69
Ion Ratio	-	-	0.923	0.948
Sodium Adsorption Ratio	-	-	0.246	0.247
TDS (Ion Sum Calc)	mg/L	1	370	364
TDS(calc.)/EC(actual)	-	-	0.557	0.546
Conductivity Calc	µmho/cm	-	683	672

Michelle Dubien
Data Specialist

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		Client I.D.	SW6	DUP
		Sample I.D.	25-022074-1	25-022074-2
		Date Collected	2025-07-22	2025-07-22
Parameter	**Units**	**R.L.**	-	-
Conductivity Calc / Conductivity	-	-	1.03	1.01
Langelier Index(25°C)	-	-	1.30	1.30
Saturation pH (25°C)	-	-	6.84	6.85
pH (Client Data)	pH units	-	7.11	7.11
Temperature (Client Data)	°C	-	6.69	6.69

Michelle Dubien
Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 25-029875 - 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: Kayla Pantaleo

DATE RECEIVED: 2025-Oct-01
DATE REPORTED: 2025-Oct-08
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Eldon Landfill
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	37	OTTAWA	PCURIEL	2025-Oct-03	A-IC-01	SM 4110B
COD (Liquid)	37	KINGSTON	MWILSON	2025-Oct-08	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	37	OTTAWA	SBOUDREAU	2025-Oct-02	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
DOC (Liquid)	37	OTTAWA	SLOZO	2025-Oct-06	C-OC-01	EPA 415.2
Ion Balance (Calc.)	37	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	37	OTTAWA	SLOZO	2025-Oct-06	D-CRVI-01	MECP E3056
ICP/MS (Liquid)	37	OTTAWA	GFENTON	2025-Oct-03	D-ICPMS-01	EPA 200.8
ICP/OES (Liquid)	37	OTTAWA	SGORMAN	2025-Oct-06	D-ICP-01	SM 3120B
Mercury (Liquid)	37	OTTAWA	TBENNETT	2025-Oct-03	D-HG-02	SM 3112B
Ammonia (Liquid)	37	KINGSTON	DCASSIDY	2025-Oct-03	NH3-001	SM 4500NH3
Phenols (Liquid)	37	KINGSTON	EHINCH	2025-Oct-06	PHEN-01	MECP E3179
TP & TKN (Liquid)	37	KINGSTON	YLIEN	2025-Oct-06	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	2	RICHMOND_HILL	FLENA	2025-Oct-05	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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		Client I.D.	7	10	11-I	11-II	12
		Sample I.D.	25-029875-1	25-029875-2	25-029875-3	25-029875-4	25-029875-5
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	302	255	237	206	203
TDS (Calc. from Cond.) (Calculated)	mg/L	3	365	2300	290	215	224
Conductivity @25°C	uS/cm	1	702	4080	560	417	433
pH @25°C	pH units	-	7.78	7.80	8.00	8.00	7.97
Fluoride	mg/L	0.1	<0.1	<0.7	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	16.7	1250	26.0	5.3	5.7
Nitrate (N)	mg/L	0.05	6.26	<0.40	0.94	1.96	1.88
Nitrite (N)	mg/L	0.05	0.19	<0.40	<0.05	<0.05	<0.05
Sulphate	mg/L	1	22	18	13	9	10
Phosphorus (Total)	mg/L	0.01	0.03	0.24	0.83	0.03	0.36
Total Kjeldahl Nitrogen	mg/L	0.1	0.8	2.2	1.0	0.1	2.0
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.46	1.51	0.63	<0.05	<0.05
Ammonia (N)-unionized (Calculated)	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	6.4	2.5	3.4	3.0	3.1
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5	14	75	62	<5	35
Hardness (as CaCO3)	mg/L	0.02	353	749	223	221	228
Aluminum	mg/L	0.01	0.07	0.07	0.04	0.04	0.05
Barium	mg/L	0.001	0.204	0.140	0.059	0.043	0.046
Boron	mg/L	0.005	0.094	0.372	0.030	0.007	0.007
Calcium	mg/L	0.02	118	166	70.0	75.2	77.5

Michelle Dubien
Data Specialist

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		Client I.D.	7	10	11-I	11-II	12
		Sample I.D.	25-029875-1	25-029875-2	25-029875-3	25-029875-4	25-029875-5
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-	-	-	-
Iron	mg/L	0.005	<0.005	<0.005	0.029	<0.005	0.006
Magnesium	mg/L	0.02	14.1	81.2	11.8	8.01	8.44
Manganese	mg/L	0.001	0.002	0.005	0.006	<0.001	0.003
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	5.4	18.6	2.2	0.7	0.8
Sodium	mg/L	0.2	9.8	489	14.2	3.4	3.3
Strontium	mg/L	0.001	0.183	8.23	0.424	0.129	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	<0.0001	<0.0001	0.0003	<0.0001	<0.0001
Arsenic	mg/L	0.0001	<0.0001	<0.0001	0.0004	<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	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0003	0.0002	0.0002	0.0001	0.0002
Copper	mg/L	0.0001	0.0035	0.0001	0.0006	0.0005	0.0006
Lead	mg/L	0.00002	<0.00002	<0.00004	0.00017	<0.00002	<0.00002
Molybdenum	mg/L	0.0001	0.0005	0.0002	0.0003	<0.0001	0.0001
Nickel	mg/L	0.0002	0.0008	0.0006	0.0009	0.0006	0.0006
Selenium	mg/L	0.001	<0.001	0.003	<0.001	<0.001	<0.001

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		Client I.D.	7	10	11-I	11-II	12
		Sample I.D.	25-029875-1	25-029875-2	25-029875-3	25-029875-4	25-029875-5
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-	-	-	-
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	0.00094	0.00026	0.00086	0.00036	0.00036
Vanadium	mg/L	0.0001	0.0002	<0.0001	0.0002	0.0003	0.0003
Chromium (VI)	mg/L	0.01	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)
Mercury	mg/L	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum (Calculated)	meq/L	-	7.42	40.7	5.82	4.59	4.57
Cation Sum (Calculated)	meq/L	-	7.65	37.0	5.19	4.58	4.73
% Difference (Calculated)	%	-	1.56	4.78	5.66	0.0592	1.72
Ion Ratio (Calculated)	-	-	0.969	1.10	1.12	1.00	0.966
Sodium Adsorption Ratio (Calculated)	-	-	0.228	7.78	0.413	0.0984	0.0939
TDS (Ion Sum Calc) (Calculated)	mg/L	1	396	2180	285	234	236
TDS(calc.)/EC(actual) (Calculated)	-	-	0.564	0.534	0.509	0.560	0.546
Conductivity Calc	µmho/cm	-	702	3850	522	432	440
Conductivity Calc / Conductivity (Calculated)	-	-	1.00	0.944	0.931	1.04	1.02
Langelier Index(25°C) (Calculated)	-	-	0.879	0.903	0.777	0.757	0.735
Saturation pH (25°C) (Calculated)	-	-	6.90	6.90	7.22	7.24	7.23
pH (Client Data)	pH units	-	7.38	7.40	6.14	7.05	7.61
Temperature (Client Data)	°C	-	12.8	10.4	9.3	9.8	15.0

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		Client I.D.	13-I	13-II	14-I	14-II	16-I
		Sample I.D.	25-029875-6	25-029875-7	25-029875-8	25-029875-9	25-029875-10
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	217	1080	496	729	320
TDS (Calc. from Cond.) (Calculated)	mg/L	3	241	1760	1540	885	489
Conductivity @25°C	uS/cm	1	467	3150	2770	1620	922
pH @25°C	pH units	-	8.00	7.46	7.26	7.51	7.85
Fluoride	mg/L	0.1	<0.1	<0.7	<0.7	<0.4	<0.1
Chloride	mg/L	0.5	7.1	136	683	81.5	53.2
Nitrate (N)	mg/L	0.05	1.21	<0.40	<0.40	<0.20	2.18
Nitrite (N)	mg/L	0.05	<0.05	<0.40	<0.40	<0.20	<0.05
Sulphate	mg/L	1	17	84	4	38	93
Phosphorus (Total)	mg/L	0.01	0.03	10.2	0.27	0.08	0.74
Total Kjeldahl Nitrogen	mg/L	0.1	0.2	171	10.6	26.1	0.9
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	<0.05	150	8.09	20.7	0.11
Ammonia (N)-unionized (Calculated)	mg/L	0.01	<0.01	0.28	0.02	0.03	<0.01
Dissolved Organic Carbon	mg/L	0.8	3.1	58.6	6.3	18.7	4.5
Phenolics	mg/L	0.001	<0.001	0.002	0.002	0.002	<0.001
COD	mg/L	5	<5	358	129	61	46
Hardness (as CaCO3)	mg/L	0.02	242	775	677	586	425
Aluminum	mg/L	0.01	0.03	0.12	0.10	0.10	0.09
Barium	mg/L	0.001	0.098	0.357	0.254	0.575	0.096
Boron	mg/L	0.005	0.025	2.02	1.33	2.08	0.229
Calcium	mg/L	0.02	68.1	242	182	189	140

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		Client I.D.	13-I	13-II	14-I	14-II	16-I
		Sample I.D.	25-029875-6	25-029875-7	25-029875-8	25-029875-9	25-029875-10
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-	-	-	-
Iron	mg/L	0.005	<0.005	5.66	15.0	0.762	0.014
Magnesium	mg/L	0.02	17.4	41.4	54.0	27.6	18.2
Manganese	mg/L	0.001	0.041	0.367	0.571	2.99	0.003
Phosphorus	mg/L	0.1	<0.1	0.2	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	1.7	123	22.7	24.9	28.6
Sodium	mg/L	0.2	5.2	174	300	98.7	12.8
Strontium	mg/L	0.001	0.723	1.32	4.27	0.568	0.268
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	0.006	0.009	0.006	<0.005
Antimony	mg/L	0.0001	<0.0001	0.0003	0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001	<0.0001	0.0009	0.0002	0.0003	<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	0.000022	<0.000015	<0.000015
Chromium	mg/L	0.001	<0.001	0.002	<0.001	<0.001	0.001
Cobalt	mg/L	0.0001	0.0004	0.0041	0.0006	0.0218	0.0003
Copper	mg/L	0.0001	0.0005	0.0013	0.0004	0.0050	0.0018
Lead	mg/L	0.00002	<0.00002	<0.00004	0.00006	0.00004	<0.00002
Molybdenum	mg/L	0.0001	0.0001	0.0001	<0.0001	0.0001	0.0012
Nickel	mg/L	0.0002	0.0009	0.0046	0.0007	0.0205	0.0014
Selenium	mg/L	0.001	<0.001	0.002	0.009	0.001	0.001

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		Client I.D.	13-I	13-II	14-I	14-II	16-I
		Sample I.D.	25-029875-6	25-029875-7	25-029875-8	25-029875-9	25-029875-10
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-	-	-	-
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	0.00099	0.00021	<0.00005	0.00179	0.00088
Vanadium	mg/L	0.0001	0.0003	0.0035	0.0003	0.0009	0.0002
Chromium (VI)	mg/L	0.01	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)
Mercury	mg/L	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum (Calculated)	meq/L	-	4.97	27.3	29.3	17.7	9.98
Cation Sum (Calculated)	meq/L	-	5.12	37.0	28.6	18.2	9.79
% Difference (Calculated)	%	-	1.53	15.2	1.07	1.59	0.994
Ion Ratio (Calculated)	-	-	0.970	0.736	1.02	0.969	1.02
Sodium Adsorption Ratio (Calculated)	-	-	0.146	2.72	5.02	1.77	0.270
TDS (Ion Sum Calc) (Calculated)	mg/L	1	252	1650	1570	928	548
TDS(calc.)/EC(actual) (Calculated)	-	-	0.539	0.524	0.567	0.573	0.594
Conductivity Calc	µmho/cm	-	470	2830	2740	1560	938
Conductivity Calc / Conductivity (Calculated)	-	-	1.01	0.898	0.990	0.962	1.02
Langelier Index(25°C) (Calculated)	-	-	0.736	1.37	0.703	1.15	1.03
Saturation pH (25°C) (Calculated)	-	-	7.26	6.09	6.56	6.36	6.82
pH (Client Data)	pH units	-	7.59	6.98	6.95	6.75	6.78
Temperature (Client Data)	°C	-	9.7	10.9	17.0	13.6	11.8

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		Client I.D.	16-II	17-I	17-II	19	25-I
		Sample I.D.	25-029875-11	25-029875-12	25-029875-13	25-029875-14	25-029875-15
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	329	786	448	223	555
TDS (Calc. from Cond.) (Calculated)	mg/L	3	406	881	512	247	745
Conductivity @25°C	uS/cm	1	775	1610	962	477	1370
pH @25°C	pH units	-	7.63	7.59	7.72	7.91	7.62
Fluoride	mg/L	0.1	<0.1	<0.4	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	19.9	67.1	22.9	6.6	114
Nitrate (N)	mg/L	0.05	2.05	<0.20	<0.05	2.02	<0.05
Nitrite (N)	mg/L	0.05	<0.05	<0.20	<0.05	<0.05	<0.05
Sulphate	mg/L	1	50	39	28	13	40
Phosphorus (Total)	mg/L	0.01	1.00	0.08	1.08	0.08	0.13
Total Kjeldahl Nitrogen	mg/L	0.1	0.8	3.7	17.8	0.7	0.6
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.07	2.42	12.9	0.49	0.08
Ammonia (N)-unionized (Calculated)	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	4.3	30.6	11.2	4.2	9.8
Phenolics	mg/L	0.001	<0.001	0.001	<0.001	<0.001	<0.001
COD	mg/L	5	58	67	88	<5	18
Hardness (as CaCO3)	mg/L	0.02	348	739	400	246	593
Aluminum	mg/L	0.01	0.07	0.12	0.08	0.05	0.10
Barium	mg/L	0.001	0.103	0.528	0.395	0.062	0.232
Boron	mg/L	0.005	0.170	2.68	0.738	0.040	0.514
Calcium	mg/L	0.02	116	235	130	82.6	174

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		Client I.D.	16-II	17-I	17-II	19	25-I
		Sample I.D.	25-029875-11	25-029875-12	25-029875-13	25-029875-14	25-029875-15
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-	-	-	-
Iron	mg/L	0.005	<0.005	2.73	8.90	0.011	1.49
Magnesium	mg/L	0.02	14.0	36.9	18.2	9.69	38.5
Manganese	mg/L	0.001	0.002	1.86	1.65	<0.001	0.163
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	23.4	11.5	19.2	1.8	3.2
Sodium	mg/L	0.2	7.9	92.8	26.1	4.3	72.6
Strontium	mg/L	0.001	0.249	0.773	0.446	0.159	0.842
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	0.007	0.006	<0.005	0.006
Antimony	mg/L	0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001	<0.0001	0.0006	0.0016	<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	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0002	0.0169	0.0048	0.0002	0.0007
Copper	mg/L	0.0001	0.0014	0.0046	0.0005	0.0008	0.0009
Lead	mg/L	0.00002	<0.00002	0.00004	0.00002	0.00006	<0.00002
Molybdenum	mg/L	0.0001	0.0003	0.0006	0.0003	0.0001	0.0002
Nickel	mg/L	0.0002	0.0007	0.0124	0.0071	<0.0002	0.0156
Selenium	mg/L	0.001	<0.001	0.001	<0.001	<0.001	0.001

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		Client I.D.	16-II	17-I	17-II	19	25-I
		Sample I.D.	25-029875-11	25-029875-12	25-029875-13	25-029875-14	25-029875-15
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-	-	-	-
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	0.00065	0.00298	0.00054	0.00042	0.00074
Vanadium	mg/L	0.0001	0.0002	0.0007	0.0003	0.0003	0.0004
Chromium (VI)	mg/L	0.01	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)
Mercury	mg/L	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum (Calculated)	meq/L	-	8.33	18.4	10.2	5.05	15.1
Cation Sum (Calculated)	meq/L	-	7.89	19.5	11.1	5.19	15.2
% Difference (Calculated)	%	-	2.70	2.83	4.07	1.33	0.218
Ion Ratio (Calculated)	-	-	1.06	0.945	0.922	0.974	0.996
Sodium Adsorption Ratio (Calculated)	-	-	0.185	1.49	0.568	0.118	1.30
TDS (Ion Sum Calc) (Calculated)	mg/L	1	438	962	541	261	777
TDS(calc.)/EC(actual) (Calculated)	-	-	0.565	0.597	0.562	0.547	0.566
Conductivity Calc	µmho/cm	-	757	1580	937	482	1340
Conductivity Calc / Conductivity (Calculated)	-	-	0.976	0.978	0.974	1.01	0.975
Langelier Index(25°C) (Calculated)	-	-	0.749	1.35	1.01	0.743	1.12
Saturation pH (25°C) (Calculated)	-	-	6.88	6.24	6.71	7.17	6.50
pH (Client Data)	pH units	-	6.47	6.09	6.24	7.51	6.61
Temperature (Client Data)	°C	-	12.1	12.5	13.5	12.2	11.2

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		Client I.D.	25-II	26-I	26-II	26-III	27-I
		Sample I.D.	25-029875-16	25-029875-17	25-029875-18	25-029875-19	25-029875-20
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	838	256	385	666	184
TDS (Calc. from Cond.) (Calculated)	mg/L	3	1020	517	505	807	2600
Conductivity @25°C	uS/cm	1	1850	971	949	1480	4610
pH @25°C	pH units	-	7.48	8.04	7.75	7.54	7.96
Fluoride	mg/L	0.1	<0.7	0.2	<0.1	<0.1	<0.7
Chloride	mg/L	0.5	132	162	63.3	103	1490
Nitrate (N)	mg/L	0.05	<0.40	<0.05	0.54	<0.05	<0.40
Nitrite (N)	mg/L	0.05	<0.40	<0.05	0.09	<0.05	<0.40
Sulphate	mg/L	1	24	6	37	21	<2
Phosphorus (Total)	mg/L	0.01	0.23	0.42	0.06	0.47	0.04
Total Kjeldahl Nitrogen	mg/L	0.1	2.7	4.7	0.4	0.9	3.7
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	1.54	1.59	<0.05	0.07	2.13
Ammonia (N)-unionized (Calculated)	mg/L	0.01	<0.01	0.02	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	23.6	3.5	7.5	16.2	1.7
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5	56	<5	6	52	65
Hardness (as CaCO3)	mg/L	0.02	788	247	437	691	453
Aluminum	mg/L	0.01	0.12	0.04	0.09	0.10	0.06
Barium	mg/L	0.001	0.364	0.019	0.165	0.333	0.066
Boron	mg/L	0.005	1.04	0.492	0.230	0.299	1.26
Calcium	mg/L	0.02	238	50.5	131	184	96.5

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		Client I.D.	25-II	26-I	26-II	26-III	27-I
		Sample I.D.	25-029875-16	25-029875-17	25-029875-18	25-029875-19	25-029875-20
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-	-	-	-
Iron	mg/L	0.005	0.178	0.018	<0.005	12.9	0.128
Magnesium	mg/L	0.02	47.0	29.3	26.7	56.1	51.5
Manganese	mg/L	0.001	1.57	0.002	0.963	1.57	0.003
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	6.0	12.6	1.5	2.4	22.7
Sodium	mg/L	0.2	119	98.0	35.3	62.4	667
Strontium	mg/L	0.001	0.711	2.66	0.354	0.573	6.31
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	0.007	<0.005	<0.005	0.005	<0.005
Antimony	mg/L	0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001	0.0003	<0.0001	<0.0001	0.0011	<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	0.000017	<0.000015	<0.000030
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0142	<0.0001	0.0064	0.0186	0.0002
Copper	mg/L	0.0001	0.0107	0.0002	0.0056	0.0006	<0.0002
Lead	mg/L	0.00002	0.00004	<0.00002	<0.00002	<0.00002	<0.00009
Molybdenum	mg/L	0.0001	0.0002	<0.0001	0.0005	0.0005	<0.0002
Nickel	mg/L	0.0002	0.0232	0.0009	0.0064	0.0068	0.0009
Selenium	mg/L	0.001	0.002	0.003	<0.001	0.001	0.024

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		Client I.D.	25-II	26-I	26-II	26-III	27-I
		Sample I.D.	25-029875-16	25-029875-17	25-029875-18	25-029875-19	25-029875-20
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-	-	-	-
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	0.00199	<0.00005	0.00808	0.0106	0.00040
Vanadium	mg/L	0.0001	0.0007	<0.0001	0.0003	0.0006	<0.0004
Chromium (VI)	mg/L	0.01	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)
Mercury	mg/L	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum (Calculated)	meq/L	-	21.0	9.83	10.3	16.6	45.7
Cation Sum (Calculated)	meq/L	-	21.3	9.69	10.4	17.3	38.9
% Difference (Calculated)	%	-	0.674	0.749	0.274	2.04	7.99
Ion Ratio (Calculated)	-	-	0.987	1.02	0.995	0.960	1.17
Sodium Adsorption Ratio (Calculated)	-	-	1.84	2.71	0.735	1.03	13.6
TDS (Ion Sum Calc) (Calculated)	mg/L	1	1070	515	530	843	2440
TDS(calc.)/EC(actual) (Calculated)	-	-	0.579	0.530	0.558	0.569	0.529
Conductivity Calc	µmho/cm	-	1770	973	943	1420	4350
Conductivity Calc / Conductivity (Calculated)	-	-	0.958	1.00	0.993	0.959	0.945
Langelier Index(25°C) (Calculated)	-	-	1.27	0.689	0.990	1.14	0.688
Saturation pH (25°C) (Calculated)	-	-	6.21	7.35	6.76	6.40	7.27
pH (Client Data)	pH units	-	6.45	7.85	7.19	6.90	7.47
Temperature (Client Data)	°C	-	12.5	12.5	10.1	12.0	7.40

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		Client I.D.	27-II	29-I	29-II	29-III	30
		Sample I.D.	25-029875-21	25-029875-22	25-029875-23	25-029875-24	25-029875-25
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	229	254	413	326	216
TDS (Calc. from Cond.) (Calculated)	mg/L	3	252	660	484	377	292
Conductivity @25°C	uS/cm	1	487	1220	912	724	564
pH @25°C	pH units	-	7.95	8.34	7.85	7.94	7.99
Fluoride	mg/L	0.1	<0.1	1.2	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	7.1	239	35.0	24.1	56.5
Nitrate (N)	mg/L	0.05	2.10	<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	14	<1	42	35	6
Phosphorus (Total)	mg/L	0.01	0.06	0.71	18.3	0.56	0.72
Total Kjeldahl Nitrogen	mg/L	0.1	0.6	1.4	2.8	0.4	1.4
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.36	1.06	0.16	0.07	0.36
Ammonia (N)-unionized (Calculated)	mg/L	0.01	<0.01	0.04	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	3.7	2.3	7.3	6.1	8.3
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5	<5	23	60	21	71
Hardness (as CaCO3)	mg/L	0.02	252	44.4	462	380	263
Aluminum	mg/L	0.01	0.06	<0.01	0.09	0.08	0.04
Barium	mg/L	0.001	0.067	0.016	0.173	0.169	0.147
Boron	mg/L	0.005	0.059	1.63	0.221	0.058	0.131
Calcium	mg/L	0.02	84.5	9.10	147	119	71.0

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		Client I.D.	27-II	29-I	29-II	29-III	30
		Sample I.D.	25-029875-21	25-029875-22	25-029875-23	25-029875-24	25-029875-25
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-	-	-	-
Iron	mg/L	0.005	<0.005	0.010	1.42	0.941	1.14
Magnesium	mg/L	0.02	10.0	5.27	23.1	20.0	20.8
Manganese	mg/L	0.001	0.001	0.001	0.029	0.055	0.051
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	1.7	6.8	2.1	2.0	2.5
Sodium	mg/L	0.2	4.8	238	23.3	10.7	12.9
Strontium	mg/L	0.001	0.159	0.608	0.337	0.287	0.784
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	0.006
Antimony	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001	<0.0001	<0.0001	0.0003	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	<0.000015	<0.000015
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.005
Cobalt	mg/L	0.0001	0.0002	<0.0001	0.0003	0.0005	0.0002
Copper	mg/L	0.0001	0.0008	0.0002	0.0004	0.0004	0.0003
Lead	mg/L	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.0001	0.0002	<0.0001	0.0002	0.0002	0.0001
Nickel	mg/L	0.0002	0.0008	<0.0002	0.0047	0.0019	0.0031
Selenium	mg/L	0.001	<0.001	0.004	<0.001	<0.001	0.001

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		Client I.D.	27-II	29-I	29-II	29-III	30
		Sample I.D.	25-029875-21	25-029875-22	25-029875-23	25-029875-24	25-029875-25
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-	-	-	-
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	0.00043	0.00005	0.00257	0.00032	<0.00005
Vanadium	mg/L	0.0001	0.0003	<0.0001	<0.0001	<0.0001	0.0001
Chromium (VI)	mg/L	0.01	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)
Mercury	mg/L	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum (Calculated)	meq/L	-	5.22	11.9	10.1	7.93	6.04
Cation Sum (Calculated)	meq/L	-	5.32	11.5	10.4	8.16	5.99
% Difference (Calculated)	%	-	0.975	1.66	1.31	1.48	0.433
Ion Ratio (Calculated)	-	-	0.981	1.03	0.974	0.971	1.01
Sodium Adsorption Ratio (Calculated)	-	-	0.132	15.5	0.472	0.239	0.346
TDS (Ion Sum Calc) (Calculated)	mg/L	1	269	653	523	408	301
TDS(calc.)/EC(actual) (Calculated)	-	-	0.553	0.535	0.573	0.563	0.534
Conductivity Calc	µmho/cm	-	495	1210	917	734	583
Conductivity Calc / Conductivity (Calculated)	-	-	1.02	0.987	1.01	1.01	1.03
Langelier Index(25°C) (Calculated)	-	-	0.794	0.232	1.17	1.07	0.733
Saturation pH (25°C) (Calculated)	-	-	7.16	8.11	6.68	6.87	7.26
pH (Client Data)	pH units	-	7.53	8.19	7.23	7.54	6.90
Temperature (Client Data)	°C	-	11.6	13.0	13.6	14.1	13.4

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		Client I.D.	31	33-I	33-II	34	35
		Sample I.D.	25-029875-26	25-029875-27	25-029875-28	25-029875-29	25-029875-30
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	1020	278	252	310	380
TDS (Calc. from Cond.) (Calculated)	mg/L	3	1280	905	246	2040	459
Conductivity @25°C	uS/cm	1	2310	1650	476	3630	868
pH @25°C	pH units	-	7.42	8.11	8.04	8.18	7.90
Fluoride	mg/L	0.1	<0.7	1.7	<0.1	<0.7	<0.1
Chloride	mg/L	0.5	195	435	2.7	1080	44.8
Nitrate (N)	mg/L	0.05	<0.40	<0.20	0.16	<0.40	<0.05
Nitrite (N)	mg/L	0.05	<0.40	<0.20	<0.05	<0.40	<0.05
Sulphate	mg/L	1	32	<1	9	4	33
Phosphorus (Total)	mg/L	0.01	5.47	0.06	5.57	0.17	3.60
Total Kjeldahl Nitrogen	mg/L	0.1	18.5	1.6	0.5	3.1	1.9
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	7.75	1.17	<0.05	2.13	<0.05
Ammonia (N)-unionized (Calculated)	mg/L	0.01	<0.01	0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	42.2	2.6	4.0	2.2	7.7
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5	701	15	100	55	158
Hardness (as CaCO3)	mg/L	0.02	959	167	254	318	415
Aluminum	mg/L	0.01	0.12	0.03	0.06	0.03	0.07
Barium	mg/L	0.001	0.901	0.026	0.057	0.085	0.144
Boron	mg/L	0.005	0.605	2.24	0.008	1.75	0.118
Calcium	mg/L	0.02	250	33.6	87.5	56.1	118

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		Client I.D.	31	33-I	33-II	34	35
		Sample I.D.	25-029875-26	25-029875-27	25-029875-28	25-029875-29	25-029875-30
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-	-	-	-
Iron	mg/L	0.005	6.43	0.456	0.008	0.933	0.082
Magnesium	mg/L	0.02	81.3	20.1	8.68	43.2	29.2
Manganese	mg/L	0.001	0.091	0.007	0.007	0.017	1.31
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	19.3	11.0	1.0	15.7	2.4
Sodium	mg/L	0.2	172	272	2.8	485	27.6
Strontium	mg/L	0.001	3.01	1.93	0.193	3.70	0.610
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	0.0002	<0.0001	<0.0001	0.0001	0.0004
Arsenic	mg/L	0.0001	0.0005	0.0026	0.0001	0.0019	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	<0.000030	0.000137
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0015	<0.0001	0.0002	0.0002	0.0076
Copper	mg/L	0.0001	0.0019	<0.0001	0.0007	0.0041	0.0030
Lead	mg/L	0.00002	<0.00004	<0.00002	<0.00002	<0.00009	<0.00002
Molybdenum	mg/L	0.0001	<0.0001	0.0062	0.0002	0.0004	0.0004
Nickel	mg/L	0.0002	0.0078	0.0004	0.0009	0.0007	0.0080
Selenium	mg/L	0.001	0.002	0.006	0.001	0.016	<0.001

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		Client I.D.	31	33-I	33-II	34	35
		Sample I.D.	25-029875-26	25-029875-27	25-029875-28	25-029875-29	25-029875-30
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-	-	-	-
Silver	mg/L	0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001
Thallium	mg/L	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00008
Uranium	mg/L	0.00005	<0.00005	0.00012	0.00239	0.00012	0.00564
Vanadium	mg/L	0.0001	0.0018	<0.0001	0.0006	<0.0004	0.0013
Chromium (VI)	mg/L	0.01	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)
Mercury	mg/L	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum (Calculated)	meq/L	-	26.6	17.9	5.32	36.9	9.54
Cation Sum (Calculated)	meq/L	-	28.1	15.6	5.23	28.1	9.62
% Difference (Calculated)	%	-	2.81	6.97	0.785	13.4	0.445
Ion Ratio (Calculated)	-	-	0.945	1.15	1.02	1.31	0.991
Sodium Adsorption Ratio (Calculated)	-	-	2.42	9.17	0.0750	11.8	0.590
TDS (Ion Sum Calc) (Calculated)	mg/L	1	1380	943	264	1880	484
TDS(calc.)/EC(actual) (Calculated)	-	-	0.597	0.570	0.554	0.517	0.558
Conductivity Calc	µmho/cm	-	2230	1740	486	3380	866
Conductivity Calc / Conductivity (Calculated)	-	-	0.964	1.05	1.02	0.931	0.997
Langelier Index(25°C) (Calculated)	-	-	1.31	0.578	0.952	0.908	1.09
Saturation pH (25°C) (Calculated)	-	-	6.11	7.53	7.09	7.27	6.81
pH (Client Data)	pH units	-	6.36	7.73	7.55	7.04	7.28
Temperature (Client Data)	°C	-	15.7	11.1	11.4	12.0	14.7

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		Client I.D.	36	37	201	DUP	DUP-1
		Sample I.D.	25-029875-31	25-029875-32	25-029875-33	25-029875-34	25-029875-35
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	312	234	244	201	324
TDS (Calc. from Cond.) (Calculated)	mg/L	3	342	289	270	220	490
Conductivity @25°C	uS/cm	1	659	557	521	427	923
pH @25°C	pH units	-	8.03	7.88	8.02	8.07	7.97
Fluoride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	17.4	13.8	10.4	5.8	58.1
Nitrate (N)	mg/L	0.05	<0.05	<0.05	1.06	1.91	2.24
Nitrite (N)	mg/L	0.05	<0.05	<0.05	0.10	<0.05	<0.05
Sulphate	mg/L	1	23	40	16	10	95
Phosphorus (Total)	mg/L	0.01	9.96	61.4	1.39	0.36	0.78
Total Kjeldahl Nitrogen	mg/L	0.1	6.1	80.4	0.7	0.7	0.5
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.12	0.68	0.20	0.52	0.15
Ammonia (N)-unionized (Calculated)	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	6.9	46.0	5.5	3.6	4.8
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5	337	2700	58	9	29
Hardness (as CaCO3)	mg/L	0.02	349	301	256	226	419
Aluminum	mg/L	0.01	0.07	0.06	0.05	0.05	0.08
Barium	mg/L	0.001	0.172	0.172	0.077	0.045	0.094
Boron	mg/L	0.005	0.035	0.046	0.155	0.007	0.222
Calcium	mg/L	0.02	112	109	85.2	76.7	138

Michelle Dubien
Data Specialist

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		Client I.D.	36	37	201	DUP	DUP-1
		Sample I.D.	25-029875-31	25-029875-32	25-029875-33	25-029875-34	25-029875-35
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-	-	-	-
Iron	mg/L	0.005	1.38	0.058	0.007	0.007	0.009
Magnesium	mg/L	0.02	16.9	7.05	10.5	8.39	18.0
Manganese	mg/L	0.001	0.084	0.398	0.001	0.003	0.002
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	1.7	2.1	2.4	0.8	28.3
Sodium	mg/L	0.2	7.9	12.3	8.2	3.2	12.6
Strontium	mg/L	0.001	0.216	0.206	0.169	0.131	0.265
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	0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001	0.0007	0.0005	<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	0.000022	<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	0.0003	0.0011	0.0004	0.0001	0.0003
Copper	mg/L	0.0001	0.0006	0.0009	0.0022	0.0006	0.0018
Lead	mg/L	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.0001	0.0012	0.0013	0.0001	0.0001	0.0012
Nickel	mg/L	0.0002	0.0018	0.0019	0.0007	0.0006	0.0014
Selenium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001

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Data Specialist

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		Client I.D.	36	37	201	DUP	DUP-1
		Sample I.D.	25-029875-31	25-029875-32	25-029875-33	25-029875-34	25-029875-35
		Date Collected	2025-09-30	2025-09-30	2025-09-30	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-	-	-	-
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	0.00404	0.00217	0.00048	0.00040	0.00088
Vanadium	mg/L	0.0001	0.0006	0.0031	0.0002	0.0003	0.0002
Chromium (VI)	mg/L	0.01	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)	<0.01 (25)
Mercury	mg/L	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum (Calculated)	meq/L	-	7.22	5.90	5.59	4.52	10.2
Cation Sum (Calculated)	meq/L	-	7.46	6.68	5.55	4.72	9.66
% Difference (Calculated)	%	-	1.62	6.17	0.372	2.11	2.97
Ion Ratio (Calculated)	-	-	0.968	0.884	1.01	0.959	1.06
Sodium Adsorption Ratio (Calculated)	-	-	0.185	0.308	0.223	0.0935	0.268
TDS (Ion Sum Calc) (Calculated)	mg/L	1	369	326	285	235	554
TDS(calc.)/EC(actual) (Calculated)	-	-	0.559	0.585	0.547	0.550	0.601
Conductivity Calc	µmho/cm	-	669	596	521	438	946
Conductivity Calc / Conductivity (Calculated)	-	-	1.02	1.07	0.999	1.03	1.02
Langelier Index(25°C) (Calculated)	-	-	1.12	0.845	0.896	0.825	1.15
Saturation pH (25°C) (Calculated)	-	-	6.91	7.04	7.12	7.25	6.82
pH (Client Data)	pH units	-	7.48	6.62	6.74	7.61	6.78
Temperature (Client Data)	°C	-	13.3	14.9	12.1	15.0	11.8

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Data Specialist

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		Client I.D.	DUP-2	DUP-3
		Sample I.D.	25-029875-36	25-029875-37
		Date Collected	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	302	787
TDS (Calc. from Cond.) (Calculated)	mg/L	3	363	893
Conductivity @25°C	uS/cm	1	698	1630
pH @25°C	pH units	-	7.95	7.79
Fluoride	mg/L	0.1	<0.1	<0.4
Chloride	mg/L	0.5	17.4	68.9
Nitrate (N)	mg/L	0.05	6.46	<0.20
Nitrite (N)	mg/L	0.05	0.18	<0.20
Sulphate	mg/L	1	22	38
Phosphorus (Total)	mg/L	0.01	0.03	0.08
Total Kjeldahl Nitrogen	mg/L	0.1	0.9	3.9
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.49	2.44
Ammonia (N)-unionized (Calculated)	mg/L	0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	6.8	31.9
Phenolics	mg/L	0.001	<0.001	<0.001
COD	mg/L	5	<5	68
Hardness (as CaCO3)	mg/L	0.02	342	716
Aluminum	mg/L	0.01	0.07	0.12
Barium	mg/L	0.001	0.199	0.509
Boron	mg/L	0.005	0.090	2.64
Calcium	mg/L	0.02	114	227

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		Client I.D.	DUP-2	DUP-3
		Sample I.D.	25-029875-36	25-029875-37
		Date Collected	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-
Iron	mg/L	0.005	<0.005	2.64
Magnesium	mg/L	0.02	13.8	36.2
Manganese	mg/L	0.001	0.003	1.80
Phosphorus	mg/L	0.1	<0.1	<0.1
Potassium	mg/L	0.1	5.3	11.3
Sodium	mg/L	0.2	9.6	91.2
Strontium	mg/L	0.001	0.179	0.760
Tin	mg/L	0.05	<0.05	<0.05
Titanium	mg/L	0.005	<0.005	<0.005
Zinc	mg/L	0.005	<0.005	0.005
Antimony	mg/L	0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001	<0.0001	0.0006
Beryllium	mg/L	0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0003	0.0167
Copper	mg/L	0.0001	0.0033	0.0037
Lead	mg/L	0.00002	<0.00002	0.00003
Molybdenum	mg/L	0.0001	0.0005	0.0006
Nickel	mg/L	0.0002	0.0008	0.0123
Selenium	mg/L	0.001	<0.001	0.001

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		Client I.D.	DUP-2	DUP-3
		Sample I.D.	25-029875-36	25-029875-37
		Date Collected	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-
Silver	mg/L	0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005	0.00097	0.00302
Vanadium	mg/L	0.0001	0.0002	0.0007
Chromium (VI)	mg/L	0.01	<0.01 (25)	<0.01 (25)
Mercury	mg/L	0.00002	<0.00002	<0.00002
Anion Sum (Calculated)	meq/L	-	7.47	18.5
Cation Sum (Calculated)	meq/L	-	7.42	19.0
% Difference (Calculated)	%	-	0.334	1.34
Ion Ratio (Calculated)	-	-	1.01	0.973
Sodium Adsorption Ratio (Calculated)	-	-	0.227	1.48
TDS (Ion Sum Calc) (Calculated)	mg/L	1	394	952
TDS(calc.)/EC(actual) (Calculated)	-	-	0.564	0.583
Conductivity Calc	µmho/cm	-	694	1560
Conductivity Calc / Conductivity (Calculated)	-	-	0.994	0.954
Langelier Index(25°C) (Calculated)	-	-	1.03	1.54
Saturation pH (25°C) (Calculated)	-	-	6.92	6.25
pH (Client Data)	pH units	-	7.38	6.09
Temperature (Client Data)	°C	-	12.8	12.5

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		Client I.D.	14-I	14-II
		Sample I.D.	25-029875-8	25-029875-9
		Date Collected	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-
Acetone	µg/L	30	<30	<30
Benzene	µg/L	0.5	<0.5	<0.5
Bromodichloromethane	µg/L	2	<2	<2
Bromoform	µg/L	5	<5	<5
Bromomethane	µg/L	0.5	<0.5	<0.5
Carbon Tetrachloride	µg/L	0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5	<0.5	<0.5
Chloroform	µg/L	1	<1	<1
Chloromethane (Methyl Chloride)	µg/L	2	<2	<2
Dibromochloromethane	µg/L	2	<2	<2
Ethylene Dibromide	µg/L	0.2	<0.2	<0.2
Dichlorobenzene,1,2-	µg/L	0.5	<0.5	<0.5
Dichlorobenzene,1,3-	µg/L	0.5	<0.5	<0.5
Dichlorobenzene,1,4-	µg/L	0.5	<0.5	<0.5
Dichloroethane,1,1-	µg/L	0.5	<0.5	<0.5
Dichloroethane,1,2-	µg/L	0.5	<0.5	<0.5
Dichloroethylene,1,1-	µg/L	0.5	<0.5	<0.5
Dichloroethylene,1,2-cis-	µg/L	0.5	<0.5	<0.5
Dichloroethylene,1,2-trans-	µg/L	0.5	<0.5	<0.5
Dichloropropane,1,2-	µg/L	0.5	<0.5	<0.5
Dichloropropene,1,3-cis-	µg/L	0.5	<0.5	<0.5

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		Client I.D.	14-I	14-II
		Sample I.D.	25-029875-8	25-029875-9
		Date Collected	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-
Dichloropropene,1,3-trans-	µg/L	0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5
Dichloromethane (Methylene Chloride)	µg/L	5	<5	<5
Methyl Ethyl Ketone	µg/L	2	<2	<2
Methyl Isobutyl Ketone	µg/L	20	<20	<20
Methyl tert-Butyl Ether (MTBE)	µg/L	2	<2	<2
Styrene	µg/L	0.5	<0.5	<0.5
Tetrachloroethane,1,1,1,2-	µg/L	0.5	<0.5	<0.5
Tetrachloroethane,1,1,2,2-	µg/L	0.5	<0.5	<0.5
Tetrachloroethylene	µg/L	0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5
Trichlorobenzene,1,2,4-	µg/L	0.5	<0.5	<0.5
Trichloroethane,1,1,1-	µg/L	0.5	<0.5	<0.5
Trichloroethane,1,1,2-	µg/L	0.5	<0.5	<0.5
Trichloroethylene	µg/L	0.5	<0.5	<0.5
Trichlorofluoromethane (Freon 11)	µg/L	5	<5	<5
Vinyl Chloride	µg/L	0.2	<0.2	<0.2
Xylene, m,p-	µg/L	1	<1	<1
Xylene, o-	µg/L	0.5	<0.5	<0.5

Comments:

25. Chromium (VI) result based on Total Chromium

Elevated RLs due to sample matrix interferences

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Data Specialist

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 25-029880 - 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: Kayla Pantaleo

DATE RECEIVED: 2025-Oct-01
DATE REPORTED: 2025-Oct-09
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Eldon Landfill
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	2	OTTAWA	PCURIEL	2025-Oct-03	A-IC-01	SM 4110B
BOD5 (Liquid)	2	KINGSTON	JWOLFE2	2025-Oct-02	BOD-001	SM 5210B
COD (Liquid)	2	KINGSTON	MWILSON	2025-Oct-08	COD-001	SM 5220D
Colour (Liquid)	2	OTTAWA	STAILLON	2025-Oct-03	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	2	OTTAWA	SBOUDREAU	2025-Oct-03	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Cyanide Total (Liquid)	2	KINGSTON	EHINCH	2025-Oct-07	CN-001	SM 4500-CN-E
Cyanide WAD (Liquid)	2	KINGSTON	EHINCH	2025-Oct-03	CN-001	SM 4500-CN-E
DOC (Liquid)	2	OTTAWA	SLOZO	2025-Oct-03	C-OC-01	EPA 415.2
Ion Balance (Calc.)	2	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	2	OTTAWA	SLOZO	2025-Oct-06	D-CRVI-01	MECP E3056
ICP/MS (Liquid)	2	OTTAWA	GFENTON	2025-Oct-03	D-ICPMS-01	EPA 200.8
ICP/OES (Liquid)	2	OTTAWA	SGORMAN	2025-Oct-02	D-ICP-01	SM 3120B
Mercury (Liquid)	2	OTTAWA	TBENNETT	2025-Oct-03	D-HG-02	SM 3112B
Ammonia (Liquid)	2	KINGSTON	VHAMMOND	2025-Oct-06	NH3-001	SM 4500NH3
Phenols (Liquid)	2	KINGSTON	EHINCH	2025-Oct-06	PHEN-01	MECP E3179
Total Organic Carbon (TOC)	2	OTTAWA	SLOZO	2025-Oct-06	C-OC-01	EPA 415.2
TP & TKN (Liquid)	2	KINGSTON	YLIEN	2025-Oct-03	TPTKN-001	MECP E3516.2
TSS (Liquid)	2	KINGSTON	MWILSON	2025-Oct-03	TSS-001	SM 2540D
Turbidity (Liquid)	2	OTTAWA	ABAILEY	2025-Oct-02	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 *

Michelle Dubien
Data Specialist

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		Client I.D.	8	9
		Sample I.D.	25-029880-1	25-029880-2
		Date Collected	2025-09-30	2025-09-30
Parameter	**Units**	**R.L.**	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	431	247
TDS (Calc. from Cond.) (Calculated)	mg/L	3	524	255
Conductivity @25°C	uS/cm	1	983	493
pH @25°C	pH units	-	7.68	7.99
Colour	TCU	2	2	<2
Turbidity	NTU	0.1	771	4970
Fluoride	mg/L	0.1	<0.1	<0.1
Chloride	mg/L	0.5	39.2	5.6
Nitrate (N)	mg/L	0.05	0.17	0.28
Nitrite (N)	mg/L	0.05	<0.05	<0.05
Sulphate	mg/L	1	70	18
BOD5	mg/L	3	<3	<3
Total Suspended Solids	mg/L	3	6920	24200
Phosphorus (Total)	mg/L	0.01	1.03	10.4
Total Kjeldahl Nitrogen	mg/L	0.1	1.0	2.1
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.27	0.09
Ammonia (N)-unionized (Calculated)	mg/L	0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	11.4	4.1
Total Organic Carbon	mg/L	0.8	10.0	7.5
Cyanide (Total)	mg/L	0.005	<0.005	<0.005
Cyanide (WAD)	mg/L	0.005	<0.005	<0.005

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		Client I.D.	8	9
		Sample I.D.	25-029880-1	25-029880-2
		Date Collected	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-
Phenolics	mg/L	0.001	<0.001	<0.001
COD	mg/L	5	49	239
Hardness (as CaCO3)	mg/L	0.02	464	282
Aluminum	mg/L	0.01	0.09	0.06
Barium	mg/L	0.001	0.179	0.060
Boron	mg/L	0.005	0.932	0.038
Calcium	mg/L	0.02	156	82.2
Iron	mg/L	0.005	0.005	0.008
Magnesium	mg/L	0.02	18.1	18.5
Manganese	mg/L	0.001	0.446	0.003
Phosphorus	mg/L	0.1	<0.1	<0.1
Potassium	mg/L	0.1	4.3	2.7
Sodium	mg/L	0.2	29.9	3.5
Strontium	mg/L	0.001	0.411	0.475
Tin	mg/L	0.05	<0.05	<0.05
Titanium	mg/L	0.005	<0.005	<0.005
Zinc	mg/L	0.005	<0.005	<0.005
Antimony	mg/L	0.0001	0.0001	0.0002
Arsenic	mg/L	0.0001	0.0001	<0.0001
Beryllium	mg/L	0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015	<0.000015	<0.000015

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		Client I.D.	8	9
		Sample I.D.	25-029880-1	25-029880-2
		Date Collected	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-
Chromium	mg/L	0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0018	0.0001
Copper	mg/L	0.0001	0.0063	0.0006
Lead	mg/L	0.00002	<0.00004	<0.00002
Molybdenum	mg/L	0.0001	0.0004	0.0002
Nickel	mg/L	0.0002	0.0068	0.0009
Selenium	mg/L	0.001	<0.001	<0.001
Silver	mg/L	0.0001	<0.0001	<0.0001
Thallium	mg/L	0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005	0.00093	0.00078
Vanadium	mg/L	0.0001	0.0003	0.0003
Chromium (VI)	mg/L	0.01	<0.01 (25)	<0.01 (25)
Mercury	mg/L	0.00002	<0.00002	<0.00002
Anion Sum (Calculated)	meq/L	-	11.2	5.49
Cation Sum (Calculated)	meq/L	-	10.7	5.86
% Difference (Calculated)	%	-	2.19	3.24
Ion Ratio (Calculated)	-	-	1.04	0.937
Sodium Adsorption Ratio (Calculated)	-	-	0.604	0.0913
TDS (Ion Sum Calc) (Calculated)	mg/L	1	577	280
TDS(calc.)/EC(actual) (Calculated)	-	-	0.587	0.568
Conductivity Calc	µmho/cm	-	981	524

Michelle Dubien
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		Client I.D.	8	9
		Sample I.D.	25-029880-1	25-029880-2
		Date Collected	2025-09-30	2025-09-30
Parameter	Units	R.L.	-	-
Conductivity Calc / Conductivity (Calculated)	-	-	0.998	1.06
Langelier Index(25°C) (Calculated)	-	-	1.03	0.855
Saturation pH (25°C) (Calculated)	-	-	6.65	7.13
pH (Client Data)	pH units	-	6.31	6.86
Temperature (Client Data)	°C	-	13.2	13.0

Comments:

25. Chromium (VI) result based on Total Chromium

DOC greater than TOC within acceptable analytical limits

Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received and relate only to the items tested. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

APPENDIX E

Chemistry Summary Tables

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	7-I 25-Apr-16	7-I 19-Oct-16	7-I 12-Apr-17	7-I 05-Oct-17	7-I 10-Apr-18	7-I 01-Oct-18	7-I 22-Apr-19	7-I 08-Oct-19	7-I 13-Apr-20	7-I 14-Oct-20	7-I 21-Apr-21	7-I 18-Oct-21	7-I 20-Apr-22	7-I 12-Oct-22	7-I 19-Apr-23	7-I 12-Oct-23
Alkalinity	mg/L	500	OG	351	NV	248	264	281	223	270	223	291	257	253	241	282	282	277	294	265	282
Conductivity	µS/cm	-		-	NV	625	629	636	822	680	724	715	659	663	587	648	590	643	668	596	649
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.75	7.72	7.85	7.85	7.94	7.89	7.8	7.78	7.81	7.88	7.96	7.66	7.6	7.82	7.82	7.68
TDS	mg/L	500	AO	362	NV	320	311	337	***365***	338	340	***379***	324	327	309	332	337	329	358	303	337
DOC	mg/L	5		3.7	NV	2.4	3.5	3.3	**6.5**	***4.5***	**8.5**	5	**8.1**	***4.2***	**6.3**	**6.2**	**5.9**	3.5	4	2.8	**7.2**
COD	mg/L	-		-	NV	5	10	< 5	21	< 5	27	10	14	8	13	17	11	12	8	12	11
Phenols	mg/L	-		-	0.001	< 0.001	**0.009**	< 0.001	**0.004**	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001
Chloride	mg/L	250	AO	128	NV	35	21	21	62	25.2	55.7	29.5	26.4	25.8	17	15.4	17.3	13	14.4	10.3	13.1
Ammonia, total	mg/L	-		-	NV	0.05	0.1	0.04	0.05	0.09	0.06	0.08	0.12	< 0.01	0.08	0.04	0.18	0.55	0.05	0.16	0.28
Unionized Ammonia	mg/L	-		-	0.02	-	-	-	-	-	-	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	0.01	< 0.01	< 0.01	<0.01
Fluoride	mg/L	2.4	MAC	0.7	NV	< 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	<0.1
Sulphate	mg/L	500	AO	255	NV	11	10	16	21	18	21	22	19	23	20	18	25	22	19	19	19
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.1	0.2	0.2	< 0.05	0.07	0.07	0.07	< 0.05	< 0.05	< 0.05	< 0.05	0.1	< 0.05	< 0.05	< 0.5	0.13
Nitrate (N)	mg/L	10	MAC	4.0	NV	2.7	2.1	2.7	**16.9**	***5.48***	**14**	***4.18***	***6.71***	***4.45***	***4.36***	***4.38***	3.61	3.22	***5.82***	< 0.5	***7.52***
Bromide	mg/L	-		-	NV	< 0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	0.4	0.4	0.3	0.9	0.5	2.2	0.7	0.7	0.5	0.7	0.5	0.6	0.7	0.5	0.4	0.7
Hardness	mg/L	500	OG	361	NV	273	265	284	***362***	314	308	348	281	292	288	297	288	290	340	267	311
Aluminum	mg/L	0.1	OG	0.07	0.075	0.03	0.03	***0.07***	**0.09**	0.05	**0.08**	***0.07***	**0.17**	0.06	0.04	0.06	0.06	0.03	0.04	**0.08**	0.03
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 0.0001	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	< 0.0001	<0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	0.0001	< 0.0001	0.0002	< 0.0001	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Barium	mg/L	1	MAC	0.3	NV	0.08	0.1	0.14	0.15	0.121	0.12	0.135	0.111	0.11	0.124	0.118	0.131	0.127	0.158	0.107	0.161
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	<0.0001
Boron	mg/L	5	IMAC	1.3	0.2	< 0.005	0.034	0.046	0.033	0.044	0.034	0.059	0.052	0.063	0.079	0.067	0.076	0.09	0.098	0.066	0.099
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015
Calcium	mg/L	-		-	NV	93	90	96	123	107	105	119	96.5	98.6	98.3	101	97.9	97.7	115	90.2	104
Chromium	mg/L	0.05	MAC	0.013	0.001	< 0.0002	0.001	**0.0171**	< 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	-		-	0.0009	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.01**	**0.01**	< 0.005	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0003
Copper	mg/L	1	AO	0.5	0.005	0.001	0.0012	0.001	0.0018	0.0015	0.0045	0.0026	**0.0067**	0.0025	**0.0067**	0.0044	0.0036	0.0029	0.0033	0.002	0.0039
Iron	mg/L	0.3	AO	0.15	0.3	< 0.005	< 0.005	0.01	< 0.005	0.01	0.071	< 0.005	**0.629**	< 0.005	0.012	0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005
Lead	mg/L	0.01	MAC	0.003	0.005	< 0.00002	0.00008	< 0.00002	< 0.00002	< 0.00002	0.00013	< 0.00002	0.00132	0.00004	0.0001	0.00007	< 0.00002	0.00004	0.00003	< 0.00002	0.00003
Magnesium	mg/L	-		-	NV	9.6	9.9	11	13.3	11.3	11	12.2	9.7	11	10.3	10.8	10.5	11.1	12.7	10.1	12.3
Manganese	mg/L	0.05	AO	0.03	NV	< 0.001	0.004	0.001	< 0.001	< 0.001	0.008	< 0.001	***0.043***	< 0.001	0.002	< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.001
Mercury	mg/L	0.001	MAC	0.0003	0.0002	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	< 0.00002	< 0.00002	<0.00002
Molybdenum	mg/L	-		-	0.04	0.0002	0.0002	0.0002	0.0001	< 0.0001	0.0002	0.0001	0.0002	0.0003	0.0003	0.0002	0.0003	0.0003	0.0002	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	< 0.01	0.0007
Potassium	mg/L	-		-	NV	1.4	2.5	1.5	2	1.5	2	1.7	1.9	1.4	2.3	1.7	2.4	2.3	2.7	1.6	4.1
Phosphorus-Total	mg/L	-		-	0.03	**0.24**	**0.19**	**0.18**	**0.22**	**0.13**	**0.25**	**0.09**	**0.08**	**0.06**	**0.04**	**0.09**	**0.05**	**0.04**	**0.08**	< 0.01	**0.05**
Selenium	mg/L	0.01	MAC	0.003	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	<0.001
Silver	mg/L	-		-	0.0001	< 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	< 0.0001	< 0.0001	<0.0001
Sodium	mg/L	200	AO	102	NV	8.8	9	10	10.3	12.9	11.4	20	15.4	15.7	16.7	15.3	14.2	16.5	17.4	11	10.2
Strontium	mg/L	-		-	NV	0.14	0.14	0.13	0.18	0.141	0.148	0.169	0.143	0.144	0.132	0.144	0.142	0.142	0.166	0.126	0.164
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	< 0.005	< 0.00005	<0.00005
Vanadium	mg/L	-		-	0.006	0.0008	0.001	0.0008	0.0011	0.0002	0.0003	0.0002	0.0011	0.0003	0.0004	0.0002	0.0002	0.0003	0.0003	< 0.0004	0.0003
Zinc	mg/L	5	AO	2.5	0.02	0.007	< 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	0.006
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	4.8	13	7.3	12.2	-	-	7.9	11.9	7.6	12	5	11.2	8	13.1	6.7	11.9
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	8.05	7.7	8.21	7.52	7.94	7.89	7.61	7.66	7.14	7.63	7.88	7.75	8.1	7.6	7.9	7.74
Field Conductivity	µS/cm	-		-	NV	375	435	453	705	622	635	780	491	595	500	630	600	650	800	556	721

ODWQS Ontario Drinking Water Quality Objectives
MAC Maximum Acceptable Concentration
IMAC Interim Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operatioal Guidelines
Bold / Highlighting for ODWQS exceeded parameters
Bold / Underlined for PWQO exceeded parameters
Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	7-I 16-Apr-24	7-I 10-Oct-24	7-I 16-Apr-25	7-I Dup 16-Apr-25	7-I 30-Sep-25	7-I Dup 30-Sep-25	8-I 25-Apr-16	8-I 19-Oct-16	8-I 12-Apr-17	8-I 05-Oct-17	8-I 10-Apr-18	8-I 01-Oct-18	8-I 22-Apr-19	8-I 08-Oct-19	8-I 13-Apr-20	8-I 14-Oct-20
Alkalinity	mg/L	500	OG	351	NV	264	266	223	228	302	302	198	203	204	196	194	224	209	226	***400***	***365***
Conductivity	µS/cm	-		-	NV	596	967	539	544	702	698	424	430	437	412	452	791	429	493	1090	916
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.63	7.84	7.5	7.95	7.78	7.95	7.96	8.18	8.17	8.08	8.06	7.74	7.71	7.71	7.69	7.55
TDS	mg/L	500	AO	362	NV	309	**515**	279	282	***365***	***363***	230	226	244	212	242	***407***	234	263	**686**	**551**
DOC	mg/L	5		3.7	NV	4	**9.4**	3	2.7	**6.4**	**6.8**	0.8	0.9	1.2	1.5	1.5	2.1	1.3	2.4	3.1	3
COD	mg/L	-		-	NV	18	29	12	5	14	<5	< 5	40	41	21	< 5	7	1.5	< 5	5	46
Phenols	mg/L	-		-	0.001	<0.001	<0.001	**0.002**	<0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001	**0.004**	< 0.001	< 0.002	<0.002	< 0.002	< 0.002	< 0.002
Chloride	mg/L	250	AO	128	NV	9.9	24	14.5	17.1	16.7	17.4	8	6	6	4	20.5	89.7	5.5	3.9	6.8	21.8
Ammonia, total	mg/L	-		-	NV	0.59	0.58	0.16	0.17	0.46	0.49	0.03	0.04	0.03	< 0.01	0.14	0.03	0.8	0.09	0.03	0.03
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
Fluoride	mg/L	2.4	MAC	0.7	NV	<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	< 0.1
Sulphate	mg/L	500	AO	255	NV	20	32	17	18	22	22	10	11	12	7	9	35	16	19	192	95
Nitrite (N)	mg/L	1	MAC	0.3	NV	0.1	0.27	0.09	0.09	0.19	0.18	< 0.1	0.2	< 0.1	< 0.05	< 0.05	< 0.05	<0.05	< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	3.45	**45.7**	***4.72***	***5.55***	***6.26***	***6.46***	1.3	1.5	1.7	1.2	1.73	1.15	1.03	1.48	1.95	1.48
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	< 0.4	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	0.8	1.4	0.6	0.4	0.8	0.9	0.2	0.4	0.4	0.2	0.2	0.4	1.3	0.3	0.4	0.6
Hardness	mg/L	500	OG	361	NV	295	***413***	227	224	353	342	217	195	241	208	243	332	226	247	**601**	**503**
Aluminum	mg/L	0.1	OG	0.07	0.075	0.04	0.04	0.02	0.02	***0.07***	***0.07***	0.02	0.05	0.04	0.06	0.06	***0.07***	0.04	0.06	**0.1**	***0.07***
Antimony	mg/L	0.006	IMAC	0.002	0.02	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	< 0.0001	< 0.0001	0.0005
Arsenic	mg/L	0.025	IMAC	0.006	0.005	<0.0001	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	< 0.0001	< 0.0001
Barium	mg/L	1	MAC	0.3	NV	0.151	0.246	0.083	0.081	0.204	0.199	0.04	0.05	0.07	0.06	0.053	0.101	0.042	0.063	0.137	0.153
Beryllium	mg/L	-		-	1.1	<0.0001	<0.0001	<0.0001	<0.0001	<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	5	IMAC	1.3	0.2	0.097	0.11	0.04	0.039	0.094	0.09	< 0.005	0.014	0.02	0.033	0.018	0.173	0.024	0.03	**0.353**	**0.559**
Cadmium	mg/L	0.005	MAC	0.001	0.0005	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	<0.000015	< 0.000015	< 0.000015	< 0.000015
Calcium	mg/L	-		-	NV	98.9	136	76.8	75.8	118	114	73.6	62.9	81.8	68.9	81.7	113	70.1	83.7	208	174
Chromium	mg/L	0.05	MAC	0.013	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	0	0.001	< 0.001	< 0.001	< 0.001	<0.001	< 0.001	< 0.001	**0.002**
Chromium (VI)	mg/L			-		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/L	-		-	0.0009	0.0003	0.0004	0.0002	0.0001	0.0003	0.0003	< 0.005	< 0.005	< 0.005	**0.005**	< 0.005	< 0.0001	0.0004	< 0.005	< 0.005	0.0008
Copper	mg/L	1	AO	0.5	0.005	0.0024	0.0036	0.0015	0.0014	0.0035	0.0033	0.0005	0.0007	0.001	0.0007	0.0003	0.0012	0.0005	0.0006	0.002	0.0026
Iron	mg/L	0.3	AO	0.15	0.3	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	0.01	0.021	< 0.005	0.007	0.045
Lead	mg/L	0.01	MAC	0.003	0.005	0.00007	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	0.00006	0.00007
Magnesium	mg/L	-		-	NV	11.7	17.5	8.48	8.37	14.1	13.8	8.2	9.2	8.9	8.6	9.34	12.1	12.3	9.27	19.7	16.6
Manganese	mg/L	0.05	AO	0.03	NV	<0.001	0.002	<0.001	<0.001	0.002	0.003	< 0.001	0	< 0.001	0	< 0.001	0.0045	0.002	0.001	< 0.001	0.011
Mercury	mg/L	0.001	MAC	0.0003	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	< 0.00002
Molybdenum	mg/L	-		-	0.04	0.0003	0.0003	0.0004	0.0003	0.0005	0.0005	0.0002	0.0003	0.0003	0.0003	0.0001	0.0003	0.0002	0.0003	0.0001	0.0002
Nickel	mg/L	-		-	0.025	0.0006	0.0009	0.0008	0.0008	0.0008	0.0008	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	< 0.01	< 0.01	< 0.01
Potassium	mg/L	-		-	NV	3.6	5.8	1.7	1.8	5.4	5.3	0.9	1.1	0.9	1.4	1	1.6	1.6	1.3	1.3	1.6
Phosphorus-Total	mg/L	-		-	0.03	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**3.02**	**1.2**	**3.45**	**1.32**	**1.14**	**0.9**	**8.82**	**1.61**	**2.05**	**1.74**
Selenium	mg/L	0.01	MAC	0.003	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.001	0	< 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	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV	7.9	11	5.8	5.7	9.8	9.6	5.7	6.8	3.9	4.1	3.5	21.6	3.4	9.9	17.9	25
Strontium	mg/L	-		-	NV	0.155	0.219	0.106	0.106	0.183	0.179	0.13	0.11	0.13	0.13	0.14	0.221	0.241	0.153	0.349	0.28
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	< 0.00005
Vanadium	mg/L	-		-	0.006	0.0002	0.0004	0.0002	0.0002	0.0002	0.0002	0.0009	0.0009	0.0002	0.0011	0.0003	0.0003	<0.0001	0.0003	0.0003	0.0002
Zinc	mg/L	5	AO	2.5	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	<0.005	< 0.005	< 0.005	0.016
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	8.6	12.6	7.4	7.4	12.8	12.8	6	12	6.4	13.4	-	-	8.5	11.8	8.8	11.9
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.82	7.65	8.08	8.08	7.38	7.38	8.12	7.82	7.91	7.91	8.06	7.74	7.47	7.48	6.14	7.37
Field Conductivity	µS/cm	-		-	NV	693	702	387	387	672	672	330	400	343	365	465	763	540	485	1037	820

ODWQS Ontario Drinking Water Quality Objectives
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IMAC Interim Maximum Acceptable Concentration
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OG Operatioal Guidelines
Bold / Highlighting for ODWQS exceeded parameters
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Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	8-I	8-I	8-I	8-I	8-I	8-I	8-I	8-I	8-I	8-I Dup	8-I	9-I	9-I	9-I	9-I	9-I
						21-Apr-21	18-Oct-21	20-Apr-22	12-Oct-22	19-Apr-23	12-Oct-23	16-Apr-24	10-Oct-24	16-Apr-25	16-Apr-25	30-Sep-25	25-Apr-16	19-Oct-16	12-Apr-17	05-Oct-17	10-Apr-18
Alkalinity	mg/L	500	OG	351	NV	***421***	***377***	***438***	345	***436***	***465***	***390***	***442***	***411***	***422***	***431***	249	255	236	261	246
Conductivity	µS/cm	-		-	NV	936	948	1030	917	959	1120	852	1100	864	870	983	489	522	468	527	471
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.78	7.73	7.7	7.76	7.48	7.26	8	7.86	7.75	7.85	7.68	7.87	8.01	8.1	8.06	7.97
TDS	mg/L	500	AO	362	NV	**562**	**610**	**605**	**526**	**542**	**602**	***450***	**588**	***456***	***460***	**524**	266	273	261	275	259
DOC	mg/L	5		3.7	NV	**5.2**	5	**5.3**	1.3	2.3	**7.2**	**5.8**	**10.7**	3.3	3.4	**11.4**	1.4	1.6	2.3	3.1	2.3
COD	mg/L	-		-	NV	14	< 3	16	5	20	10	6	76	41	30	49	< 5	< 5	83	44	11
Phenols	mg/L	-		-	0.001	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	**0.002**	<0.001	<0.001	< 0.001	< 0.001	< 0.001	**0.004**	< 0.001
Chloride	mg/L	250	AO	128	NV	17.1	42.7	43.6	49.3	21.3	50.6	23.8	45.9	21	21.8	39.2	3	4	3	4	3.8
Ammonia, total	mg/L	-		-	NV	0.02	0.14	0.57	0.05	0.34	0.12	0.31	0.3	<0.05	0.07	0.27	0.09	0.22	0.11	0.05	0.22
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	-	-	-	-	-
Fluoride	mg/L	2.4	MAC	0.7	NV	< 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	< 0.1
Sulphate	mg/L	500	AO	255	NV	74	108	83	78	43	79	45	77	40	41	70	13	17	13	12	9
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	0.2	< 0.1	< 0.05	< 0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	1.55	1.16	1.53	1.06	1.57	1.97	1.26	0.49	0.77	0.81	0.17	0.3	0.4	0.1	0.3	0.16
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	< 0.4	-	-	-	-
TKN	mg/L	-		-	NV	0.5	1.1	0.7	0.6	0.7	0.6	0.8	1	0.4	0.4	1	0.5	0.6	0.6	0.5	0.6
Hardness	mg/L	500	OG	361	NV	**514**	**508**	***485***	***423***	**538**	**559**	***404***	**538**	***424***	***416***	***464***	258	253	268	269	259
Aluminum	mg/L	0.1	OG	0.07	0.075	**0.1**	**0.1**	0.04	0.04	**0.1**	0.06	0.04	0.06	0.04	0.05	**0.09**	0.02	0.05	0.05	0.06	0.06
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 0.0001	0.0001	0.0001	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	IMAC	0.006	0.005	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	0.0004	< 0.0001	< 0.0001
Barium	mg/L	1	MAC	0.3	NV	0.137	0.178	0.152	0.148	0.128	0.191	0.116	0.208	0.107	0.105	0.179	0.05	0.05	0.07	0.06	0.051
Beryllium	mg/L	-		-	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	IMAC	1.3	0.2	**0.577**	**0.919**	**0.707**	**0.533**	**0.357**	**0.493**	**0.359**	**0.914**	**0.415**	**0.416**	**0.932**	< 0.005	0.026	0.021	0.044	0.028
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014
Calcium	mg/L	-		-	NV	178	171	161	142	182	188	133	178	145	142	156	79.6	75.2	84.4	80.2	77.6
Chromium	mg/L	0.05	MAC	0.013	0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	< 0.0002	0.0004	< 0.001	< 0.001
Chromium (VI)	mg/L			-		-	-	< 0.001	< 0.001	**0.002**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-
Cobalt	mg/L	-		-	0.0009	< 0.005	< 0.005	< 0.005	**0.005**	< 0.005	**0.0016**	0.0009	**0.0019**	0.0007	0.0007	**0.0018**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	AO	0.5	0.005	0.0033	0.0045	0.0037	0.0042	0.0019	**0.0057**	0.0034	**0.0061**	0.0028	0.0025	**0.0063**	0.0004	0.0004	0.0014	0.0008	0.0004
Iron	mg/L	0.3	AO	0.15	0.3	0.034	< 0.005	< 0.005	< 0.005	< 0.005	0.017	<0.005	<0.005	<0.005	<0.005	0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005
Lead	mg/L	0.01	MAC	0.003	0.005	0.00008	< 0.00002	< 0.00002	0.00003	< 0.00002	0.00004	0.00004	<0.00002	<0.00002	<0.00002	<0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Magnesium	mg/L	-		-	NV	16.7	19.5	20.4	16.5	20.1	21.6	17.2	22.5	15.2	15.1	18.1	14.5	15.8	13.9	16.7	15.8
Manganese	mg/L	0.05	AO	0.03	NV	0.003	***0.05***	0.009	***0.039***	< 0.001	***0.044***	0.006	**0.456**	0.007	0.006	**0.446**	0.01	0.01	0	***0.04***	***0.033***
Mercury	mg/L	0.001	MAC	0.0003	0.0002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00004	<0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	-		-	0.04	< 0.0001	0.0002	0.0002	0.0003	0.0001	0.0002	0.0002	0.0003	0.0001	0.0002	0.0004	0.0002	0.0001	0.0002	0.0002	< 0.0001
Nickel	mg/L	-		-	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.003	0.002	0.0056	0.0018	0.0025	0.0068	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Potassium	mg/L	-		-	NV	1.4	2.6	1.8	2.4	1.1	2.3	1.6	4	1.3	1.4	4.3	1.5	1.5	1.1	2.2	1.4
Phosphorus-Total	mg/L	-		-	0.03	**1.04**	**1.27**	**1.27**	0.03	**0.73**	**0.71**	<0.1	<0.1	<0.1	<0.1	<0.1	**0.99**	**6.81**	**5.78**	**1.7**	**4.81**
Selenium	mg/L	0.01	MAC	0.003	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	< 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	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Sodium	mg/L	200	AO	102	NV	22.6	40.3	32.6	29.8	12.7	29.6	24.5	36.7	19.8	19.6	29.9	3.3	4	2.9	3.9	3.3
Strontium	mg/L	-		-	NV	0.311	0.373	0.319	0.297	0.305	0.365	0.293	0.432	0.277	0.276	0.411	0.28	0.23	0.24	0.35	0.324
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	< 0.00005
Vanadium	mg/L	-		-	0.006	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003	0.0002	0.0003	0.0002	0.0002	0.0003	0.001	0.0009	0.0002	0.0014	0.0001
Zinc	mg/L	5	AO	2.5	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	2180	5600	5000	3180	3880	11300	3960	1760	1930	-	6920	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	5.7	11.1	7.7	13.1	8.1	13.2	9.5	12.4	5.4	5.4	13.2	4.4	12	4.9	12.3	-
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.56	7.34	7.13	6.98	7.36	7.18	7.17	7.55	7.44	7.44	6.31	8.14	7.74	7.83	7.75	7.97
Field Conductivity	µS/cm	-		-	NV	910	1000	1009	959	832	974	289	819	860	860	971	365	480	360	445	486

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	9-I 01-Oct-18	9-I 22-Apr-19	9-I 08-Oct-19	9-I 13-Apr-20	9-I 14-Oct-20	9-I 21-Apr-21	9-I 18-Oct-21	9-I 20-Apr-22	9-I 12-Oct-22	9-I 19-Apr-23	9-I 12-Oct-23	9-I 16-Apr-24	9-I 10-Oct-24	9-I 16-Apr-25	9-I 30-Sep-25	11-II 25-Apr-16
Alkalinity	mg/L	500	OG	351	NV	226	256	220	212	218	234	265	278	250	254	298	254	252	239	247	208
Conductivity	µS/cm	-		-	NV	459	494	461	450	466	476	497	503	505	509	521	487	515	460	493	434
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.92	7.68	7.83	7.83	7.87	7.95	7.89	7.87	7.87	7.75	7.42	7.99	8.08	7.94	7.99	7.99
TDS	mg/L	500	AO	362	NV	249	288	246	236	248	257	288	279	285	275	270	252	267	238	255	240
DOC	mg/L	5		3.7	NV	1.9	1.6	2.3	1.8	1.5	3.1	2.2	2.7	< 0.2	2.5	3.5	2.8	2.6	1.8	***4.1***	0.7
COD	mg/L	-		-	NV	80	1.6	30	102	105	136	< 3	176	64	133	49	148	526	640	239	< 5
Phenols	mg/L	-		-	0.001	**0.008**	<0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	**0.002**	<0.001	< 0.001
Chloride	mg/L	250	AO	128	NV	6.4	5.3	2.8	5	5.4	4.4	5	3.2	5.3	3.5	5	4.4	5	4	5.6	4
Ammonia, total	mg/L	-		-	NV	0.05	0.1	0.16	0.04	0.04	0.05	0.17	1.41	< 0.01	0.05	0.32	0.64	0.11	0.1	0.09	0.03
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	<0.01	<0.01	-
Fluoride	mg/L	2.4	MAC	0.7	NV	< 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	0.1
Sulphate	mg/L	500	AO	255	NV	16	21	15	14	17	12	14	8	19	10	33	13	16	11	18	10
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 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	< 0.1
Nitrate (N)	mg/L	10	MAC	4.0	NV	1.02	1.51	0.69	0.7	0.54	0.26	0.35	0.13	0.32	0.2	0.09	0.35	0.23	0.19	0.28	1.8
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.4
TKN	mg/L	-		-	NV	0.8	0.4	1.1	1	0.8	0.2	0.3	2.6	0.6	0.2	2.8	2.6	3	0.3	2.1	0.4
Hardness	mg/L	500	OG	361	NV	231	224	244	230	251	262	286	268	286	291	258	220	280	240	282	234
Aluminum	mg/L	0.1	OG	0.07	0.075	0.05	0.05	0.06	0.05	0.03	0.06	**0.08**	0.03	**0.36**	***0.07***	0.02	0.04	0.03	0.02	0.06	0.02
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 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	<0.0001	0.0002	< 0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	< 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	< 0.0001
Barium	mg/L	1	MAC	0.3	NV	0.057	0.058	0.056	0.048	0.056	0.055	0.065	0.057	0.06	0.068	0.057	0.051	0.064	0.057	0.06	0.04
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	<0.0001	<0.0001	<0.0001	< 0.002
Boron	mg/L	5	IMAC	1.3	0.2	0.018	0.103	0.017	0.014	0.056	0.02	0.037	0.011	0.043	0.014	0.052	0.029	0.038	0.02	0.038	< 0.005
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000015	<0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	0.000015	0.000039	0.000016	<0.000015	<0.000015	<0.000015	< 0.00002
Calcium	mg/L	-		-	NV	73.7	75.6	77.6	72.8	75.3	81.5	87.7	80.8	86.6	88	76.1	63.9	83.5	73.5	82.2	79.7
Chromium	mg/L	0.05	MAC	0.013	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	< 0.0002
Chromium (VI)	mg/L			-		-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-
Cobalt	mg/L	-		-	0.0009	< 0.0001	0.0002	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	0.0001	0.0002	0.0001	0.0001	< 0.005
Copper	mg/L	1	AO	0.5	0.005	0.0008	0.0009	0.0003	0.0018	0.0008	0.0016	0.0011	0.0016	0.0012	0.0009	0.0008	0.001	0.0007	0.0005	0.0006	0.0005
Iron	mg/L	0.3	AO	0.15	0.3	< 0.005	<0.005	< 0.005	0.006	0.05	0.013	0.076	< 0.005	**0.5**	< 0.005	0.008	0.025	<0.005	<0.005	0.008	< 0.005
Lead	mg/L	0.01	MAC	0.003	0.005	< 0.00002	<0.00002	< 0.00002	0.00005	0.00003	0.00005	0.00006	0.00003	0.00042	0.00002	<0.00002	0.00007	<0.00002	<0.00002	<0.00002	< 0.00002
Magnesium	mg/L	-		-	NV	11.4	8.5	12.2	11.8	15.2	14.1	16.2	16	16.9	17.3	16.6	14.6	17.4	13.8	18.5	8.5
Manganese	mg/L	0.05	AO	0.03	NV	0.0006	<0.001	0.001	< 0.001	0.005	0.009	0.009	***0.026***	***0.037***	0.002	0.02	0.022	***0.027***	0.008	0.003	< 0.001
Mercury	mg/L	0.001	MAC	0.0003	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	< 0.00002
Molybdenum	mg/L	-		-	0.04	0.0002	0.0003	0.0002	0.0001	0.0002	0.0002	0.0001	0.0002	< 0.0001	0.0002	0.0113	0.0002	0.0002	0.0002	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	0.0011	0.0005	0.0008	0.0009	0.0009	< 0.01
Potassium	mg/L	-		-	NV	2	1.1	2.2	1.5	2.4	1.3	2.2	1.3	2.5	1.1	2.5	1.6	2.2	1.1	2.7	0.7
Phosphorus-Total	mg/L	-		-	0.03	**14.7**	**0.66**	**12.5**	**6.77**	**6.69**	**1.03**	**1.94**	**21.7**	**3.62**	**1.18**	**7.44**	<0.1	<0.1	<0.1	<0.1	**0.11**
Selenium	mg/L	0.01	MAC	0.003	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	< 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	<0.0001	< 0.00002
Sodium	mg/L	200	AO	102	NV	3.6	23.4	4	3.1	4.2	3.2	3.9	2.9	3.9	2.8	3.9	3.5	3.8	3	3.5	3.5
Strontium	mg/L	-		-	NV	0.193	0.146	0.217	0.201	0.345	0.248	0.309	0.23	0.376	0.247	0.376	0.31	0.33	0.205	0.475	0.15
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	< 0.00005
Vanadium	mg/L	-		-	0.006	0.0001	0.0002	0.0001	0.0001	0.0003	0.0002	0.0004	0.0003	0.0015	0.0003	0.0004	0.0003	0.0002	0.0003	0.0003	0.001
Zinc	mg/L	5	AO	2.5	0.02	< 0.005	<0.005	< 0.005	< 0.005	0.008	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	11900	15400	81500	5870	19700	-	65400	200000	80400	24200	-
Field Temperature	°C	-	AO	-	NV	-	1.1	10.2	5.4	12.5	7.6	13.1	4.9	13.1	6.2	13.3	7.4	10.5	3.1	13	7.1
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.92	8	7.7	7.41	7.83	7.5	7.65	7.65	7.37	7.91	7.62	7.9	7.87	7.66	6.86	7.77
Field Conductivity	µS/cm	-		-	NV	459	510	375	516	430	540	535	562	620	437	482	457	545	470	579	460

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Bold / Highlighting for ODWQS exceeded parameters
Bold / Underlined for PWQO exceeded parameters
Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	11-II 19-Oct-16	11-II 12-Apr-17	11-II 05-Oct-17	11-II 10-Apr-18	11-II 01-Oct-18	11-II 22-Apr-19	11-II 08-Oct-19	11-II 13-Apr-20	11-II 14-Oct-20	11-II 21-Apr-21	11-II 18-Oct-21	11-II 20-Apr-22	11-II 12-Oct-22	11-II 19-Apr-23	11-II 12-Oct-23	11-II 16-Apr-24
Alkalinity	mg/L	500	OG	351	NV	191	202	194	189	192	188	186	186	188	199	203	194	196	202	210	205
Conductivity	µS/cm	-		-	NV	425	431	426	410	407	415	406	425	413	423	398	440	422	428	442	450
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.98	7.95	7.97	8.09	7.92	8.02	7.93	7.94	7.9	8.05	7.81	7.52	7.86	7.9	7.3	7.87
TDS	mg/L	500	AO	362	NV	238	235	215	215	210	219	203	211	219	221	228	222	224	229	228	232
DOC	mg/L	5		3.7	NV	1.1	1.7	1.5	2	1.4	1.4	2.3	0.9	2.1	3	2.6	1.6	2.5	1.3	***4.3***	2
COD	mg/L	-		-	NV	38	< 5	< 5	< 5	< 5	< 5	6	< 5	5	11	6	< 5	< 5	< 5	5	13
Phenols	mg/L	-		-	0.001	**0.008**	< 0.001	**0.004**	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001
Chloride	mg/L	250	AO	128	NV	7	6	5	4.3	4.7	5.4	1.1	4.2	4.4	4.4	5.1	4.9	5.7	5.7	7.8	7
Ammonia, total	mg/L	-		-	NV	0.03	< 0.01	< 0.01	0.02	0.02	0.01	0.06	< 0.01	0.01	0.02	0.07	1.22	< 0.01	0.52	<0.05	0.32
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
Fluoride	mg/L	2.4	MAC	0.7	NV	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	<0.1
Sulphate	mg/L	500	AO	255	NV	10	10	8	9	10	10	6	10	9	10	11	10	8	9	9	10
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.1	0.2	< 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
Nitrate (N)	mg/L	10	MAC	4.0	NV	2.3	1.7	2.6	2.39	2.19	2.02	2.44	1.92	2	2.06	2.48	2.15	2.35	1.71	2.09	2.07
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	< 0.1	0.2	0.2	0.2	0.2	0.2	0.5	0.3	0.3	0.2	0.2	1.4	0.2	0.8	<0.1	0.5
Hardness	mg/L	500	OG	361	NV	244	225	213	223	202	228	212	216	234	220	230	227	234	236	222	217
Aluminum	mg/L	0.1	OG	0.07	0.075	0.02	0.05	***0.07***	**0.08**	**0.1**	**0.14**	0.06	0.05	0.04	0.05	0.06	0.02	0.04	0.05	0.02	0.03
Antimony	mg/L	0.006	IMAC	0.002	0.02	0.0004	< 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
Arsenic	mg/L	0.025	IMAC	0.006	0.005	< 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	<0.0001
Barium	mg/L	1	MAC	0.3	NV	0.05	0.07	0.05	0.042	0.04	0.04	0.04	0.041	0.045	0.041	0.046	0.048	0.045	0.047	0.044	0.043
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	<0.0001	<0.0001
Boron	mg/L	5	IMAC	1.3	0.2	0.01	0.012	0.011	0.01	0.007	0.009	0.005	0.008	0.011	0.008	0.01	0.005	0.008	< 0.005	0.011	0.008
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015
Calcium	mg/L	-		-	NV	83	75.5	71.8	75.6	68.1	77.5	71.9	73.2	79.6	74.5	78.7	76.6	79.8	79.4	75.3	73.6
Chromium	mg/L	0.05	MAC	0.013	0.001	0.0007	**0.0015**	< 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	<0.01	<0.01
Cobalt	mg/L	-		-	0.0009	< 0.005	< 0.005	< 0.005	< 0.005	**0.007**	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	0.0001
Copper	mg/L	1	AO	0.5	0.005	0.0006	0.0002	0.0002	0.0005	0.0016	0.0012	0.0005	0.0012	0.0009	0.0016	0.0009	0.0007	0.0013	0.0012	0.0008	0.0005
Iron	mg/L	0.3	AO	0.15	0.3	< 0.005	< 0.005	< 0.005	0.008	***0.169***	0.105	< 0.005	< 0.005	0.023	< 0.005	0.02	< 0.005	0.019	< 0.005	<0.005	<0.005
Lead	mg/L	0.01	MAC	0.003	0.005	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00026	0.00018	< 0.00002	0.00002	0.00005	0.00006	0.00003	< 0.00002	0.00006	< 0.00002	0.00002	0.00002
Magnesium	mg/L	-		-	NV	8.9	8.8	8.2	8.21	7.63	8.24	7.87	8.07	8.53	8.25	8.12	8.54	8.32	9.02	8.2	8.07
Manganese	mg/L	0.05	AO	0.03	NV	0	< 0.001	< 0.001	< 0.001	***0.027***	0.022	< 0.001	< 0.001	0.005	< 0.001	0.003	< 0.001	0.005	< 0.001	<0.001	<0.001
Mercury	mg/L	0.001	MAC	0.0003	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	<0.00002
Molybdenum	mg/L	-		-	0.04	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0001	0.0001	< 0.0001	0.0001	0.0002	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	<0.0002	0.0006
Potassium	mg/L	-		-	NV	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.8	0.7	0.8	0.8	0.7	0.6	0.8	0.8
Phosphorus-Total	mg/L	-		-	0.03	0.03	**0.09**	**0.06**	**0.05**	**0.12**	**0.04**	**0.36**	0.02	**0.06**	**0.08**	**0.07**	0.03	**0.12**	< 0.01	0.03	<0.1
Selenium	mg/L	0.01	MAC	0.003	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	<0.001
Silver	mg/L	-		-	0.0001	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001
Sodium	mg/L	200	AO	102	NV	4.3	4.4	4.1	4.2	3.8	3.6	3.5	3.2	3.3	3.3	3.3	3.1	3.2	3	3.4	3.9
Strontium	mg/L	-		-	NV	0.15	0.13	0.13	0.128	0.117	0.131	0.129	0.13	0.128	0.133	0.134	0.137	0.133	0.134	0.137	0.136
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	< 0.005	< 0.00005	<0.00005	<0.00005
Vanadium	mg/L	-		-	0.006	0.0008	0.0011	0.0011	0.0003	0.0006	0.0005	0.0003	0.0003	0.0004	0.0003	0.0003	0.0003	0.0004	0.0003	0.0004	0.0003
Zinc	mg/L	5	AO	2.5	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	< 0.005	< 0.005	<0.005	<0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	10	6.2	9.4	-	-	7.7	9.5	7.1	9.1	6.9	9.4	7.3	11.1	7.7	9.8	7.4
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	8.06	7.85	7.89	8.09	7.92	7.82	7.86	7.73	8.13	7.19	7.94	7.77	7.93	7.16	7.6	8.3
Field Conductivity	µS/cm	-		-	NV	405	330	375	411	394	690	340	680	390	560	476	423	455	389	392	520

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	11-II	11-II	11-II	12-I	12-I	12-I	12-I	12-I	12-I	12-I	12-I	12-I	12-I	12-I	12-I	12-I
						10-Oct-24	16-Apr-25	30-Sep-25	25-Apr-16	19-Oct-16	12-Apr-17	05-Oct-17	10-Apr-18	02-Oct-18	22-Apr-19	08-Oct-19	13-Apr-20	14-Oct-20	21-Apr-21	18-Oct-21	20-Apr-22
Alkalinity	mg/L	500	OG	351	NV	204	206	206	208	204	204	206	203	175	162	192	182	199	208	216	202
Conductivity	µS/cm	-		-	NV	420	436	417	440	442	432	449	417	409	391	412	412	427	435	419	440
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	8.12	7.56	8	7.98	7.97	7.96	7.91	8.05	8.04	8	7.93	7.94	7.86	7.94	7.8	7.47
TDS	mg/L	500	AO	362	NV	217	225	215	239	252	236	226	227	212	194	209	205	228	230	240	229
DOC	mg/L	5		3.7	NV	2	1.5	3	0.8	1.2	1.7	1.7	2	1.9	1.4	2.4	1.3	1.9	3.3	2.5	2
COD	mg/L	-		-	NV	<5	7	<5	< 5	< 5	29	< 5	24	159	57	8	9	34	9	10	17
Phenols	mg/L	-		-	0.001	<0.001	0.001	<0.001	< 0.001	< 0.001	**0.007**	**0.002**	< 0.001	**0.014**	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001
Chloride	mg/L	250	AO	128	NV	5.2	5.5	5.3	5	6	7	5	4.6	4.5	3.8	0.9	4.3	4.4	4.7	5.4	4.9
Ammonia, total	mg/L	-		-	NV	0.19	<0.05	<0.05	0.04	0.23	0.02	< 0.01	0.14	0.13	0.05	0.08	< 0.01	0.02	0.03	0.06	1.74
Unionized Ammonia	mg/L	-		-	0.02	<0.01	<0.01	<0.01	-	-	-	-	-	-	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	**0.03**
Fluoride	mg/L	2.4	MAC	0.7	NV	<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	< 0.1
Sulphate	mg/L	500	AO	255	NV	9	9	9	11	10	10	9	9	15	9	7	9	9	10	11	10
Nitrite (N)	mg/L	1	MAC	0.3	NV	<0.05	<0.05	<0.05	< 0.1	0.2	0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	2	1.57	1.96	1.3	2.1	1.3	2.1	1.95	2.47	1.76	2.3	1.62	1.75	1.37	2.12	2.01
Bromide	mg/L	-		-	NV	-	-	-	< 0.4	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	0.3	0.5	0.1	0.2	0.3	0.4	0.2	0.3	1.7	0.8	0.7	0.2	0.4	0.2	0.7	2
Hardness	mg/L	500	OG	361	NV	214	212	221	236	261	227	224	231	208	209	217	209	241	230	238	231
Aluminum	mg/L	0.1	OG	0.07	0.075	0.02	0.02	0.04	0.02	0.03	0.05	0.06	0.06	0.04	0.05	0.06	0.05	0.03	0.05	0.05	0.02
Antimony	mg/L	0.006	IMAC	0.002	0.02	<0.0001	<0.0001	<0.0001	< 0.0001	0.0003	< 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	IMAC	0.006	0.005	<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	< 0.0005	< 0.0001	< 0.0001
Barium	mg/L	1	MAC	0.3	NV	0.042	0.042	0.043	0.04	0.05	0.07	0.05	0.04	0.045	0.035	0.04	0.036	0.046	0.042	0.048	0.043
Beryllium	mg/L	-		-	1.1	<0.0001	<0.0001	<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	< 0.002
Boron	mg/L	5	IMAC	1.3	0.2	0.008	0.007	0.007	< 0.005	0.01	0.011	0.011	0.007	0.008	0.009	0.005	0.007	0.009	0.008	0.009	< 0.005
Cadmium	mg/L	0.005	MAC	0.001	0.0005	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000059	< 0.000015	< 0.000015
Calcium	mg/L	-		-	NV	72.1	71.9	75.2	79.9	88.7	75.9	75.2	78.4	69.9	71.2	73	70.5	81.8	77.9	81	77.7
Chromium	mg/L	0.05	MAC	0.013	0.001	<0.001	<0.001	<0.001	< 0.0002	0.001	**0.0014**	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.002**	< 0.001	< 0.001
Chromium (VI)	mg/L			-		<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	< 0.001
Cobalt	mg/L	-		-	0.0009	0.0001	0.0001	0.0001	< 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	AO	0.5	0.005	0.0005	0.0005	0.0005	0.0039	0.0006	0.0005	0.0005	0.0005	0.0009	0.0013	0.0005	0.0015	0.0009	0.0018	0.0009	0.0011
Iron	mg/L	0.3	AO	0.15	0.3	<0.005	<0.005	<0.005	< 0.005	0.02	< 0.005	< 0.005	0.007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.015	0.005	< 0.005
Lead	mg/L	0.01	MAC	0.003	0.005	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	0.00026	< 0.00002	< 0.00002
Magnesium	mg/L	-		-	NV	8.3	7.94	8.01	8.8	9.5	9.1	8.8	8.48	8	7.61	8.32	8.03	8.91	8.62	8.59	8.86
Manganese	mg/L	0.05	AO	0.03	NV	<0.001	<0.001	<0.001	< 0.001	0.01	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.003	0.016	< 0.001
Mercury	mg/L	0.001	MAC	0.0003	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	< 0.00002
Molybdenum	mg/L	-		-	0.04	0.0001	0.0001	<0.0001	< 0.0001	0.0001	0.0001	0.0001	< 0.0001	0.0015	0.0003	0.0001	< 0.0001	0.0001	< 0.0004	0.0001	0.0001
Nickel	mg/L	-		-	0.025	<0.0002	0.0005	0.0006	< 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
Potassium	mg/L	-		-	NV	0.7	0.7	0.7	0.7	0.9	0.6	0.9	0.5	1	0.7	0.8	0.7	1	0.8	1	0.9
Phosphorus-Total	mg/L	-		-	0.03	<0.1	<0.1	<0.1	**0.44**	**0.14**	**0.59**	**0.14**	**0.62**	**7.8**	**3.7**	**2.29**	**0.32**	**0.53**	**0.25**	**0.41**	**0.32**
Selenium	mg/L	0.01	MAC	0.003	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	< 0.002	< 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	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV	3.5	3.2	3.4	3.6	3.9	3.8	3.9	3.9	7.4	3.7	3.4	3.2	3	3.3	3.2	3
Strontium	mg/L	-		-	NV	0.13	0.125	0.129	0.14	0.16	0.13	0.14	0.123	0.122	0.117	0.13	0.121	0.129	0.135	0.135	0.134
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	< 0.00005
Vanadium	mg/L	-		-	0.006	0.0004	0.0003	0.0003	0.0009	0.001	0.001	0.0014	0.0002	0.0003	0.0002	0.0004	0.0002	0.0004	< 0.0007	0.0003	0.0003
Zinc	mg/L	5	AO	2.5	0.02	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	**0.18**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	10.1	7	9.8	4.9	12.8	6.2	11.7	-	-	7.6	12.1	5.7	12.3	5.6	11	5.6
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.68	7.02	7.05	8.19	7.9	7.85	7.8	8.05	8.04	7.84	7.71	7.53	7.9	7.98	8.23	8.05
Field Conductivity	µS/cm	-		-	NV	396	402	450	350	405	330	390	430	401	460	350	452	400	402	462	412

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	12-I	12-I	12-I	12-I	12-I	12-I	12-I Dup	12-I	12-I Dup	13-II	13-II	13-II	13-II	13-II	13-II	13-II
						12-Oct-22	19-Apr-23	12-Oct-23	16-Apr-24	10-Oct-24	16-Apr-25	16-Apr-25	30-Sep-25	30-Sep-25	25-Apr-16	20-Oct-16	12-Apr-17	05-Oct-17	11-Apr-18	02-Oct-18	23-Apr-19
Alkalinity	mg/L	500	OG	351	NV	206	201	223	207	216	202	204	203	201	**1290**	**1280**	**1390**	**1380**	**1330**	**1260**	**1180**
Conductivity	µS/cm	-		-	NV	441	430	447	452	442	427	428	433	427	3520	3540	3690	3680	3550	3660	3550
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.87	7.84	7.3	7.83	8.02	7.71	8.03	7.97	8.07	7.06	6.83	7.05	6.81	7.26	7.15	7.27
TDS	mg/L	500	AO	362	NV	238	228	231	234	228	220	221	224	220	**2270**	**2360**	**2310**	**2282**	**2241**	**2277**	**2288**
DOC	mg/L	5		3.7	NV	1	0.4	3.2	2.5	2.4	1.5	1.4	3.1	3.6	**23.5**	**21.6**	**61.3**	**69.3**	**70.4**	**24**	**28**
COD	mg/L	-		-	NV	48	6	5	8	19	5	6	35	9	241	246	300	376	275	276	308
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	**0.022**	**0.023**	**0.019**	< 0.001	**0.012**	< 0.002
Chloride	mg/L	250	AO	128	NV	6.5	5.7	6.9	7.7	5.9	5.7	6.6	5.7	5.8	**339**	**317**	**340**	**296**	**284**	**336**	**391**
Ammonia, total	mg/L	-		-	NV	< 0.01	0.26	<0.05	2.13	0.19	<0.05	<0.05	<0.05	0.52	27.7	3.5	42.4	56.7	59.2	60	56.4
Unionized Ammonia	mg/L	-		-	0.02	< 0.01	< 0.01	<0.01	**0.04**	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	0.02
Fluoride	mg/L	2.4	MAC	0.7	NV	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**5.1**	< 0.5	< 0.5	< 1	< 1	< 1	< 1
Sulphate	mg/L	500	AO	255	NV	11	16	9	10	10	9	10	10	10	***300***	***338***	***297***	233	232	***293***	***340***
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nitrate (N)	mg/L	10	MAC	4.0	NV	2.17	0.93	1.68	1.63	1.84	1.55	1.74	1.88	1.91	1	< 0.5	1.9	< 0.5	< 0.5	< 0.5	< 0.5
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	< 4	-	-	-	-	-	-
TKN	mg/L	-		-	NV	0.4	0.3	0.1	1.9	0.4	0.3	0.2	2	0.7	386	46.4	53.9	70.9	70.7	72.1	62
Hardness	mg/L	500	OG	361	NV	247	238	233	223	226	211	208	228	226	**1300**	**1420**	**1260**	**1220**	**1260**	**1170**	**1170**
Aluminum	mg/L	0.1	OG	0.07	0.075	0.02	0.04	0.02	0.03	0.02	0.02	0.02	0.05	0.05	***0.07***	**0.11**	**0.26**	**0.16**	**0.15**	**0.1**	**0.14**
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0004	0.0006	0.0004	0.0005	0.0003	0.0005	0.0004
Arsenic	mg/L	0.025	IMAC	0.006	0.005	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0017	0.0014	0.0034	0.0028	0.0014	0.0023	0.0019
Barium	mg/L	1	MAC	0.3	NV	0.051	0.044	0.046	0.042	0.045	0.038	0.038	0.046	0.045	0.2	0.22	***0.44***	***0.31***	0.265	0.278	0.269
Beryllium	mg/L	-		-	1.1	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	IMAC	1.3	0.2	0.005	0.005	0.011	0.008	0.008	0.006	0.007	0.007	0.007	**0.568**	**0.966**	**0.884**	**1.24**	**1.03**	**1.17**	**1.1**
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	0.00012	< 0.000014	< 0.000014	< 0.000015	< 0.000015
Calcium	mg/L	-		-	NV	84.1	80.1	78.8	75.5	75.6	71	69.8	77.5	76.7	392	430	386	370	381	354	353
Chromium	mg/L	0.05	MAC	0.013	0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	**0.0031**	**0.0148**	< 0.001	**0.002**	**0.003**	**0.002**
Chromium (VI)	mg/L			-		< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-
Cobalt	mg/L	-		-	0.0009	< 0.005	< 0.005	0.0002	0.0001	0.0001	<0.0001	0.0001	0.0002	0.0001	< 0.005	**0.006**	**0.008**	**0.009**	< 0.005	**0.006**	< 0.005
Copper	mg/L	1	AO	0.5	0.005	0.0008	0.0007	0.0009	0.0006	0.0011	0.0005	0.0005	0.0006	0.0006	0.002	0.003	**0.0102**	0.0017	0.0023	0.0004	0.0031
Iron	mg/L	0.3	AO	0.15	0.3	< 0.005	< 0.005	<0.005	<0.005	0.007	<0.005	<0.005	0.006	0.007	**21.4**	**23.6**	**2.9**	**18.1**	**17.5**	**16.1**	**16.5**
Lead	mg/L	0.01	MAC	0.003	0.005	< 0.00002	< 0.00002	0.00003	0.00003	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	0.00005	< 0.00002	0.00005	< 0.00002	0.00011	0.00007
Magnesium	mg/L	-		-	NV	9	9.21	8.85	8.38	8.94	8.07	8.04	8.44	8.39	78.5	84.8	72.2	70.7	75.9	70.1	69.6
Manganese	mg/L	0.05	AO	0.03	NV	< 0.001	< 0.001	0.001	0.001	<0.001	<0.001	<0.001	0.003	0.003	**0.3**	**0.3**	**1.43**	**0.34**	**0.323**	**0.238**	**0.313**
Mercury	mg/L	0.001	MAC	0.0003	0.0002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00004	<0.00002	<0.00002	0.00003	< 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	0.0001	0.0001	0.0001	0.0002	0.0005	0.0002	< 0.0001	0.0003	0.0002
Nickel	mg/L	-		-	0.025	< 0.01	< 0.01	<0.0002	0.0005	<0.0002	0.0006	0.0005	0.0006	0.0006	0.01	0.02	0.02	0.01	0.02	0.01	0.01
Potassium	mg/L	-		-	NV	0.9	0.7	0.9	0.8	1	0.7	0.7	0.8	0.8	24.9	31.3	31.3	52.1	40.9	50.6	46.2
Phosphorus-Total	mg/L	-		-	0.03	**0.54**	**0.04**	**0.12**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**50**	**7.94**	**11.4**	**9.41**	**6.9**	**4.17**	**16**
Selenium	mg/L	0.01	MAC	0.003	0.1	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	***0.01***	< 0.001	0	***0.004***	0.003	0.003
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	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV	3.1	2.9	3.2	3.3	3.3	3.1	3.1	3.3	3.2	**292**	**363**	**284**	**342**	**338**	**325**	**293**
Strontium	mg/L	-		-	NV	0.139	0.132	0.141	0.132	0.135	0.118	0.117	0.132	0.131	1.03	1.18	1.57	1.22	1.11	1.16	1.12
Thallium	mg/L	-		-	0.0003	< 0.005	< 0.00005	<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	< 0.00005
Vanadium	mg/L	-		-	0.006	0.0003	0.0003	0.0004	0.0002	0.0003	0.0002	0.0002	0.0003	0.0003	**0.0076**	**0.008**	**0.0123**	**0.0103**	0.0031	0.00474	0.0038
Zinc	mg/L	5	AO	2.5	0.02	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	13.4	7.4	12.7	7.4	11.4	5.7	5.7	15	15	6.3	11.2	8.6	11.7	-	-	7.5
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.86	7.97	7.92	8.05	7.71	7.85	7.85	7.61	7.61	7.07	6.76	7.26	6.8	7.26	7.15	6.42
Field Conductivity	µS/cm	-		-	NV	546	523	509	517	562	361	361	421	421	2470	3025	2505	3025	3260	3280	3080

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PARAMETER	UNITS	ODWQS		RUP	PWQO	13-II 09-Oct-19	13-II 13-Apr-20	13-II 15-Oct-20	13-II 21-Apr-21	13-II 18-Oct-21	13-II 20-Apr-22	13-II 12-Oct-22	13-II 19-Apr-23	13-II 12-Oct-23	13-II 16-Apr-24	13-II 10-Oct-24	13-II 16-Apr-25	13-II 30-Sep-25	14-II 26-Apr-16	14-II 19-Oct-16	14-II 12-Apr-17
Alkalinity	mg/L	500	OG	351	NV	**1350**	**1250**	**1380**	**1420**	**1460**	**1390**	**1480**	**1370**	**1310**	**1390**	**1450**	**1470**	**1080**	**733**	**687**	**672**
Conductivity	µS/cm	-		-	NV	3710	3830	3670	3680	3490	3610	3560	3440	3410	3270	3230	3170	3150	1620	1560	1470
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.14	7.28	7.34	7.45	7.1	7.33	7.47	7.28	7.22	7.52	7.65	7.16	7.46	7.18	7.22	7.29
TDS	mg/L	500	AO	362	NV	**2446**	**2203**	**2328**	**2318**	**2326**	**2135**	**2026**	**1863**	**1910**	**1830**	**1810**	**1770**	**1760**	**960**	**952**	**875**
DOC	mg/L	5		3.7	NV	**80.3**	**26.1**	**19.4**	**24.6**	**21**	**19.6**	**11.8**	**14.6**	**25.2**	**54.8**	**57**	**31.2**	**58.6**	**11.1**	**10.8**	**10**
COD	mg/L	-		-	NV	260	260	279	352	273	271	297	359	351	251	643	295	358	37	39	58
Phenols	mg/L	-		-	0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	**0.004**	**0.002**	< 0.001	**0.014**	< 0.001
Chloride	mg/L	250	AO	128	NV	**428**	**302**	**304**	**277**	**279**	***217***	***161***	***199***	***181***	***166***	***147***	***141***	***136***	100	88	80
Ammonia, total	mg/L	-		-	NV	92.5	106	108	121	124	125	163	129	141	140	187	134	150	0.05	0.11	0.09
Unionized Ammonia	mg/L	-		-	0.02	**0.11**	**0.09**	**0.08**	-	**0.17**	0.01	**0.3**	**0.25**	<0.01	**0.09**	**0.33**	0	**0.28**	-	-	-
Fluoride	mg/L	2.4	MAC	0.7	NV	< 1	< 1	< 1	< 0.1	< 1	< 1	**4.6**	< 1	<0.1	<0.7	<0.7	<0.7	<0.7	0.1	< 0.1	< 0.1
Sulphate	mg/L	500	AO	255	NV	***271***	238	253	245	248	188	158	35	143	117	110	86	84	51	53	41
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.5	< 0.5	< 0.5	< 0.05	< 0.5	< 0.5	< 0.5	< 0.5	<0.05	<0.40	<0.40	<0.40	<0.40	< 0.1	< 0.1	***0.6***
Nitrate (N)	mg/L	10	MAC	4.0	NV	< 0.5	< 0.5	0.52	0.23	< 0.5	< 0.5	< 0.5	< 0.5	0.05	<0.40	<0.40	<0.40	<0.40	< 0.1	< 0.1	< 0.1
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-
TKN	mg/L	-		-	NV	106	131	124	128	145	159	171	150	164	170	183	146	171	1.1	1.3	1.2
Hardness	mg/L	500	OG	361	NV	**1110**	**1050**	**1090**	**1050**	**972**	**1000**	**1080**	**943**	**832**	**773**	**815**	**772**	**775**	**712**	**762**	**677**
Aluminum	mg/L	0.1	OG	0.07	0.075	**0.14**	**0.12**	**0.14**	**0.13**	**0.13**	**0.1**	**0.12**	**0.14**	**0.09**	**0.09**	**0.09**	**0.08**	**0.12**	0.05	**0.1**	**0.11**
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 0.0002	0.0003	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0002	0.0003	0.0003	0.0003	0.0001	0.0003	< 0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0009	0.0008	0.001	0.0009	0.0008	0.0009	0.0008	0.0007	0.001	0.0007	0.0007	0.001	0.0009	0.0009	0.0008	0.0006
Barium	mg/L	1	MAC	0.3	NV	0.281	***0.299***	***0.333***	***0.307***	***0.299***	***0.331***	***0.451***	***0.311***	***0.312***	0.271	***0.329***	***0.301***	***0.357***	0.21	0.24	***0.308***
Beryllium	mg/L	-		-	1.1	< 0.002	< 0.002	< 0.004	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	IMAC	1.3	0.2	**1.39**	**1.24**	**1.7**	**1.55**	**1.8**	**1.59**	**2.17**	**1.85**	**2.1**	**1.75**	**2.06**	**1.65**	**2.02**	**0.715**	**0.857**	**0.78**
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000059	< 0.000059	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.00003	0.00002	< 0.00002
Calcium	mg/L	-		-	NV	335	319	335	320	297	309	350	282	254	231	254	237	242	236	251	220
Chromium	mg/L	0.05	MAC	0.013	0.001	**0.002**	**0.002**	< 0.002	**0.003**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	< 0.0002	**0.003**	**0.0055**
Chromium (VI)	mg/L			-		-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-
Cobalt	mg/L	-		-	0.0009	< 0.005	**0.0044**	**0.013**	< 0.005	< 0.005	**0.009**	**0.01**	**0.006**	**0.0059**	**0.0043**	**0.0046**	**0.0039**	**0.0041**	**0.026**	**0.029**	**0.025**
Copper	mg/L	1	AO	0.5	0.005	0.0021	0.0027	0.0007	0.0008	0.0017	0.0008	< 0.0002	0.0002	0.0005	0.0015	0.0017	0.0001	0.0013	**0.0067**	**0.0067**	**0.0053**
Iron	mg/L	0.3	AO	0.15	0.3	**15.7**	**12.9**	**12.8**	**11.6**	**12.6**	**11.5**	**5.84**	**11.7**	**8.55**	**9.42**	**5.94**	**7.44**	**5.66**	**0.41**	**0.68**	**0.478**
Lead	mg/L	0.01	MAC	0.003	0.005	< 0.0002	< 0.0002	< 0.00009	0.00009	< 0.00009	0.00004	< 0.00009	< 0.00009	0.00006	0.00005	<0.00004	<0.00004	<0.00004	0.00007	0.00024	< 0.00002
Magnesium	mg/L	-		-	NV	65.3	61.6	61.1	60.2	55.8	56	49.2	57.8	47.9	47.7	44.1	43.7	41.4	29.5	32.6	31
Manganese	mg/L	0.05	AO	0.03	NV	**0.329**	**0.418**	**0.441**	**0.414**	**0.369**	**0.564**	**0.807**	**0.317**	**0.283**	**0.273**	**0.465**	**0.373**	**0.367**	**1.71**	**1.79**	**1.47**
Mercury	mg/L	0.001	MAC	0.0003	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	0.00003	< 0.00002	< 0.00002
Molybdenum	mg/L	-		-	0.04	0.0005	< 0.0004	< 0.0002	0.0002	0.0002	0.0002	< 0.0002	< 0.0002	0.0002	0.0001	0.0001	0.0002	0.0001	0.0002	0.0001	0.0001
Nickel	mg/L	-		-	0.025	0.01	< 0.01	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0074	0.007	0.0052	0.0063	0.0046	**0.03**	**0.03**	0.02
Potassium	mg/L	-		-	NV	67.1	74.9	85.3	80.8	88.2	91.5	134	93.4	117	93.3	113	89.4	123	1.6	1.7	1.7
Phosphorus-Total	mg/L	-		-	0.03	**4.29**	**3.7**	**6.68**	**18.6**	**16.3**	**6.54**	**6.22**	**9.28**	**7.42**	**0.1**	**0.3**	**0.2**	**0.2**	**0.34**	**1.18**	**1.1**
Selenium	mg/L	0.01	MAC	0.003	0.1	***0.004***	0.003	0.002	0.002	***0.004***	***0.005***	***0.004***	0.002	<0.001	<0.001	<0.001	0.002	0.002	< 0.001	0	< 0.001
Silver	mg/L	-		-	0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002
Sodium	mg/L	200	AO	102	NV	**337**	**309**	**308**	**316**	**308**	**268**	**252**	**243**	**245**	**224**	***189***	***187***	***174***	99.9	***111***	94.2
Strontium	mg/L	-		-	NV	1.24	1.24	1.25	1.29	1.26	1.33	1.63	1.24	1.31	1.17	1.34	1.16	1.32	0.48	0.53	0.434
Thallium	mg/L	-		-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	-		-	0.006	0.0032	0.0032	0.0038	0.0033	0.0032	0.003	0.0032	0.0008	0.0045	0.0031	0.0032	0.003	0.0035	0.0031	0.0028	0.0035
Zinc	mg/L	5	AO	2.5	0.02	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	0.006	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	13.2	7.3	10.6	7	10.4	7.5	11.3	6.3	9.8	8.1	9.7	5.5	10.9	6.5	15.1	10.2
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	6.24	6.77	6.52	6.93	6.88	6.85	6.88	7.14	7.01	6.61	6.99	7.21	6.98	6.86	6.86	7.31
Field Conductivity	µS/cm	-		-	NV	2650	3321	2800	2800	2648	1909	3790	4210	3820	3019	3020	1971	3100	1180	1410	1145

ODWQS Ontario Drinking Water Quality Objectives
MAC Maximum Acceptable Concentration
IMAC Interim Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operatioal Guidelines
Bold / Highlighting for ODWQS exceeded parameters
Bold / Underlined for PWQO exceeded parameters
Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	14-II 05-Oct-17	14-II 10-Apr-18	14-II 02-Oct-18	14-II 22-Apr-19	14-II 09-Oct-19	14-II 13-Apr-20	14-II 14-Oct-20	14-II 21-Apr-21	14-II 18-Oct-21	14-II 20-Apr-22	14-II 12-Oct-22	14-II 19-Apr-23	14-II 12-Oct-23	14-II 16-Apr-24	14-II 10-Oct-24	14-II 16-Apr-25
Alkalinity	mg/L	500	OG	351	NV	**648**	**653**	**603**	**639**	**636**	**623**	**663**	**690**	**751**	**655**	**694**	**727**	**763**	**743**	**757**	**775**
Conductivity	µS/cm	-		-	NV	1440	1450	1480	1490	1570	1580	1640	1660	1650	1550	1540	1660	1680	1730	1690	1750
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.42	7.65	7.44	7.47	7.45	7.47	7.48	7.67	7.37	7.47	7.56	7.48	7.36	7.41	7.7	7.29
TDS	mg/L	500	AO	362	NV	**818**	**821**	**832**	**859**	**954**	**876**	**949**	**958**	**1013**	**858**	**906**	**927**	**918**	**947**	**927**	**962**
DOC	mg/L	5		3.7	NV	**13**	**15**	**13.9**	**13.2**	**15.6**	**11**	**9.5**	**13.8**	**15.8**	**11.4**	**6.2**	**7.7**	**14.7**	**22.2**	**17.5**	**13**
COD	mg/L	-		-	NV	39	38	48	53	51	48	48	58	105	55	53	65	64	54	63	66
Phenols	mg/L	-		-	0.001	**0.004**	< 0.001	**0.002**	< 0.002	**0.005**	**0.054**	< 0.002	**0.006**	**0.005**	**0.003**	**0.002**	< 0.001	<0.001	<0.001	0.001	**0.004**
Chloride	mg/L	250	AO	128	NV	70	68.6	94.4	105	***155***	122	124	123	***145***	88.4	89.1	87.9	86.4	92	87.1	90.7
Ammonia, total	mg/L	-		-	NV	0.06	0.08	0.06	0.09	0.17	0.42	1.19	2.53	0.5	6.98	10.2	14.8	17.9	24.4	28.5	29.1
Unionized Ammonia	mg/L	-		-	0.02	-	-	-	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	0.02	**0.03**	**0.05**	<0.01	0.01	**0.06**	0
Fluoride	mg/L	2.4	MAC	0.7	NV	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	<0.1	<0.1	<0.1	<0.7
Sulphate	mg/L	500	AO	255	NV	31	28	35	32	33	31	32	30	25	29	26	57	30	41	33	46
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	<0.40
Nitrate (N)	mg/L	10	MAC	4.0	NV	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	2.37	0.24	<0.05	<0.05	<0.40
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	1	1.1	1.1	4.5	1.3	1.6	2.3	3.7	2.4	9.8	12.1	19.1	22.5	28.8	31.2	26.7
Hardness	mg/L	500	OG	361	NV	**635**	**654**	**669**	**680**	**713**	**657**	**731**	**695**	**731**	**600**	**646**	**665**	**630**	**590**	**583**	**588**
Aluminum	mg/L	0.1	OG	0.07	0.075	**0.12**	**0.1**	**0.08**	**0.1**	**0.1**	**0.09**	**0.09**	**0.11**	**0.11**	0.06	***0.07***	**0.12**	***0.07***	***0.07***	0.06	***0.07***
Antimony	mg/L	0.006	IMAC	0.002	0.02	0	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0001	0.0001	0.0001	0.0004	0.0001	0.0003	0.0001	0.0001	0.0001	0.0002	0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0007	0.0004	0.0003	0.0003	< 0.0003	0.0002	0.0003	0.0003	0.001	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0003
Barium	mg/L	1	MAC	0.3	NV	0.224	0.205	0.208	0.206	0.239	0.234	0.28	***0.29***	0.253	***0.369***	***0.431***	***0.556***	***0.558***	***0.627***	***0.622***	***0.622***
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	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	IMAC	1.3	0.2	**0.659**	**0.596**	**0.613**	**0.608**	**0.918**	**0.847**	**1.16**	**1.38**	**1.23**	**1.27**	**1.41**	**1.83**	**1.77**	**1.79**	**1.94**	**2.13**
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000017	< 0.000012	0.000015	<0.000015	<0.000015	<0.000015
Calcium	mg/L	-		-	NV	206	214	217	224	230	215	240	229	241	198	215	215	206	192	189	189
Chromium	mg/L	0.05	MAC	0.013	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	<0.001
Chromium (VI)	mg/L			-		-	-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01
Cobalt	mg/L	-		-	0.0009	**0.026**	**0.01**	**0.03**	**0.019**	**0.022**	**0.0194**	**0.027**	**0.02**	**0.007**	**0.024**	**0.027**	**0.022**	**0.0274**	**0.0236**	**0.0233**	**0.0236**
Copper	mg/L	1	AO	0.5	0.005	0.0036	**0.0052**	**0.0058**	0.0045	**0.0057**	**0.0079**	**0.0058**	**0.0077**	0.0005	**0.0051**	0.0048	**0.0054**	**0.0058**	**0.006**	**0.0053**	**0.0058**
Iron	mg/L	0.3	AO	0.15	0.3	**0.678**	**0.516**	**0.581**	**0.437**	**0.73**	**0.511**	**0.709**	**0.644**	**1.77**	**0.698**	**0.805**	**0.617**	**0.603**	**0.563**	**0.64**	**0.569**
Lead	mg/L	0.01	MAC	0.003	0.005	0.00006	0.00006	0.00006	0.00007	< 0.00009	0.00009	0.00006	0.00011	< 0.00004	0.00005	0.00007	0.00005	0.00006	0.00009	0.00004	0.00008
Magnesium	mg/L	-		-	NV	29.3	28.9	30.9	29.2	33.5	29	31.8	29.7	31.2	25.7	26.3	31.1	28.1	26.9	27	28.2
Manganese	mg/L	0.05	AO	0.03	NV	**1.36**	**1.3**	**1.52**	**1.53**	**1.93**	**1.76**	**2.1**	**2.13**	**1.66**	**2.5**	**2.61**	**3.05**	**2.92**	**2.95**	**2.87**	**3.16**
Mercury	mg/L	0.001	MAC	0.0003	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	<0.00002
Molybdenum	mg/L	-		-	0.04	0.0002	< 0.0001	0.0001	0.0001	< 0.0002	< 0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002
Nickel	mg/L	-		-	0.025	0.02	0.02	0.02	0.02	**0.03**	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.024	0.0229	0.0214	0.0231
Potassium	mg/L	-		-	NV	1.9	1.6	1.9	1.6	2.3	3.2	3.9	5.8	2.7	12.9	16	21.7	23.8	27.6	29.2	25
Phosphorus-Total	mg/L	-		-	0.03	**0.35**	**0.44**	**0.49**	**1.34**	**0.38**	**0.23**	**0.51**	**0.23**	**0.19**	**0.22**	**0.09**	**0.27**	**0.08**	<0.1	<0.1	<0.1
Selenium	mg/L	0.01	MAC	0.003	0.1	< 0.001	0.001	0.001	< 0.001	0.002	0.001	0.001	< 0.001	0.002	0.002	0.002	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	<0.0001	<0.0001	<0.0001
Sodium	mg/L	200	AO	102	NV	89.5	86.4	89.4	81.5	***115***	99.4	***115***	***120***	***114***	99.5	101	96.5	***106***	99.8	99	101
Strontium	mg/L	-		-	NV	0.433	0.419	0.457	0.45	0.562	0.525	0.548	0.615	0.521	0.641	0.673	0.758	0.733	0.68	0.646	0.598
Thallium	mg/L	-		-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00008	< 0.00005	< 0.005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-		-	0.006	0.0038	0.0004	0.00034	0.0005	0.0007	0.0005	0.0008	0.0007	0.0013	0.0007	0.0008	0.0002	0.0011	0.0008	0.0009	0.001
Zinc	mg/L	5	AO	2.5	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	<0.005	<0.005	<0.005	<0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	14.2	-	-	14.1	12.9	12.8	13.3	8.4	13.4	11.6	13.3	11.8	12	12.4	10.3	8
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.05	7.65	7.44	7.4	7.03	6.83	6.85	7.42	7.11	7.18	7.13	7.15	6.8	6.38	7.05	7.62
Field Conductivity	µS/cm	-		-	NV	1210	1390	1430	1660	1234	1700	1300	1400	2626	1470	1613	1460	1405	1517	1675	1727

ODWQS Ontario Drinking Water Quality Objectives
MAC Maximum Acceptable Concentration
IMAC Interim Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operatioal Guidelines
Bold / Highlighting for ODWQS exceeded parameters
Bold / Underlined for PWQO exceeded parameters
Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	14-II	14-III	14-III	14-III	14-III	14-III	14-III	14-III	14-III	14-III	14-III	14-III	14-III	14-III	14-III	14-III
						30-Sep-25	26-Apr-16	19-Oct-16	12-Apr-17	05-Oct-17	05-Oct-17	10-Apr-18	22-Apr-19	09-Oct-19	13-Apr-20	14-Oct-20	21-Apr-21	18-Oct-21	20-Apr-22	12-Oct-22	19-Apr-23
Alkalinity	mg/L	500	OG	351	NV	**729**	**1780**	**2000**	**1900**	**1750**	**1750**	**1640**	**1610**	**1590**	**1610**	**1560**	**1710**	**1440**	**1260**		
Conductivity	µS/cm	-		-	NV	1620	4160	4610	4310	4270	4270	3780	3930	4090	4060	4060	4040	3970	3590		
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.51	7.14	7.39	7.32	7.26	7.26	7.53	7.47	7.47	7.48	7.2	7.63	7.3	7.4		
TDS	mg/L	500	AO	362	NV	**885**	**2460**	**2790**	**2560**	**2511**	**2511**	**2298**	**2241**	**2493**	**2239**	**2323**	**2429**	**2488**	**1865**		
DOC	mg/L	5		3.7	NV	**18.7**	**29.5**	**25**	**75.6**	**24.6**	**24.6**	**63.9**	**29.2**	**73.6**	**29.1**	**17.4**	**24.4**	**21.4**	**17.4**		
COD	mg/L	-		-	NV	61	300	266	60	238	238	217	224	274	229	214	353	410	295		
Phenols	mg/L	-		-	0.001	**0.002**	**0.005**	**0.015**	**0.043**	**0.029**	**0.029**	< 0.001	< 0.002	**0.002**	< 0.002	< 0.002	**0.041**	< 0.002	< 0.001		
Chloride	mg/L	250	AO	128	NV	81.5	**295**	**349**	**294**	**272**	**272**	***250***	**284**	**395**	**300**	**323**	**300**	**431**	***249***		
Ammonia, total	mg/L	-		-	NV	20.7	154	175	174	158	158	148	155	239	119	157	185	156	139		
Unionized Ammonia	mg/L	-		-	0.02	**0.03**	-	-	-	-	-	-	< 0.01	**0.87**	**0.28**	**0.33**	-	**0.04**	**0.38**		
Fluoride	mg/L	2.4	MAC	0.7	NV	<0.4	< 1	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.1	< 1	< 1		
Sulphate	mg/L	500	AO	255	NV	38	104	60	72	144	144	100	68	23	56	82	69	96	30		
Nitrite (N)	mg/L	1	MAC	0.3	NV	<0.20	< 1	< 0.5	**2.1**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.5	< 0.5		
Nitrate (N)	mg/L	10	MAC	4.0	NV	<0.20	< 1	< 0.5	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.68	0.33	< 0.5	< 0.5		
Bromide	mg/L	-		-	NV	-	< 4	-	-	-	-	-	-	-	-	-	-	-	-		
TKN	mg/L	-		-	NV	26.1	187	186	211	183	183	150	174	186	149	162	206	188	191		
Hardness	mg/L	500	OG	361	NV	**586**	**859**	**940**	**862**	**904**	**904**	**892**	**870**	**868**	**873**	**902**	**870**	**906**	**700**		
Aluminum	mg/L	0.1	OG	0.07	0.075	**0.1**	0.06	0.06	**0.28**	**0.13**	**0.13**	**0.11**	**0.11**	**0.12**	**0.1**	**0.11**	**0.11**	**0.12**	0.06		
Antimony	mg/L	0.006	IMAC	0.002	0.02	<0.0001	0.0004	0.0008	0.0004	0.0003	0.0003	0.0002	0.0002	< 0.0002	< 0.0002	0.0004	0.0003	0.0009	0.0003		
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0003	0.0047	0.0038	**0.0061**	0.0036	0.0036	0.002	0.0015	0.0012	0.0011	0.0015	0.0019	0.0013	0.0011		
Barium	mg/L	1	MAC	0.3	NV	***0.575***	***0.61***	**1.09**	***0.99***	**1.12**	**1.12**	***0.64***	***0.442***	***0.687***	***0.465***	***0.628***	***0.661***	***0.908***	***0.55***		
Beryllium	mg/L	-		-	1.1	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.004	< 0.002	< 0.002	< 0.002		
Boron	mg/L	5	IMAC	1.3	0.2	**2.08**	3	**3.9**	**3.3**	**3.4**	**3.4**	**3.01**	**2.97**	**3.64**	**3.03**	**3.08**	**3.35**	**3.49**	**2.53**		
Cadmium	mg/L	0.005	MAC	0.001	0.0005	<0.000015	< 0.00002	0.00005	0.00003	< 0.000014	< 0.000014	< 0.000014	< 0.000015	< 0.000059	< 0.000059	< 0.000059	< 0.000059	< 0.000059	< 0.000029		
Calcium	mg/L	-		-	NV	189	237	256	232	243	243	243	240	236	232	245	235	248	190		
Chromium	mg/L	0.05	MAC	0.013	0.001	<0.001	< 0.0002	**0.0052**	**0.0115**	< 0.001	< 0.001	**0.002**	**0.002**	0.001	**0.002**	< 0.002	**0.002**	**0.002**	0.001	Damaged	Damaged
Chromium (VI)	mg/L			-		<0.01	-	-	-	-	-	-	-	-	-	-	-	-	< 0.001		
Cobalt	mg/L	-		-	0.0009	**0.0218**	**0.013**	**0.01**	**0.009**	**0.007**	**0.007**	< 0.005	< 0.005	**0.005**	**0.0056**	**0.01**	**0.006**	**0.008**	**0.007**		
Copper	mg/L	1	AO	0.5	0.005	0.005	0.0022	0.0034	0.0047	0.002	0.002	0.0031	0.0027	0.0027	0.003	0.0009	0.0011	0.0009	0.0005		
Iron	mg/L	0.3	AO	0.15	0.3	**0.762**	**17.3**	**14**	**15.4**	**16.3**	**16.3**	**14.8**	**12.8**	***0.193***	**12.8**	**16.3**	**10.4**	**16.2**	**20.5**		
Lead	mg/L	0.01	MAC	0.003	0.005	0.00004	0.00004	0.00003	0.00057	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0002	< 0.0002	< 0.0002	0.00026	0.00039	0.00008		
Magnesium	mg/L	-		-	NV	27.6	64.9	72.7	68.6	72.1	72.1	69.1	65.6	67.7	71.4	70.6	68.8	69.6	54.5		
Manganese	mg/L	0.05	AO	0.03	NV	**2.99**	**1.59**	**1.39**	**1.47**	**1.58**	**1.58**	**1.74**	**1.74**	**1.31**	**1.97**	**1.46**	**1.32**	**1.42**	**1.13**		
Mercury	mg/L	0.001	MAC	0.0003	0.0002	<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	< 0.00002		
Molybdenum	mg/L	-		-	0.04	0.0001	0.0005	0.0054	0.0006	0.0003	0.0003	0.0001	0.0003	0.0006	< 0.0004	< 0.0004	0.0006	0.0006	0.0003		
Nickel	mg/L	-		-	0.025	0.0205	**0.03**	**0.04**	**0.04**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	< 0.02	**0.03**	**0.03**	< 0.01		
Potassium	mg/L	-		-	NV	24.9	129	168	164	161	161	129	121	157	127	134	146	162	135		
Phosphorus-Total	mg/L	-		-	0.03	<0.1	**0.12**	**0.28**	**0.23**	**0.14**	**0.14**	**0.05**	**0.09**	**0.15**	**0.05**	**0.06**	**0.42**	**1.22**	**0.58**		
Selenium	mg/L	0.01	MAC	0.003	0.1	0.001	0.002	***0.01***	< 0.001	0.003	0.003	0.003	***0.004***	***0.006***	***0.004***	***0.004***	0.002	<0.02	***0.005***		
Silver	mg/L	-		-	0.0001	<0.0001	0.00004	0.00005	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0001		
Sodium	mg/L	200	AO	102	NV	98.7	**343**	**442**	**339**	**346**	**346**	**314**	**282**	**349**	**320**	**314**	**334**	**352**	**250**		
Strontium	mg/L	-		-	NV	0.568	2.17	2.49	2.44	2.53	2.53	2.21	2.21	2.3	2.23	2.21	2.4	2.29	1.94		
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	0.00025	< 0.00005		
Vanadium	mg/L	-		-	0.006	0.0009	**0.011**	**0.0114**	**0.013**	**0.012**	**0.012**	0.0053	0.0047	0.0019	0.0051	0.0057	0.0055	**0.0067**	0.0045		
Zinc	mg/L	5	AO	2.5	0.02	0.006	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005		
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	200	4980	2050		
Field Temperature	°C	-	AO	-	NV	13.6	6.7	16.5	10.2	15	15	-	12.3	14.3	10.1	14.4	9.2	12.9	11		
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	6.75	7.28	6.96	7.28	7.01	7.01	7.53	6.75	7.15	7.1	6.91	7.01	6.98	7.13		
Field Conductivity	µS/cm	-		-	NV	1528	2860	3720	2905	3399	3399	3580	3550	2680	3500	2900	2900	>4000	3220		

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PARAMETER	UNITS	ODWQS		RUP	PWQO	14-III 12-Oct-23	14-III 16-Apr-24	14-III 10-Oct-24	14-III 16-Apr-25	14-III 30-Sep-25	16-II 25-Apr-16	16-II 19-Oct-16	16-II 12-Apr-17	16-II 05-Oct-17	16-II 10-Apr-18	16-II 01-Oct-18	16-II 22-Apr-19	16-II 08-Oct-19	16-II 13-Apr-20	16-II 14-Oct-20	16-II 21-Apr-21
Alkalinity	mg/L	500	OG	351	NV						347	294	317	***471***	336	***392***	316	***353***	281	249	292
Conductivity	µS/cm	-		-	NV						900	892	878	1660	932	1180	982	892	723	586	666
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5						7.76	7.7	7.78	7.76	7.95	7.58	7.73	7.61	7.8	7.79	7.93
TDS	mg/L	500	AO	362	NV						**501**	**514**	**517**	**941**	***492***	**657**	**545**	**545**	***395***	327	***379***
DOC	mg/L	5		3.7	NV						0.8	1	2.2	**10.2**	**8.7**	**5.4**	**5.2**	**5.5**	4	2.8	**5.2**
COD	mg/L	-		-	NV						47	15	6	28	24	14	19	269	50	5	19
Phenols	mg/L	-		-	0.001						< 0.001	< 0.001	< 0.001	**0.01**	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Chloride	mg/L	250	AO	128	NV						66	80	73	127	45.5	96.9	55.4	37.7	12.8	8.5	12.1
Ammonia, total	mg/L	-		-	NV						0.05	0.03	< 0.01	0.08	2.64	1.45	1.88	1.05	0.78	0.31	0.13
Unionized Ammonia	mg/L	-		-	0.02						-	-	-	-	-	-	0.02	< 0.01	< 0.01	**0.03**	-
Fluoride	mg/L	2.4	MAC	0.7	NV						< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Sulphate	mg/L	500	AO	255	NV						20	37	24	178	36	68	83	58	55	35	36
Nitrite (N)	mg/L	1	MAC	0.3	NV						< 0.1	< 0.1	***0.3***	< 0.05	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV						2.9	2.5	2.3	0.7	0.69	0.64	***4.13***	***4.32***	3.31	2.35	2.3
Bromide	mg/L	-		-	NV						< 0.4	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV						0.4	0.2	0.5	1.6	3.7	1.9	2.5	12.7	1.7	0.7	0.6
Hardness	mg/L	500	OG	361	NV						***401***	***442***	***371***	**590**	325	***437***	***371***	***473***	320	295	317
Aluminum	mg/L	0.1	OG	0.07	0.075						0.03	0.04	***0.07***	**0.11**	0.06	**0.08**	**0.08**	**0.1**	0.06	0.04	***0.07***
Antimony	mg/L	0.006	IMAC	0.002	0.02						< 0.0001	0.0003	< 0.0001	0.0002	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005						0.0001	< 0.0001	0.0002	0.0006	0.0001	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	MAC	0.3	NV						0.19	0.19	***0.33***	***0.41***	0.231	0.229	0.171	0.209	0.146	0.104	0.134
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	5	IMAC	1.3	0.2						0.051	0.08	0.165	**2.53**	**0.954**	**0.619**	**0.461**	**0.264**	**0.242**	0.178	0.171
Cadmium	mg/L	0.005	MAC	0.001	0.0005						< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	0.000018	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Calcium	mg/L	-		-	NV						133	148	123	193	107	146	128	164	109	99.8	106
Chromium	mg/L	0.05	MAC	0.013	0.001	Damaged	Damaged	Damaged	Blocked	Blocked	< 0.0002	**0.0012**	**0.0025**	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001
Chromium (VI)	mg/L			-							-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/L	-		-	0.0009						< 0.005	< 0.005	< 0.005	**0.012**	< 0.005	**0.006**	**0.009**	< 0.005	0.0004	**0.005**	< 0.005
Copper	mg/L	1	AO	0.5	0.005						0.001	0.0011	0.0028	**0.0074**	**0.0055**	0.0039	0.004	0.0029	0.0032	0.0017	0.0029
Iron	mg/L	0.3	AO	0.15	0.3						< 0.005	< 0.005	0.02	0.03	***0.263***	**0.538**	< 0.005	0.006	0.014	0.005	0.022
Lead	mg/L	0.01	MAC	0.003	0.005						< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	0.00004	0.00003	0.00006
Magnesium	mg/L	-		-	NV						16.5	17.7	15.5	26.2	14.1	17.5	12.5	15.3	11.6	11.1	12.6
Manganese	mg/L	0.05	AO	0.03	NV						< 0.001	0	0	0.01	***0.026***	***0.039***	***0.037***	***0.043***	**0.066**	**0.139**	**0.499**
Mercury	mg/L	0.001	MAC	0.0003	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						0.0005	0.0004	0.0005	0.0004	0.0007	0.0007	0.0012	0.0012	0.0016	0.0017	0.0013
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
Potassium	mg/L	-		-	NV						20.5	13.9	30.8	44.1	46.6	26.5	15.9	19.9	15.9	9.3	19.6
Phosphorus-Total	mg/L	-		-	0.03						**0.52**	**0.05**	**0.13**	**0.12**	**0.06**	**0.04**	**0.04**	**7.74**	**0.8**	**0.28**	**0.25**
Selenium	mg/L	0.01	MAC	0.003	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	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV						24.4	31.2	49.4	90.3	38	63.7	57.9	36.5	20.8	9.8	16.4
Strontium	mg/L	-		-	NV						0.25	0.28	0.25	0.4	0.211	0.265	0.258	0.313	0.268	0.191	0.202
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						0.0013	0.0011	0.0015	0.0024	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002
Zinc	mg/L	5	AO	2.5	0.02						< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV						-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV						6.2	11	6.8	10.8	-	-	11	9	9.6	10.6	7.1
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5						8.26	6.84	7.48	7.59	7.95	7.58	7.65	7.01	6.78	7.67	7.53
Field Conductivity	µS/cm	-		-	NV						880	795	801	1308	869	1130	1020	774	680	540	640

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						18-Oct-21	20-Apr-22	12-Oct-22	19-Apr-23	12-Oct-23	16-Apr-24	10-Oct-24	16-Apr-25	30-Sep-25	25-Apr-16	19-Oct-16	12-Apr-17	05-Oct-17	01-Oct-18	22-Apr-19	08-Oct-19
Alkalinity	mg/L	500	OG	351	NV	272	257	***374***	286	351	313	291	276	329	**735**	**682**	**777**	**751**	**831**	**770**	**794**
Conductivity	µS/cm	-		-	NV	587	609	809	676	788	814	668	635	775	1530	1470	1640	1640	1880	1880	1970
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.55	7.65	7.58	7.81	7.38	8.01	8.05	7.49	7.63	7.39	7.37	7.37	7.4	7.44	7.4	7.38
TDS	mg/L	500	AO	362	NV	351	323	***471***	***388***	***413***	***428***	347	330	***406***	**880**	**896**	**965**	**923**	**1088**	**1077**	**1128**
DOC	mg/L	5		3.7	NV	***3.8***	2.9	2.6	2.2	**5.3**	***4.3***	2.8	1.7	***4.3***	**10.6**	**10.7**	**14.2**	**14.5**	**18.3**	**16.4**	**22.2**
COD	mg/L	-		-	NV	6	8	27	23	7	53	27	58	58	44	33	37	35	73	66	87
Phenols	mg/L	-		-	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	**0.008**	**0.011**	< 0.002	< 0.002
Chloride	mg/L	250	AO	128	NV	13.4	8.9	9.7	10.5	11.2	28.3	14.5	13.3	19.9	69	73	84	75	***139***	***144***	***187***
Ammonia, total	mg/L	-		-	NV	0.58	1.11	0.08	0.74	0.11	0.07	0.74	0.1	0.07	0.31	0.49	0.28	0.5	0.63	0.7	1.23
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
Fluoride	mg/L	2.4	MAC	0.7	NV	< 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	< 1
Sulphate	mg/L	500	AO	255	NV	33	28	36	44	51	40	49	24	50	33	36	39	33	44	48	< 10
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.5
Nitrate (N)	mg/L	10	MAC	4.0	NV	2.55	2.39	2.03	< 0.5	1.91	3.29	2.15	2.15	2.05	0.2	0.2	< 0.1	< 0.05	0.22	< 0.05	< 0.5
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-
TKN	mg/L	-		-	NV	1.1	1.2	0.5	1.1	0.4	0.6	1	0.4	0.8	1	1.2	1.2	1.3	2.2	2.1	3.2
Hardness	mg/L	500	OG	361	NV	292	264	***413***	304	***381***	308	321	272	348	**701**	**792**	**784**	**749**	**787**	**840**	**838**
Aluminum	mg/L	0.1	OG	0.07	0.075	0.06	0.03	0.06	**0.08**	0.04	0.03	0.04	0.05	***0.07***	0.05	0.06	**0.12**	**0.12**	**0.13**	**0.11**	**0.13**
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 0.0001	0.0001	0.0001	< 0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	0.0001	0.0001	< 0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0012	0.0009	0.001	0.001	0.0009	0.0008	0.0006
Barium	mg/L	1	MAC	0.3	NV	0.144	0.106	0.176	0.166	0.11	0.186	0.062	0.094	0.103	***0.29***	***0.34***	***0.48***	***0.37***	***0.378***	***0.425***	***0.431***
Beryllium	mg/L	-		-	1.1	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	IMAC	1.3	0.2	0.105	0.14	**0.216**	0.159	**0.228**	0.169	0.122	0.11	0.17	**0.613**	**0.697**	**0.866**	**0.813**	**1.04**	**1.13**	***1.71***
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000015	< 0.000015	< 0.000010	0.000028	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	0.00002	< 0.00002	< 0.000014	0.000029	< 0.000015	< 0.000029
Calcium	mg/L	-		-	NV	97.2	87.2	137	103	126	104	105	91.9	116	226	256	250	240	253	273	270
Chromium	mg/L	0.05	MAC	0.013	0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	**0.003**	**0.007**	< 0.001	0.001	0.001	**0.005**
Chromium (VI)	mg/L			-		-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-
Cobalt	mg/L	-		-	0.0009	< 0.005	< 0.005	< 0.005	< 0.005	0.0003	0.0003	0.0003	0.0002	0.0002	**0.034**	**0.037**	**0.039**	**0.037**	**0.039**	**0.037**	**0.041**
Copper	mg/L	1	AO	0.5	0.005	0.0022	0.0023	0.0019	0.0017	0.0019	0.0016	0.0019	0.0014	0.0014	**0.0051**	0.0049	**0.0059**	0.0046	**0.0114**	**0.0073**	**0.0112**
Iron	mg/L	0.3	AO	0.15	0.3	0.009	< 0.005	0.045	0.005	<0.005	<0.005	0.01	0.051	<0.005	**1.82**	**1.96**	**2.39**	**2.24**	**2.67**	**2.07**	**2.52**
Lead	mg/L	0.01	MAC	0.003	0.005	0.00002	0.00002	0.00011	0.00003	<0.00002	0.00002	0.00002	0.00008	<0.00002	0.00004	0.00006	< 0.00002	0.00009	0.00071	0.00009	0.00015
Magnesium	mg/L	-		-	NV	11.9	11.3	17	11.4	16.1	11.7	14.3	10.2	14	32.8	37.1	38.7	36.3	37.6	38.3	39.6
Manganese	mg/L	0.05	AO	0.03	NV	**0.664**	**0.539**	**0.143**	**0.112**	0.007	**0.1**	0.016	0.018	0.002	**1.72**	**1.91**	2	**1.99**	**2.07**	**2.31**	**2.25**
Mercury	mg/L	0.001	MAC	0.0003	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	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	-		-	0.04	0.0009	0.0008	0.0004	0.0004	0.0004	0.0005	0.0004	0.0005	0.0003	0.0006	0.0005	0.0005	0.0005	0.0005	0.0005	0.0007
Nickel	mg/L	-		-	0.025	< 0.01	< 0.01	< 0.01	< 0.01	0.0007	0.0007	0.0008	0.0006	0.0007	0.01	0.02	0.01	0.02	0.02	0.02	0.02
Potassium	mg/L	-		-	NV	22	21.2	36.3	49	20.9	79.2	14.1	28.7	23.4	3.2	3.6	3.4	3.5	4	4	5
Phosphorus-Total	mg/L	-		-	0.03	**0.35**	**0.18**	**0.22**	**0.09**	**0.14**	<0.1	<0.1	<0.1	<0.1	**0.08**	**0.06**	**0.05**	**0.12**	**0.05**	0.03	**0.07**
Selenium	mg/L	0.01	MAC	0.003	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	0.003
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	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV	9.5	9.7	10.3	7.9	8	11	7.2	7.9	7.9	70.2	76.2	79.5	80.4	***106***	***102***	***144***
Strontium	mg/L	-		-	NV	0.169	0.144	0.201	0.199	0.236	0.239	0.181	0.184	0.249	0.69	0.78	0.73	0.71	0.759	0.774	0.792
Thallium	mg/L	-		-	0.0003	< 0.00005	< 0.00005	< 0.005	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	0.0002	0.0003	0.0009	0.0002	0.0002	0.0002	0.0002	0.0002	0.0028	0.0027	0.0036	0.0038	0.0008	0.0006	0.0008
Zinc	mg/L	5	AO	2.5	0.02	< 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	< 0.005	< 0.005	0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	10.2	7.4	13	8.7	12.2	10.3	9.4	6	12.1	7.1	11.9	9.2	12.3	-	11.3	12.8
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.65	7.59	7.2	7.54	7.23	7.42	7.4	7.85	6.47	7.45	7.16	7.03	7.69	7.44	6.81	6.41
Field Conductivity	µS/cm	-		-	NV	780	840	835	616	683	816	674	653	912	1080	1270	1259	1310	1770	1800	1388

ODWQS Ontario Drinking Water Quality Objectives
MAC Maximum Acceptable Concentration
IMAC Interim Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operatioal Guidelines
Bold / Highlighting for ODWQS exceeded parameters
Bold / Underlined for PWQO exceeded parameters
Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	17-I	17-I	17-I	17-I	17-I	17-I	17-I	17-I	17-I	17-I	17-I	17-I	17-I Dup	17-II	17-II	17-II
						13-Apr-20	14-Oct-20	21-Apr-21	18-Oct-21	20-Apr-22	12-Oct-22	19-Apr-23	12-Oct-23	16-Apr-24	10-Oct-24	16-Apr-25	30-Sep-25	30-Sep-25	25-Apr-16	19-Oct-16	12-Apr-17
Alkalinity	mg/L	500	OG	351	NV	**811**	**819**	**832**	**850**	**802**	**782**	**814**	**780**	**826**	**800**	**809**	**786**	**787**	***457***	**512**	**533**
Conductivity	µS/cm	-		-	NV	2040	1910	1980	1840	1970	1790	1910	1720	1830	1670	1690	1610	1630	1060	1220	1250
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.47	7.54	7.64	7.45	7.35	7.61	7.42	7.45	7.54	7.72	7.43	7.59	7.79	7.59	7.45	7.59
TDS	mg/L	500	AO	362	NV	**1174**	**1156**	**1183**	**1198**	**1127**	**1101**	**1095**	**946**	**1010**	**916**	**924**	**881**	**893**	**590**	**711**	**719**
DOC	mg/L	5		3.7	NV	**18.8**	**13.5**	**19.2**	**16.5**	**15.1**	**7.1**	**16.7**	**15.5**	**31.2**	**25.9**	**24**	**30.6**	**31.9**	**9.2**	**11.7**	**13.2**
COD	mg/L	-		-	NV	95	77	89	78	89	77	106	70	82	79	99	67	68	32	37	38
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	**0.002**	0.001	<0.001	< 0.001	< 0.001	< 0.001
Chloride	mg/L	250	AO	128	NV	***161***	***144***	***151***	***156***	***141***	***129***	120	98.8	102	86.3	71.8	67.1	68.9	41	52	57
Ammonia, total	mg/L	-		-	NV	1.11	1.24	0.93	1.02	2.25	1.32	1.6	1.63	1.43	2.43	3.82	2.42	2.44	16.2	21.2	17.2
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	-	-	-
Fluoride	mg/L	2.4	MAC	0.7	NV	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	<0.1	<0.1	<0.1	<0.7	<0.4	<0.4	0.1	< 0.1	< 0.1
Sulphate	mg/L	500	AO	255	NV	56	56	57	62	51	57	26	51	42	42	34	39	38	39	47	52
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.05	< 0.05	0.06	0.06	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	<0.40	<0.20	<0.20	< 0.1	< 0.1	***0.5***
Nitrate (N)	mg/L	10	MAC	4.0	NV	< 0.05	0.17	< 0.05	0.08	< 0.05	0.12	0.47	0.08	0.61	0.1	0.52	<0.20	<0.20	0.1	0.1	0.2
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.4	-	-
TKN	mg/L	-		-	NV	3.4	3.2	3	2.9	3.6	2.9	3.5	2.7	3.1	3.4	4.8	3.7	3.9	18.9	26.8	19.2
Hardness	mg/L	500	OG	361	NV	**851**	**845**	**882**	**855**	**833**	**835**	**843**	**779**	**763**	**730**	**702**	**739**	**716**	***397***	***488***	***485***
Aluminum	mg/L	0.1	OG	0.07	0.075	**0.11**	**0.1**	**0.13**	**0.12**	***0.07***	**0.09**	**0.13**	**0.08**	**0.09**	***0.07***	0.06	**0.12**	**0.12**	0.03	0.05	**0.09**
Antimony	mg/L	0.006	IMAC	0.002	0.02	0.0002	0.0003	0.0006	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0001	<0.0001	<0.0001	< 0.0001	0.0004	< 0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0006	0.0007	0.0007	0.0006	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0015	0.002	0.0008
Barium	mg/L	1	MAC	0.3	NV	***0.473***	***0.483***	***0.488***	***0.49***	***0.486***	***0.477***	***0.518***	***0.459***	***0.481***	***0.446***	***0.525***	***0.528***	***0.509***	***0.32***	***0.47***	***0.56***
Beryllium	mg/L	-		-	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	IMAC	1.3	0.2	**1.74**	**1.63**	**1.89**	**2.1**	**2.15**	**2.16**	**2.47**	**2.18**	**2.71**	**2.6**	**2.73**	**2.68**	**2.64**	**0.525**	**0.828**	**0.871**
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000029	0.000021	< 0.000029	< 0.000029	0.000021	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002
Calcium	mg/L	-		-	NV	276	273	288	282	273	275	271	251	244	229	224	235	227	130	158	156
Chromium	mg/L	0.05	MAC	0.013	0.001	0.001	< 0.001	0.001	0.001	< 0.001	< 0.001	< 0.001	<0.001	**0.078**	<0.001	<0.001	<0.001	<0.001	< 0.0002	**0.002**	**0.004**
Chromium (VI)	mg/L			-		-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-
Cobalt	mg/L	-		-	0.0009	**0.0403**	**0.038**	**0.037**	**0.035**	**0.039**	**0.033**	**0.027**	**0.0289**	**0.0224**	**0.0195**	**0.0185**	**0.0169**	**0.0167**	**0.008**	**0.015**	**0.01**
Copper	mg/L	1	AO	0.5	0.005	**0.012**	**0.0087**	**0.0099**	**0.0073**	**0.0076**	**0.0055**	**0.0063**	0.0048	**0.0053**	0.0038	0.0044	0.0046	0.0037	0.0013	0.0011	0.003
Iron	mg/L	0.3	AO	0.15	0.3	**2.63**	**2.68**	**2.93**	**3.17**	**3.29**	**3.08**	**3.1**	**2.95**	**2.63**	**2.5**	**2.15**	**2.73**	**2.64**	**6.15**	**9.18**	**5.19**
Lead	mg/L	0.01	MAC	0.003	0.005	0.00014	0.00009	0.00015	0.00009	0.00008	0.00006	0.00007	0.00005	0.00007	<0.00004	0.00004	0.00004	0.00003	0.0001	0.00007	0.00004
Magnesium	mg/L	-		-	NV	39.1	39.8	39.3	36.4	37	35.8	40.2	36.9	37.5	38	34.8	36.9	36.2	17.6	22.4	23.1
Manganese	mg/L	0.05	AO	0.03	NV	**2.31**	**2.18**	**2.5**	**2.4**	**2.39**	**2.24**	**2.24**	**2.08**	**2.04**	**1.88**	**1.78**	**1.86**	**1.8**	**1.72**	**2.35**	**2.14**
Mercury	mg/L	0.001	MAC	0.0003	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	< 0.00002
Molybdenum	mg/L	-		-	0.04	0.001	0.0008	0.0012	0.001	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	0.0006	0.0006	0.0005	0.0005	0.0004
Nickel	mg/L	-		-	0.025	0.02	0.02	**0.03**	0.02	0.02	0.02	0.02	0.0188	0.0178	0.0142	0.0144	0.0124	0.0123	< 0.01	0.02	0.01
Potassium	mg/L	-		-	NV	5.4	6.5	5.8	6.2	6.3	6.6	7.5	7.9	8.1	8.8	12.3	11.5	11.3	20.3	28	24.6
Phosphorus-Total	mg/L	-		-	0.03	**0.04**	**0.04**	**0.08**	**0.04**	**0.06**	0.03	0.03	**0.04**	<0.1	<0.1	<0.1	<0.1	<0.1	**0.15**	**0.81**	**0.11**
Selenium	mg/L	0.01	MAC	0.003	0.1	0.001	0.001	0.001	0.003	0.002	0.002	0.002	0.002	<0.001	<0.001	0.002	0.001	0.001	< 0.001	0	< 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	< 0.00002	< 0.00002	< 0.00002
Sodium	mg/L	200	AO	102	NV	***143***	***139***	***136***	***138***	***129***	***121***	***118***	***110***	***118***	***102***	95.5	92.8	91.2	39	57.3	55.1
Strontium	mg/L	-		-	NV	0.765	0.798	0.824	0.844	0.872	0.789	0.77	0.699	0.699	0.695	0.734	0.773	0.76	0.45	0.6	0.53
Thallium	mg/L	-		-	0.0003	< 0.00005	< 0.00005	0.00007	< 0.00005	< 0.00005	< 0.005	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	0.0008	0.0008	0.0008	0.0008	0.0009	0.0008	0.0002	0.0009	0.0008	0.0008	0.0007	0.0007	0.0007	0.0017	0.0018	0.0024
Zinc	mg/L	5	AO	2.5	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	0.007	0.005	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	11.3	12.3	10.5	11.1	10.7	15.4	10.2	11.2	11.7	11.9	7.9	12.5	12.5	4.8	14	8.2
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	6.69	6.82	6.95	7.05	6.98	6.96	6.98	6.83	6.8	7.16	7.24	6.09	6.09	7.65	7.19	7.25
Field Conductivity	µS/cm	-		-	NV	1832	1522	1730	1944	1832	1859	1598	1455	1636	1644	1665	1472	1472	810	1065	1003

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	17-II 05-Oct-17	17-II 10-Apr-18	17-II 01-Oct-18	17-II 22-Apr-19	17-II 08-Oct-19	17-II 13-Apr-20	17-II 14-Oct-20	17-II 21-Apr-21	17-II 18-Oct-21	17-II 20-Apr-22	17-II 12-Oct-22	17-II 19-Apr-23	17-II 12-Oct-23	17-II 16-Apr-24	17-II 10-Oct-24	17-II 16-Apr-25
Alkalinity	mg/L	500	OG	351	NV	**628**	**551**	**571**	**532**	**560**	**549**	**558**	**522**	**550**	***417***	***454***	***397***	***460***	***381***	***459***	***407***
Conductivity	µS/cm	-		-	NV	1490	1300	1320	1300	1310	1300	1270	1160	1110	950	938	879	947	856	974	884
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.56	7.61	7.59	7.68	7.64	7.73	7.73	7.79	7.6	7.68	7.71	7.66	7.44	7.58	7.67	7.67
TDS	mg/L	500	AO	362	NV	**823**	**738**	**776**	**688**	**739**	**710**	**731**	**665**	**666**	**508**	**536**	***474***	**504**	***452***	**519**	***468***
DOC	mg/L	5		3.7	NV	**16.5**	**16.6**	**15.4**	**14.9**	**18.5**	**12.7**	**13.1**	**14.1**	**13.9**	**10.2**	**6.2**	**5.8**	**11.8**	**11.1**	**28.1**	**7.3**
COD	mg/L	-		-	NV	56	45	62	45	44	65	36	26	53	39	44	28	32	32	182	43
Phenols	mg/L	-		-	0.001	**0.007**	< 0.001	**0.009**	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001
Chloride	mg/L	250	AO	128	NV	64	52.3	56.1	53.4	67.7	49.2	46.4	38.2	39.8	24.4	21.1	19.3	20.6	16.4	23.6	17
Ammonia, total	mg/L	-		-	NV	29.3	23.1	27.7	29.1	37.4	36.4	26.4	28.7	27	19	16.3	12.4	13	11.4	13.4	11.4
Unionized Ammonia	mg/L	-		-	0.02	-	-	-	**0.03**	**0.14**	**0.09**	**0.08**	-	**0.19**	**0.08**	**0.08**	**0.05**	<0.01	**0.09**	**0.05**	0
Fluoride	mg/L	2.4	MAC	0.7	NV	< 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	<0.1
Sulphate	mg/L	500	AO	255	NV	40	46	43	30	24	39	41	31	23	17	15	17	18	37	19	32
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 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	0.08
Nitrate (N)	mg/L	10	MAC	4.0	NV	< 0.05	< 0.05	0.06	< 0.05	< 0.05	0.08	0.07	< 0.05	< 0.05	< 0.05	< 0.05	1.98	<0.05	0.23	<0.05	0.3
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	44.1	25.8	28.4	31.3	37.5	44.8	31.6	36.7	31.8	22.8	16.8	16.7	15.8	13.3	21.6	13
Hardness	mg/L	500	OG	361	NV	***495***	***485***	**536**	***431***	***419***	***391***	***471***	***425***	***416***	354	***392***	***379***	***395***	349	***377***	353
Aluminum	mg/L	0.1	OG	0.07	0.075	**0.1**	**0.09**	**0.68**	**0.08**	**0.09**	***0.07***	0.06	**0.08**	**0.08**	0.03	0.04	***0.07***	0.04	0.04	0.04	0.04
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 0.0001	0.0001	< 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	<0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0022	0.0014	0.0026	0.0005	0.0012	0.0011	0.0017	0.0017	0.0013	0.0014	0.0014	0.001	0.0013	0.0013	0.0013	0.0014
Barium	mg/L	1	MAC	0.3	NV	***0.6***	***0.495***	***0.476***	***0.471***	***0.488***	***0.464***	***0.51***	***0.447***	***0.443***	***0.335***	***0.351***	***0.319***	***0.35***	***0.292***	***0.304***	***0.317***
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	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	IMAC	1.3	0.2	**1.25**	**1.31**	**1.13**	**1.28**	**1.33**	**1.3**	**1.36**	**1.13**	**1.05**	**0.727**	**0.75**	**0.729**	**0.766**	**0.62**	**0.75**	**0.656**
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000014	< 0.000014	0.00014	0.000038	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	<0.000015
Calcium	mg/L	-		-	NV	157	158	170	140	133	123	148	135	132	113	127	122	128	113	118	114
Chromium	mg/L	0.05	MAC	0.013	0.001	< 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	<0.001	<0.001
Chromium (VI)	mg/L			-		-	-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01
Cobalt	mg/L	-		-	0.0009	**0.013**	< 0.005	**0.018**	**0.009**	**0.007**	**0.0064**	**0.011**	**0.006**	< 0.005	**0.012**	**0.005**	**0.005**	**0.0057**	**0.0041**	**0.0087**	**0.0038**
Copper	mg/L	1	AO	0.5	0.005	0.0012	0.0018	**0.049**	0.0025	0.0011	0.002	0.0016	0.0012	0.0007	0.0006	0.0007	0.0004	0.0013	0.0006	0.0028	0.0005
Iron	mg/L	0.3	AO	0.15	0.3	**13**	**9.33**	**12.4**	**0.965**	**6.66**	**9.39**	**10**	**11.7**	**5.96**	**8.47**	**7.69**	**6.73**	**7.58**	**7.78**	**5.85**	**6.48**
Lead	mg/L	0.01	MAC	0.003	0.005	0.00005	0.00004	***0.00412***	0.00011	< 0.00009	0.00005	0.00005	0.00007	0.00005	0.00003	0.00003	0.00002	0.00004	0.00005	0.00005	0.00003
Magnesium	mg/L	-		-	NV	25	22	27	19.8	21.1	20.4	24.8	21.4	20.9	17.5	18.2	18	18.3	16.2	19.6	16.4
Manganese	mg/L	0.05	AO	0.03	NV	**2.15**	**1.88**	**1.92**	**1.93**	**1.48**	**1.33**	**1.57**	**1.54**	**1.42**	**1.42**	**1.45**	**1.44**	**1.43**	**1.3**	**1.58**	**1.34**
Mercury	mg/L	0.001	MAC	0.0003	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	<0.00002
Molybdenum	mg/L	-		-	0.04	0.0006	0.0003	0.0003	0.0004	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005	0.0004	0.0004	0.0003	0.0004	0.0005	0.0004
Nickel	mg/L	-		-	0.025	0.02	0.02	0.01	0.02	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0071	0.0057	0.0065	0.0056
Potassium	mg/L	-		-	NV	32.5	25	29.2	29.6	36.6	35.2	31.8	29	29.9	22	21.6	17.8	19.2	15.9	31.7	15.5
Phosphorus-Total	mg/L	-		-	0.03	**0.21**	**0.04**	**0.23**	**0.14**	**0.14**	**0.09**	**0.06**	**0.1**	**0.08**	**0.05**	**0.08**	0.02	**0.08**	<0.1	<0.1	<0.1
Selenium	mg/L	0.01	MAC	0.003	0.1	< 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	<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	<0.0001	<0.0001	<0.0001
Sodium	mg/L	200	AO	102	NV	74.8	62.6	58	55.5	64.8	56.6	58.7	47.9	48	29.4	31.1	24.6	29.4	22.3	27.6	21.2
Strontium	mg/L	-		-	NV	0.58	0.512	0.508	0.479	0.523	0.488	0.604	0.508	0.5	0.416	0.439	0.413	0.461	0.4	0.41	0.387
Thallium	mg/L	-		-	0.0003	< 0.00005	< 0.00005	0.00008	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-		-	0.006	0.0032	0.0003	0.0026	0.0005	0.0005	0.0005	0.0004	0.0005	0.0002	0.0003	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002
Zinc	mg/L	5	AO	2.5	0.02	< 0.005	< 0.005	0.01	< 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
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	12.4	-	-	9	13.8	10.7	13.8	8.9	12.7	9.7	15.9	9.4	13.5	10.3	12.4	6.4
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.51	7.61	7.59	6.8	7.18	7.11	7.09	7.28	7.48	7.34	7.24	7.36	7.33	7.63	7.24	7.56
Field Conductivity	µS/cm	-		-	NV	1241	1260	1340	1300	1100	1061	1130	1070	1050	909	1015	788	843	961	670	904

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	17-II	19-I	19-I	19-I	19-I	19-I	19-I	19-I	19-I	19-I	19-I	19-I	19-I	19-I	19-I	19-I
						30-Sep-25	26-Apr-16	19-Oct-16	12-Apr-17	05-Oct-17	10-Apr-18	01-Oct-18	22-Apr-19	08-Oct-19	13-Apr-20	14-Oct-20	21-Apr-21	18-Oct-21	20-Apr-22	12-Oct-22	19-Apr-23
Alkalinity	mg/L	500	OG	351	NV	***448***	215	220	211	219	205	220	189	204	193	215	214	229	215	207	219
Conductivity	µS/cm	-		-	NV	962	469	484	469	481	451	470	434	452	455	471	467	466	481	427	483
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.72	7.89	7.91	8.05	7.97	7.99	7.73	7.95	7.88	7.9	7.82	7.9	7.8	7.65	8.1	7.79
TDS	mg/L	500	AO	362	NV	**512**	256	254	255	244	236	240	222	232	234	252	251	263	253	245	259
DOC	mg/L	5		3.7	NV	**11.2**	1	1.3	1.8	3.5	2.3	2.4	1.6	**6.6**	2.3	2.8	***3.8***	2.4	2.7	2	1
COD	mg/L	-		-	NV	88	< 5	17	46	48	16	6	9	11	10	20	24	12	< 5	< 5	8
Phenols	mg/L	-		-	0.001	<0.001	< 0.001	< 0.001	< 0.001	**0.005**	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001
Chloride	mg/L	250	AO	128	NV	22.9	7	7	8	7	6.7	7.3	5.3	2.8	7	6.9	6.3	7.6	6.7	6.8	7.2
Ammonia, total	mg/L	-		-	NV	12.9	0.04	0.05	0.01	0.07	0.03	0.07	0.02	0.05	0.02	0.12	0.16	0.13	0.52	< 0.01	0.23
Unionized Ammonia	mg/L	-		-	0.02	<0.01	-	-	-	-	-	-	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01
Fluoride	mg/L	2.4	MAC	0.7	NV	<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	0.3	< 0.1
Sulphate	mg/L	500	AO	255	NV	28	15	13	14	11	11	13	13	10	17	15	16	15	17	11	38
Nitrite (N)	mg/L	1	MAC	0.3	NV	<0.05	< 0.1	< 0.1	0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5
Nitrate (N)	mg/L	10	MAC	4.0	NV	<0.05	1.8	2.2	1.8	2.4	2.3	2.1	1.9	2.34	1.87	1.96	1.9	2.13	2.01	2.29	< 0.5
Bromide	mg/L	-		-	NV	-	< 0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	17.8	0.5	0.8	0.8	1.1	0.7	0.3	0.2	0.2	0.3	0.6	0.5	0.6	0.7	0.3	0.4
Hardness	mg/L	500	OG	361	NV	***400***	243	230	242	236	235	215	221	241	231	248	248	254	248	256	262
Aluminum	mg/L	0.1	OG	0.07	0.075	**0.08**	0.03	0.03	0.05	***0.07***	0.05	0.05	0.05	0.06	0.04	0.03	0.05	0.06	0.02	0.02	***0.07***
Antimony	mg/L	0.006	IMAC	0.002	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	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0016	< 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
Barium	mg/L	1	MAC	0.3	NV	***0.395***	0.05	0.05	0.07	0.06	0.051	0.052	0.046	0.057	0.053	0.064	0.056	0.063	0.061	0.061	0.06
Beryllium	mg/L	-		-	1.1	<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	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	IMAC	1.3	0.2	**0.738**	< 0.005	0.019	0.056	0.046	0.041	0.033	0.044	0.034	0.087	0.087	0.067	0.06	0.07	0.038	0.075
Cadmium	mg/L	0.005	MAC	0.001	0.0005	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010
Calcium	mg/L	-		-	NV	130	82.3	77	80.6	78.8	79.2	72	75.2	81.4	77.5	82.8	83.3	85.7	83	86.8	87.6
Chromium	mg/L	0.05	MAC	0.013	0.001	<0.001	< 0.0002	0.0009	**0.0015**	< 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			-		<0.01	-	-	-	-	-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	-		-	0.0009	**0.0048**	< 0.005	< 0.005	**0.006**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	AO	0.5	0.005	0.0005	0.001	0.0018	0.0013	0.0006	0.0008	0.0011	0.0011	0.0006	0.002	0.0012	0.0008	0.0011	0.0013	0.0008	0.0009
Iron	mg/L	0.3	AO	0.15	0.3	**8.9**	0.01	< 0.005	0.01	0.02	0.017	0.009	0.012	0.027	0.01	< 0.005	0.005	0.005	< 0.005	< 0.005	< 0.005
Lead	mg/L	0.01	MAC	0.003	0.005	0.00002	0.00004	0.00068	< 0.00002	0.00007	< 0.00002	0.00065	0.00003	0.0001	0.00005	0.00006	0.00006	0.00003	0.00003	0.00006	< 0.00002
Magnesium	mg/L	-		-	NV	18.2	9	9.1	9.8	9.6	9.01	8.63	8.14	9.16	9.1	9.95	9.63	9.57	9.86	9.53	10.4
Manganese	mg/L	0.05	AO	0.03	NV	**1.65**	< 0.001	< 0.001	0	0	0.001	< 0.001	< 0.001	0.01	< 0.001	< 0.001	< 0.001	0.008	0.004	0.003	< 0.001
Mercury	mg/L	0.001	MAC	0.0003	0.0002	<0.00002	0.00005	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	< 0.00002
Molybdenum	mg/L	-		-	0.04	0.0003	0.0001	0.0001	0.0001	0.0001	< 0.0001	0.0001	0.0001	0.0003	< 0.0001	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001
Nickel	mg/L	-		-	0.025	0.0071	< 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
Potassium	mg/L	-		-	NV	19.2	1.1	1.2	1.1	1.5	0.9	1.3	1	1.4	1.2	1.7	1.2	1.6	1.3	1.6	1.1
Phosphorus-Total	mg/L	-		-	0.03	<0.1	**0.91**	**0.97**	**1.51**	**1.64**	**1.05**	**0.26**	**0.09**	**0.22**	**0.04**	**0.19**	**0.18**	**0.12**	**0.08**	**0.14**	**0.07**
Selenium	mg/L	0.01	MAC	0.003	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	< 0.001
Silver	mg/L	-		-	0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV	26.1	5.3	4.9	5.5	5.4	5.2	5.3	5.6	5.2	6.4	6.6	5.2	5.5	4.9	4	4.5
Strontium	mg/L	-		-	NV	0.446	0.15	0.14	0.14	0.15	0.132	0.131	0.126	0.145	0.139	0.162	0.149	0.156	0.152	0.153	0.153
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	< 0.005	< 0.00005
Vanadium	mg/L	-		-	0.006	0.0003	0.0009	0.0011	0.001	0.0011	0.0003	0.0003	0.0002	0.0003	0.0002	0.0003	0.0003	0.0002	0.0002	0.0003	0.0003
Zinc	mg/L	5	AO	2.5	0.02	0.006	< 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
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	13.5	7.5	12.5	6.5	12.1	-	-	7.2	11.5	6.8	11.4	6.6	11.2	6.8	12.3	6.5
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	6.24	8.22	7.7	7.43	7.47	7.99	7.73	7.81	7.7	7.34	7.7	7.95	7.78	8.03	8.04	7.87
Field Conductivity	µS/cm	-		-	NV	972	390	435	375	428	445	440	460	392	451	450	480	505	466	491	579

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	19-I 12-Oct-23	19-I 16-Apr-24	19-I 10-Oct-24	19-I 16-Apr-25	19-I 30-Sep-25	25-I 26-Apr-16	25-I 20-Oct-16	25-I 12-Apr-17	25-I 05-Oct-17	25-I 11-Apr-18	25-I 01-Oct-18	25-I 22-Apr-19	25-I 09-Oct-19	25-I 13-Apr-20	25-I 15-Oct-20	25-I 21-Apr-21
Alkalinity	mg/L	500	OG	351	NV	233	222	231	237	223	***352***	***374***	***380***	***404***	***397***	***449***	***430***	***454***	***447***	***481***	***489***
Conductivity	µS/cm	-		-	NV	487	485	472	491	477	969	1040	1040	1100	1070	1170	1150	1190	1200	1250	1230
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.37	7.72	8.2	7.6	7.91	7.6	7.81	7.77	7.72	7.78	7.71	7.65	7.71	7.7	7.7	7.78
TDS	mg/L	500	AO	362	NV	252	251	244	254	247	**536**	**604**	**580**	**584**	**584**	**632**	**631**	**699**	**658**	**712**	**701**
DOC	mg/L	5		3.7	NV	4	3.4	2.8	2.2	***4.2***	2.9	3.6	***4.2***	5	5	***4.8***	**5.1**	**8.2**	**5.2**	***3.8***	**5.3**
COD	mg/L	-		-	NV	6	8	8	18	<5	8	15	6	13	14	13	14	8	15	14	24
Phenols	mg/L	-		-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	**0.024**	< 0.001	**0.004**	< 0.001	**0.002**	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Chloride	mg/L	250	AO	128	NV	8.1	9.1	7.5	8.5	6.6	75	80	82	74	71.9	86.2	86	111	90.7	95.3	92.7
Ammonia, total	mg/L	-		-	NV	0.09	<0.05	0.05	0.06	0.49	0.06	0.05	0.03	0.02	0.04	0.06	0.03	0.05	0.03	0.08	0.05
Unionized Ammonia	mg/L	-		-	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	< 0.01	< 0.01	< 0.01	< 0.01	-
Fluoride	mg/L	2.4	MAC	0.7	NV	<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	< 0.1
Sulphate	mg/L	500	AO	255	NV	12	12	12	18	13	55	58	56	46	46	56	50	54	48	50	47
Nitrite (N)	mg/L	1	MAC	0.3	NV	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	1.79	1.86	2.01	1.57	2.02	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05	< 0.05	< 0.05
Bromide	mg/L	-		-	NV	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	0.2	0.2	0.2	0.2	0.7	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.4
Hardness	mg/L	500	OG	361	NV	256	237	240	241	246	***432***	**534**	***476***	***487***	**502**	***481***	**523**	**565**	**542**	**587**	**570**
Aluminum	mg/L	0.1	OG	0.07	0.075	0.02	0.03	0.02	0.02	0.05	0.03	**0.09**	**0.08**	**0.1**	**0.08**	***0.07***	**0.08**	**0.09**	***0.07***	***0.07***	**0.09**
Antimony	mg/L	0.006	IMAC	0.002	0.02	<0.0001	<0.0001	<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	< 0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0005	0.0005	0.0001	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	MAC	0.3	NV	0.064	0.056	0.06	0.057	0.062	0.13	0.17	0.24	0.19	0.175	0.165	0.18	0.199	0.193	0.222	0.211
Beryllium	mg/L	-		-	1.1	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 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	IMAC	1.3	0.2	0.066	0.062	0.054	0.08	0.04	0.134	0.198	**0.202**	**0.209**	**0.216**	**0.207**	**0.226**	**0.262**	**0.259**	**0.317**	**0.3**
Cadmium	mg/L	0.005	MAC	0.001	0.0005	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Calcium	mg/L	-		-	NV	85.8	79.6	79.2	80.9	82.6	129	158	138	141	148	139	157	167	159	170	168
Chromium	mg/L	0.05	MAC	0.013	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	0.0009	**0.0021**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001
Chromium (VI)	mg/L			-		<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/L	-		-	0.0009	0.0002	0.0002	0.0002	0.0001	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.012**	< 0.005	< 0.005	0.0003	**0.006**	< 0.005
Copper	mg/L	1	AO	0.5	0.005	0.0015	0.0008	0.0012	0.0008	0.0008	0.0004	0.0006	< 0.0001	0.0004	0.0008	0.0002	0.0006	0.0007	0.0005	0.0004	0.0009
Iron	mg/L	0.3	AO	0.15	0.3	0.005	<0.005	0.009	<0.005	0.011	**0.4**	**0.61**	**0.56**	**0.59**	**0.431**	**0.673**	**0.647**	**0.907**	**0.882**	1	**1.04**
Lead	mg/L	0.01	MAC	0.003	0.005	0.00003	0.00004	0.00004	0.00002	0.00006	0.00002	0.00005	< 0.00002	0.00004	0.00124	< 0.00002	< 0.00002	< 0.00002	< 0.00004	< 0.00004	0.00005
Magnesium	mg/L	-		-	NV	10.1	9.38	10.1	9.47	9.69	27	33.8	31.8	32.7	32.1	32.4	31.8	35.9	35.1	39.3	36.4
Manganese	mg/L	0.05	AO	0.03	NV	<0.001	<0.001	<0.001	<0.001	<0.001	**0.09**	**0.12**	**0.1**	**0.12**	**0.113**	**0.111**	**0.126**	**0.134**	**0.13**	**0.135**	**0.136**
Mercury	mg/L	0.001	MAC	0.0003	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	< 0.00002
Molybdenum	mg/L	-		-	0.04	0.0002	0.0001	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	< 0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003
Nickel	mg/L	-		-	0.025	0.0003	0.0007	0.0002	0.0008	<0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	0.01
Potassium	mg/L	-		-	NV	1.8	1.3	1.9	1.3	1.8	2.3	2.7	2.6	2.7	2.4	2.7	2.7	2.9	2.9	3.3	3
Phosphorus-Total	mg/L	-		-	0.03	**0.1**	<0.1	<0.1	<0.1	<0.1	**1.08**	**1.53**	**0.19**	**0.52**	**0.64**	**0.22**	**0.3**	**0.32**	**0.06**	**0.19**	**0.22**
Selenium	mg/L	0.01	MAC	0.003	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	0	< 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	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV	5.1	4.8	4.8	5	4.3	36.9	45.8	40.8	43.9	44.7	45.7	45.3	54.6	52.9	63.7	59.9
Strontium	mg/L	-		-	NV	0.17	0.153	0.159	0.145	0.159	0.69	0.89	0.79	0.82	0.768	0.769	0.807	0.883	0.853	0.976	0.88
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	< 0.00005
Vanadium	mg/L	-		-	0.006	0.0003	0.0002	0.0003	0.0002	0.0003	0.0012	0.0012	0.0015	0.0019	< 0.0001	0.0002	0.0002	0.0003	0.0002	0.0003	0.0003
Zinc	mg/L	5	AO	2.5	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	< 0.005	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	11.8	8.1	12.7	7.7	12.2	8.6	11.6	8.4	10.8	-	-	10.4	9.2	9.6	10	9
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.79	8.05	7.81	8.27	7.51	7.96	7.62	7.71	8.1	7.78	7.71	7.68	6.29	7.03	7.21	7.22
Field Conductivity	µS/cm	-		-	NV	563	563	451	401	470	760	910	827	911	1040	1100	1140	875	1314	1030	1090

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PARAMETER	UNITS	ODWQS		RUP	PWQO	25-I	25-I	25-I	25-I	25-I	25-I	25-I	25-I	25-I	25-II	25-II	25-II	25-II	25-II	25-II	25-II
						18-Oct-21	20-Apr-22	12-Oct-22	19-Apr-23	12-Oct-23	16-Apr-24	10-Oct-24	16-Apr-25	30-Sep-25	26-Apr-16	20-Oct-16	12-Apr-17	05-Oct-17	11-Apr-18	01-Oct-18	22-Apr-19
Alkalinity	mg/L	500	OG	351	NV	**522**	***467***	**511**	***490***	**531**	**506**	**552**	**522**	**555**	**839**	**847**	**833**	**817**	**817**	**858**	**770**
Conductivity	µS/cm	-		-	NV	1240	1260	1270	1270	1320	1290	1340	1300	1370	1960	1990	1900	1880	1790	1840	1780
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.61	7.6	7.68	7.57	7.45	7.63	7.78	7.27	7.62	7.06	7.34	7.24	7.31	7.4	7.4	7.36
TDS	mg/L	500	AO	362	NV	**752**	**677**	**727**	**711**	**716**	**699**	**725**	**706**	**745**	**1150**	**1230**	**1120**	**1069**	**1073**	**1087**	**1043**
DOC	mg/L	5		3.7	NV	**6.3**	***3.8***	2	2.2	7	**9.1**	**8.7**	***4.9***	**9.8**	**12.9**	**12.3**	**14.5**	**14.9**	**19.1**	**17.1**	**15.9**
COD	mg/L	-		-	NV	23	13	26	19	21	27	41	31	18	53	52	47	50	52	53	64
Phenols	mg/L	-		-	0.001	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	**0.002**	<0.001	< 0.001	**0.023**	**0.005**	**0.009**	< 0.001	**0.011**	< 0.002
Chloride	mg/L	250	AO	128	NV	107	95	97.1	99.5	99.7	99.7	108	101	114	***135***	***138***	119	103	96.6	114	109
Ammonia, total	mg/L	-		-	NV	0.08	0.23	0.13	0.94	0.09	<0.05	0.14	0.09	0.08	0.1	0.13	0.07	0.07	0.11	0.11	0.11
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
Fluoride	mg/L	2.4	MAC	0.7	NV	< 0.1	< 0.1	< 0.1	< 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
Sulphate	mg/L	500	AO	255	NV	51	43	39	29	38	36	38	36	40	79	80	67	55	53	56	52
Nitrite (N)	mg/L	1	MAC	0.3	NV	0.06	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	0.1	< 0.05	< 0.05	< 0.05	< 0.05
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	0.8	-	-	-	-	-	-
TKN	mg/L	-		-	NV	0.4	0.8	0.5	1.5	0.5	0.4	0.6	0.5	0.6	1.3	1.6	1.2	1.2	1.1	1.2	1.2
Hardness	mg/L	500	OG	361	NV	**590**	**549**	**599**	**597**	**587**	**543**	**587**	**544**	**593**	**841**	**962**	**857**	**813**	**862**	**759**	**841**
Aluminum	mg/L	0.1	OG	0.07	0.075	**0.09**	0.05	0.05	**0.11**	0.06	0.05	0.06	0.04	**0.1**	0.06	**0.09**	**0.13**	**0.1**	**0.12**	**0.11**	**0.12**
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 0.0001	< 0.0001	< 0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0003	< 0.0001	0.0001	0.0001	0.0001	0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001	0.0009	0.0007	0.0007	0.0004	0.0003	0.0003
Barium	mg/L	1	MAC	0.3	NV	0.223	0.208	0.226	0.218	0.225	0.206	0.211	0.213	0.232	***0.3***	***0.36***	***0.45***	***0.36***	***0.334***	***0.302***	***0.324***
Beryllium	mg/L	-		-	1.1	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	IMAC	1.3	0.2	**0.323**	**0.311**	**0.354**	**0.394**	**0.415**	**0.415**	**0.489**	**0.456**	**0.514**	**0.883**	**1.08**	**0.987**	**0.952**	**0.897**	**0.895**	**0.892**
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.00004	0.00003	< 0.00002	< 0.000014	0.000019	0.000031	0.000035
Calcium	mg/L	-		-	NV	175	160	178	173	172	158	168	160	174	271	308	270	256	276	237	269
Chromium	mg/L	0.05	MAC	0.013	0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	**0.002**	**0.005**	< 0.001	< 0.001	< 0.001	0.001
Chromium (VI)	mg/L			-		-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-
Cobalt	mg/L	-		-	0.0009	< 0.005	< 0.005	< 0.005	< 0.005	0.0008	0.0006	0.0009	0.0006	0.0007	**0.01**	**0.013**	**0.015**	**0.013**	**0.011**	**0.014**	**0.019**
Copper	mg/L	1	AO	0.5	0.005	0.0004	0.0002	0.0003	0.0002	0.0003	0.0009	0.0004	0.0009	0.0009	**0.0125**	**0.018**	**0.0116**	**0.0071**	**0.0088**	**0.0086**	**0.0133**
Iron	mg/L	0.3	AO	0.15	0.3	**1.21**	**1.16**	**1.3**	**1.32**	**1.35**	**1.25**	**1.44**	**1.23**	**1.49**	0.08	***0.16***	0.1	0.11	0.068	0.122	0.064
Lead	mg/L	0.01	MAC	0.003	0.005	< 0.00004	< 0.00004	< 0.00004	< 0.00004	0.00002	0.00004	0.00003	0.00004	<0.00002	0.00006	0.00007	< 0.00002	0.00006	0.00006	0.00007	0.00007
Magnesium	mg/L	-		-	NV	37.2	36.1	37.3	40	38.3	35.8	40.4	35.2	38.5	39.9	47	44.4	42.2	41.9	40.5	41
Manganese	mg/L	0.05	AO	0.03	NV	**0.154**	**0.141**	**0.154**	**0.159**	**0.156**	**0.14**	**0.154**	**0.142**	**0.163**	**1.4**	**1.71**	**1.46**	**1.52**	**1.52**	**1.2**	**1.38**
Mercury	mg/L	0.001	MAC	0.0003	0.0002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00003	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	-		-	0.04	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	< 0.0001	0.0002	0.0002
Nickel	mg/L	-		-	0.025	0.01	< 0.01	< 0.01	0.01	0.0153	0.013	0.0153	0.014	0.0156	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Potassium	mg/L	-		-	NV	3.3	3	3.1	3	3.2	3	3.3	2.9	3.2	2.5	3.1	2.8	3.3	2.8	2.9	2.8
Phosphorus-Total	mg/L	-		-	0.03	**0.11**	**0.32**	**0.07**	**0.14**	**0.14**	<0.1	<0.1	<0.1	<0.1	**3.47**	**13.3**	**1.5**	**0.86**	**1.15**	**0.78**	**1.64**
Selenium	mg/L	0.01	MAC	0.003	0.1	0.002	0.002	0.002	0.001	0.001	<0.001	<0.001	0.001	0.001	< 0.001	0	< 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	<0.0001	<0.0001	<0.0001	<0.0001	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV	64.1	58.9	64.2	61.3	69.8	66.6	72.3	66	72.6	***118***	***142***	***119***	***118***	***111***	***120***	***106***
Strontium	mg/L	-		-	NV	0.888	0.85	0.865	0.868	0.9	0.843	0.859	0.764	0.842	0.67	0.8	0.68	0.68	0.647	0.62	0.645
Thallium	mg/L	-		-	0.0003	< 0.00005	< 0.00005	< 0.005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.0001	< 0.00005	0.0001	0.0001	0.00005	0.00009	0.00008
Vanadium	mg/L	-		-	0.006	0.0002	0.0003	0.0003	0.0006	0.0003	0.0003	0.0003	0.0003	0.0004	0.0038	0.0031	0.0035	0.0045	0.0005	0.0007	0.0006
Zinc	mg/L	5	AO	2.5	0.02	< 0.005	< 0.005	< 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	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	9.7	5.5	13.7	7	11.5	10.3	10.3	7.5	11.2	7.1	11.8	7.1	11.5	-	-	9.5
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.43	7.14	7.17	7.27	7.27	6.78	7.57	7.61	6.61	7.17	6.9	6.87	7.66	7.4	7.4	6.82
Field Conductivity	µS/cm	-		-	NV	1290	1218	1321	1511	1114	1174	479	1292	1304	1400	1525	1488	1474	1760	1750	1720

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Bold / Highlighting for ODWQS exceeded parameters
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Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	25-II 09-Oct-19	25-II 13-Apr-20	25-II 21-Apr-21	25-II 18-Oct-21	25-II 20-Apr-22	25-II 12-Oct-22	25-II 19-Apr-23	25-II 12-Oct-23	25-II 16-Apr-24	26-I 16-Apr-24	25-II 10-Oct-24	26-I 10-Oct-24	25-II 16-Apr-25	26-I 16-Apr-25	25-II 30-Sep-25	26-I 30-Sep-25
Alkalinity	mg/L	500	OG	351	NV	**786**	**758**	**791**	**824**	**767**	**809**	**805**	**828**	**808**	247	**836**	256	**814**	257	**838**	256
Conductivity	µS/cm	-		-	NV	1790	1740	1710	1690	1750	1740	1780	1800	1790	940	1810	921	1790	915	1850	971
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.33	7.47	7.55	7.35	7.41	7.5	7.26	7.32	7.37	7.93	7.69	8.01	7.28	7.94	7.48	8.04
TDS	mg/L	500	AO	362	NV	**1030**	**998**	**1022**	**1059**	**995**	**1026**	**1047**	**991**	**983**	***500***	**992**	***489***	**980**	***485***	**1020**	**517**
DOC	mg/L	5		3.7	NV	**18.6**	**17.1**	**15.4**	**14.1**	**12.5**	***4.9***	**11.9**	**13.4**	**26.5**	***4.1***	**21.1**	2.9	**12.8**	1.4	**23.6**	3.5
COD	mg/L	-		-	NV	38	53	53	52	56	60	56	58	57	12	71	11	70	14	56	<5
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	<0.001	<0.001	**0.002**	<0.001	<0.001	<0.001
Chloride	mg/L	250	AO	128	NV	124	104	98.1	111	101	102	112	110	108	***142***	118	***145***	112	***132***	***132***	***162***
Ammonia, total	mg/L	-		-	NV	0.14	0.15	0.24	0.32	0.53	0.45	0.87	0.7	0.97	1.67	2.19	1.68	1.26	1.59	1.54	1.59
Unionized Ammonia	mg/L	-		-	0.02	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.01	**0.04**	0.01	0.01	0.02	**0.09**	<0.01	0.02
Fluoride	mg/L	2.4	MAC	0.7	NV	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7	<0.1	<0.7	0.2
Sulphate	mg/L	500	AO	255	NV	< 10	43	38	37	33	25	6	30	27	6	25	6	25	6	24	6
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.5	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.40	<0.05	<0.40	<0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	< 0.5	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	0.07	<0.05	<0.40	<0.05	<0.40	<0.05
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	1.4	1.2	1.2	1.3	1.7	1.5	2.1	1.8	2.1	1.8	2.8	1.8	2.4	1.7	2.7	4.7
Hardness	mg/L	500	OG	361	NV	**824**	**785**	**817**	**814**	**788**	**792**	**830**	**707**	**807**	217	**769**	231	**793**	216	**788**	247
Aluminum	mg/L	0.1	OG	0.07	0.075	**0.13**	**0.1**	**0.12**	**0.12**	***0.07***	**0.08**	**0.14**	0.06	**0.09**	0.02	***0.07***	0.02	***0.07***	0.01	**0.12**	0.04
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 0.0001	0.0001	0.0001	< 0.0001	0.0002	0.0001	0.0002	0.0002	0.0001	<0.0001	0.0002	<0.0001	0.0001	<0.0001	0.0001	<0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003	0.0002	0.0003	0.0003	<0.0001	0.0003	<0.0001	0.0003	<0.0001	0.0003	<0.0001
Barium	mg/L	1	MAC	0.3	NV	***0.323***	***0.307***	***0.318***	***0.328***	***0.316***	***0.324***	***0.332***	***0.297***	***0.336***	0.019	***0.33***	0.017	***0.335***	0.019	***0.364***	0.019
Beryllium	mg/L	-		-	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	IMAC	1.3	0.2	**1.03**	**0.875**	**0.901**	**0.976**	**0.917**	**1.02**	**1.08**	**1.03**	**1.02**	**0.511**	**1.04**	**0.52**	**1.01**	**0.501**	**1.04**	**0.492**
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000029	0.000028	0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	0.000016	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Calcium	mg/L	-		-	NV	258	246	257	253	244	244	254	208	248	43.8	229	45.1	243	44	238	50.5
Chromium	mg/L	0.05	MAC	0.013	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	<0.001
Chromium (VI)	mg/L			-		-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	mg/L	-		-	0.0009	**0.009**	**0.011**	**0.012**	**0.011**	**0.021**	**0.015**	**0.016**	**0.0162**	**0.0134**	<0.0001	**0.0123**	<0.0001	**0.0167**	<0.0001	**0.0142**	<0.0001
Copper	mg/L	1	AO	0.5	0.005	**0.0066**	**0.0127**	**0.0113**	**0.0091**	**0.0088**	**0.0052**	**0.0081**	**0.0114**	**0.0151**	0.0008	**0.0097**	0.0004	**0.0092**	0.0001	**0.0107**	0.0002
Iron	mg/L	0.3	AO	0.15	0.3	***0.245***	0.077	0.092	***0.182***	0.139	**0.472**	***0.169***	**0.469**	0.152	0.014	***0.182***	0.021	0.112	0.019	***0.178***	0.018
Lead	mg/L	0.01	MAC	0.003	0.005	< 0.00009	0.00008	0.00009	< 0.00004	0.00004	< 0.00004	0.00004	<0.00002	0.00014	0.00002	0.00004	<0.00002	0.00004	<0.00002	0.00004	<0.00002
Magnesium	mg/L	-		-	NV	43.6	41.3	42.4	44.1	43.5	44.3	47.4	45.4	45.4	26.1	48.1	28.8	45.2	25.8	47	29.3
Manganese	mg/L	0.05	AO	0.03	NV	**1.31**	**1.5**	**1.61**	**1.57**	**1.56**	**1.29**	**1.35**	**1.08**	**1.51**	0.002	**1.45**	0.002	**1.62**	0.002	**1.57**	0.002
Mercury	mg/L	0.001	MAC	0.0003	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	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	-		-	0.04	0.0005	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	<0.0001	0.0002	<0.0001	0.0002	<0.0001	0.0002	<0.0001
Nickel	mg/L	-		-	0.025	0.02	0.02	0.02	0.02	0.02	0.02	**0.03**	0.023	0.0249	0.0007	0.0224	0.0005	**0.0255**	0.0007	0.0232	0.0009
Potassium	mg/L	-		-	NV	3.1	3.5	3.8	4.3	3.4	3.3	2.3	3.9	3.3	11.6	4.9	12.3	3.3	10.9	6	12.6
Phosphorus-Total	mg/L	-		-	0.03	**0.97**	**0.29**	**0.39**	**0.32**	**0.41**	**0.2**	**0.36**	**0.16**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/L	0.01	MAC	0.003	0.1	0.003	0.001	< 0.001	0.002	0.002	0.002	0.002	0.002	<0.001	<0.001	<0.001	<0.001	0.002	0.002	0.002	0.003
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	<0.0001	<0.0001
Sodium	mg/L	200	AO	102	NV	***128***	***104***	***107***	***113***	***107***	***119***	***118***	***122***	***127***	97.3	***121***	96.3	***124***	91.5	***119***	98
Strontium	mg/L	-		-	NV	0.67	0.653	0.661	0.664	0.655	0.649	0.652	0.666	0.694	2.46	0.698	2.58	0.65	2.3	0.711	2.66
Thallium	mg/L	-		-	0.0003	< 0.00005	0.00007	< 0.00005	< 0.00005	< 0.00005	< 0.005	< 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	0.0011	0.0005	0.0005	0.0007	0.0006	0.0015	< 0.0001	0.0014	0.0006	<0.0001	0.0008	<0.0001	0.0006	<0.0001	0.0007	<0.0001
Zinc	mg/L	5	AO	2.5	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	<0.005	<0.005	0.007	<0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	10.6	8.6	8.1	10.9	8.1	13.9	6.4	11.3	8.4	9.3	13.2	9.6	6.6	8.5	12.5	12.5
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	6.97	6.8	7.14	7.42	6.97	6.88	7.1	7.07	7.09	8.13	7.38	7.65	8.07	8.55	6.45	7.85
Field Conductivity	µS/cm	-		-	NV	1270	1407	1542	1400	1700	1814	2210	1864	1960	1083	1194	933	1221	720	1653	996

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PARAMETER	UNITS	ODWQS		RUP	PWQO	26-II 26-Apr-16	26-II 20-Oct-16	26-II 12-Apr-17	26-II 05-Oct-17	26-II 11-Apr-18	26-II 02-Oct-18	26-II 23-Apr-19	26-II 09-Oct-19	26-II 13-Apr-20	26-II 15-Oct-20	26-II 21-Apr-21	26-II 18-Oct-21	26-II 20-Apr-22	26-II 12-Oct-22	26-II 19-Apr-23	26-II 12-Oct-23
Alkalinity	mg/L	500	OG	351	NV	319	***368***	***352***	***358***	326	335	***388***	***386***	***376***	***374***	***462***	***352***	316	***374***	***375***	***404***
Conductivity	µS/cm	-		-	NV	817	977	876	951	858	910	1100	7.76	1040	942	1200	812	807	907	978	989
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.78	7.79	7.78	7.73	7.8	7.71	7.81	1040	7.68	7.72	7.75	7.67	7.62	7.76	7.69	7.49
TDS	mg/L	500	AO	362	NV	***453***	**568**	***496***	**501**	***460***	***497***	**602**	**614**	**577**	**536**	**703**	***484***	***429***	**516**	**543**	**527**
DOC	mg/L	5		3.7	NV	3	***4.6***	***4.7***	***4.8***	**5.5**	**5.1**	**6.9**	8	**5.8**	***4.9***	9	**5.2**	***4.2***	2.4	2.4	**6.7**
COD	mg/L	-		-	NV	5	13	5	12	8	10	5	11	16	11	13	8	5	24	19	15
Phenols	mg/L	-		-	0.001	< 0.001	**0.01**	< 0.001	**0.002**	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001
Chloride	mg/L	250	AO	128	NV	41	59	47	50	40.3	55.7	73.8	91.2	69.9	55.6	82	50.8	40.6	45.8	60.8	57.9
Ammonia, total	mg/L	-		-	NV	0.01	0.04	< 0.01	< 0.01	0.01	0.03	0.03	0.03	< 0.01	0.04	0.02	0.06	0.22	< 0.01	0.71	0.59
Unionized Ammonia	mg/L	-		-	0.02	-	-	-	-	-	-	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	<0.01
Fluoride	mg/L	2.4	MAC	0.7	NV	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	<0.1
Sulphate	mg/L	500	AO	255	NV	52	65	50	47	43	50	69	62	67	48	71	43	33	46	15	45
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.1	< 0.1	***0.4***	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.5	<0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	0.6	0.5	0.5	0.5	0.66	0.52	0.14	0.11	0.24	0.66	< 0.05	0.51	0.78	0.53	< 0.5	0.43
Bromide	mg/L	-		-	NV	< 0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	0.2	0.4	0.3	0.3	0.2	0.3	0.5	0.3	0.3	0.4	0.5	0.3	0.5	0.3	0.9	0.7
Hardness	mg/L	500	OG	361	NV	***383***	**508**	***438***	***438***	***415***	***440***	**510**	**520**	***483***	***440***	**595**	***422***	***380***	***442***	***473***	***474***
Aluminum	mg/L	0.1	OG	0.07	0.075	0.03	0.05	***0.07***	**0.09**	**0.08**	0.06	**0.08**	**0.09**	***0.07***	0.05	**0.1**	***0.07***	0.03	0.04	**0.09**	0.04
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 0.0001	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	< 0.0001	<0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0003	0.0003	0.0001	0.0003	< 0.0001	< 0.0001	0.0001	< 0.0003	< 0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Barium	mg/L	1	MAC	0.3	NV	0.13	0.18	0.21	0.17	0.147	0.152	0.193	0.186	0.178	0.175	0.227	0.141	0.136	0.17	0.177	0.174
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	<0.0001
Boron	mg/L	5	IMAC	1.3	0.2	0.166	**0.267**	**0.215**	**0.217**	**0.207**	0.189	**0.307**	**0.314**	**0.291**	**0.323**	**0.325**	0.154	0.174	**0.247**	**0.254**	**0.251**
Cadmium	mg/L	0.005	MAC	0.001	0.0005	0.00003	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	0.000026	< 0.000029	< 0.000015	0.000018	0.000018	0.000017	< 0.000015	0.000017	0.00002	<0.000015
Calcium	mg/L	-		-	NV	118	156	132	131	126	132	157	159	145	132	181	127	114	136	143	144
Chromium	mg/L	0.05	MAC	0.013	0.001	< 0.0002	0.0008	**0.0018**	< 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	-		-	0.0009	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.0048**	**0.011**	< 0.005	**0.006**	**0.006**	**0.011**	< 0.005	**0.0087**
Copper	mg/L	1	AO	0.5	0.005	0.0028	0.0044	0.0032	0.0027	0.0043	0.0032	**0.0056**	0.0045	**0.0059**	**0.0079**	**0.0087**	0.0044	0.0042	0.0049	**0.0053**	**0.0064**
Iron	mg/L	0.3	AO	0.15	0.3	< 0.005	< 0.005	< 0.005	0.01	0.005	0.008	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	<0.005
Lead	mg/L	0.01	MAC	0.003	0.005	0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00009	0.00002	< 0.00002	0.00004	< 0.00002	0.00002	< 0.00002	< 0.00002	<0.00002
Magnesium	mg/L	-		-	NV	21.4	28.9	26.3	27	24.4	26.7	28.7	29.8	29.4	26.7	34.7	25.5	22.8	24.9	28	27.8
Manganese	mg/L	0.05	AO	0.03	NV	**0.21**	**0.41**	**0.25**	**0.38**	**0.215**	**0.387**	**0.361**	**0.486**	**0.471**	**0.478**	**0.597**	**0.489**	**0.304**	**0.576**	**0.507**	**0.76**
Mercury	mg/L	0.001	MAC	0.0003	0.0002	0.00003	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	< 0.00002	<0.00002
Molybdenum	mg/L	-		-	0.04	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0005	0.0003	0.0003	0.0003	0.0004	0.0003	0.0004	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	< 0.01	0.0064
Potassium	mg/L	-		-	NV	1.4	1.6	1.5	1.5	1.2	1.4	1.6	1.6	1.7	1.7	1.9	1.5	1.5	1.5	1.4	1.7
Phosphorus-Total	mg/L	-		-	0.03	**0.13**	**0.17**	**0.53**	**0.31**	**0.17**	0.03	**0.06**	**0.04**	**0.04**	0.03	< 0.1	< 0.1	**0.07**	**0.05**	0.03	0.03
Selenium	mg/L	0.01	MAC	0.003	0.1	< 0.001	0	< 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	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Sodium	mg/L	200	AO	102	NV	24.1	35.3	25.3	29.4	28.4	28.7	39.2	38.5	38	47.5	54.2	24.2	27	36.8	33.2	35
Strontium	mg/L	-		-	NV	0.32	0.45	0.34	0.34	0.292	0.296	0.342	0.339	0.331	0.327	0.408	0.265	0.248	0.272	0.316	0.343
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	< 0.005	< 0.00005	<0.00005
Vanadium	mg/L	-		-	0.006	0.0014	0.0011	0.0015	0.0017	0.0002	0.00031	0.0003	< 0.0004	0.0003	0.0003	0.0003	0.0002	0.0003	0.0003	0.0005	0.0003
Zinc	mg/L	5	AO	2.5	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	< 0.005	< 0.005	< 0.005	<0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	-	11.2	8.5	11.4	-	-	9.2	10.4	10	11	8.5	10.6	9.1	12.2	8.9	10.8
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	-	7.5	7.61	7.15	7.8	7.71	7.16	7.22	7.5	7.16	7.54	7.85	7.49	7.5	7.31	6.99
Field Conductivity	µS/cm	-		-	NV	806	835	702	784	833	896	1010	844	971	810	1101	726	920	929	839	858

ODWQS Ontario Drinking Water Quality Objectives
MAC Maximum Acceptable Concentration
IMAC Interim Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operatioal Guidelines
Bold / Highlighting for ODWQS exceeded parameters
Bold / Underlined for PWQO exceeded parameters
Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	26-II	26-II	26-II	26-II	26-III	26-III	26-III	26-III	26-III	26-III	26-III	26-III	26-III	26-III	26-III	26-III
						16-Apr-24	10-Oct-24	16-Apr-25	30-Sep-25	26-Apr-16	20-Oct-16	12-Apr-17	05-Oct-17	11-Apr-18	02-Oct-18	23-Apr-19	09-Oct-19	13-Apr-20	15-Oct-20	21-Apr-21	18-Oct-21
Alkalinity	mg/L	500	OG	351	NV	347	***435***	***405***	***385***	**515**	**545**	**613**	**653**	**552**	**590**	**521**	**541**	**533**	**525**	**541**	**598**
Conductivity	µS/cm	-		-	NV	842	1060	999	949	1250	1300	1410	1480	1300	1380	1260	1250	1280	1220	1240	1270
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.7	7.84	7.67	7.75	7.41	7.55	7.59	7.4	7.49	7.36	7.64	7.58	7.52	7.61	7.7	7.43
TDS	mg/L	500	AO	362	NV	***444***	**567**	**533**	**505**	**697**	**759**	**801**	**805**	**715**	**765**	**688**	**743**	**702**	**701**	**715**	**785**
DOC	mg/L	5		3.7	NV	**6.6**	**7.4**	**5.3**	**7.5**	**6.7**	**6.6**	**9.2**	**10.5**	**11.8**	**12.4**	**9.5**	**13.5**	**10.3**	**7.2**	**10**	**12.1**
COD	mg/L	-		-	NV	13	27	24	6	23	29	26	33	31	35	35	27	42	47	20	33
Phenols	mg/L	-		-	0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	**0.008**	< 0.001	**0.004**	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Chloride	mg/L	250	AO	128	NV	40.5	70.5	59	63.3	89	87	95	79	67	81.9	74.9	90	78.5	75.9	74.7	89.7
Ammonia, total	mg/L	-		-	NV	<0.05	0.1	<0.05	<0.05	0.04	0.08	0.02	< 0.01	0.02	0.03	0.04	0.05	0.02	0.06	0.03	0.08
Unionized Ammonia	mg/L	-		-	0.02	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01
Fluoride	mg/L	2.4	MAC	0.7	NV	<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	< 0.1
Sulphate	mg/L	500	AO	255	NV	32	45	44	37	42	37	33	24	27	29	36	30	31	34	36	37
Nitrite (N)	mg/L	1	MAC	0.3	NV	<0.05	<0.05	<0.05	0.09	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	0.7	0.35	0.42	0.54	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05
Bromide	mg/L	-		-	NV	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	0.2	0.3	0.3	0.4	0.5	0.7	0.7	0.6	0.5	0.7	0.6	0.8	0.7	0.8	0.6	0.8
Hardness	mg/L	500	OG	361	NV	***365***	***480***	***432***	***437***	**612**	**729**	**719**	**711**	**658**	**670**	**597**	**654**	**605**	**614**	**627**	**670**
Aluminum	mg/L	0.1	OG	0.07	0.075	0.04	0.05	0.04	**0.09**	0.04	0.06	**0.1**	**0.11**	**0.09**	***0.07***	**0.09**	**0.11**	**0.08**	**0.08**	**0.1**	**0.09**
Antimony	mg/L	0.006	IMAC	0.002	0.02	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	0.0003	< 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	IMAC	0.006	0.005	<0.0001	<0.0001	<0.0001	<0.0001	0.0007	0.0007	0.0005	0.0007	0.0004	0.0005	0.0004	0.0005	0.0004	0.0005	0.0004	0.0005
Barium	mg/L	1	MAC	0.3	NV	0.139	0.182	0.172	0.165	0.22	0.28	***0.4***	***0.33***	0.278	***0.289***	0.258	***0.285***	0.26	0.28	0.27	***0.29***
Beryllium	mg/L	-		-	1.1	<0.0001	<0.0001	<0.0001	<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	IMAC	1.3	0.2	0.199	**0.307**	**0.283**	**0.23**	0.076	0.119	0.115	0.118	0.128	0.126	0.143	0.158	0.169	0.196	0.187	**0.212**
Cadmium	mg/L	0.005	MAC	0.001	0.0005	<0.000015	<0.000015	0.000015	0.000017	0.00004	0.00003	< 0.00002	0.00001	< 0.000014	0.000021	0.000017	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Calcium	mg/L	-		-	NV	110	141	132	131	181	213	206	201	191	190	175	186	173	173	180	191
Chromium	mg/L	0.05	MAC	0.013	0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	**0.0013**	**0.0034**	< 0.001	< 0.001	**0.002**	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001
Chromium (VI)	mg/L			-		<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/L	-		-	0.0009	**0.0042**	**0.0079**	**0.0054**	**0.0064**	**0.01**	**0.018**	**0.021**	**0.028**	**0.017**	**0.03**	**0.021**	**0.03**	**0.0256**	**0.032**	**0.025**	**0.02**
Copper	mg/L	1	AO	0.5	0.005	0.0046	**0.0057**	**0.0061**	**0.0056**	0.0043	0.0031	0.0035	0.0027	0.0025	0.0015	0.0019	0.0009	0.002	0.0012	0.0024	0.0012
Iron	mg/L	0.3	AO	0.15	0.3	<0.005	<0.005	<0.005	<0.005	0.05	***0.17***	***0.27***	**0.61**	**0.575**	**1.26**	**0.878**	**2.05**	**1.11**	**1.62**	**1.23**	**2.18**
Lead	mg/L	0.01	MAC	0.003	0.005	0.00003	<0.00002	<0.00002	<0.00002	0.00003	0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00004	< 0.00009	< 0.00004	0.00006	0.00008	< 0.00004
Magnesium	mg/L	-		-	NV	21.8	31	25	26.7	39	48.1	49.6	50.8	43.8	47.5	38.8	46.1	42	44.3	43.1	46.8
Manganese	mg/L	0.05	AO	0.03	NV	**0.447**	**0.876**	**0.659**	**0.963**	**1.61**	**2.22**	**2.38**	**2.47**	**2.38**	**2.58**	**2.33**	**2.72**	**2.43**	**2.38**	**2.5**	**2.35**
Mercury	mg/L	0.001	MAC	0.0003	0.0002	<0.00002	<0.00002	<0.00002	<0.00002	0.00003	0.00003	< 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	0.0005	0.0004	0.0004	0.0005	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0003	0.0003	0.0004	0.0003	0.0003
Nickel	mg/L	-		-	0.025	0.005	0.0069	0.0064	0.0064	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Potassium	mg/L	-		-	NV	1.4	1.8	1.6	1.5	1.7	2	2	2.1	1.7	2	1.8	2.1	2	2.3	2	2.4
Phosphorus-Total	mg/L	-		-	0.03	<0.1	<0.1	<0.1	<0.1	**0.08**	**1.26**	**1.71**	**0.05**	**0.17**	**0.5**	**0.63**	**1.41**	**2.89**	**0.64**	< 0.1	< 0.1
Selenium	mg/L	0.01	MAC	0.003	0.1	<0.001	<0.001	0.001	<0.001	< 0.001	0	< 0.001	< 0.001	0.002	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	0.002
Silver	mg/L	-		-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV	35.2	42.8	42.3	35.3	34	42.1	45.8	53.1	50.2	57.3	45.9	59.7	51.9	52.8	50.4	55.3
Strontium	mg/L	-		-	NV	0.268	0.387	0.337	0.354	0.44	0.57	0.51	0.55	0.452	0.494	0.433	0.5	0.446	0.473	0.45	0.47
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	< 0.00005
Vanadium	mg/L	-		-	0.006	0.0003	0.0003	0.0003	0.0003	0.002	0.0015	0.0025	0.0033	0.0002	0.00034	0.0003	0.0005	0.0003	0.0005	0.0004	0.0003
Zinc	mg/L	5	AO	2.5	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	< 0.005	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	9.5	10.6	7.7	10.1	8.5	11.8	8.2	11.9	-	-	8.3	10.6	9.1	10.8	7.8	10.7
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.59	7.65	7.83	7.19	7.59	6.99	7.03	7.71	7.49	7.36	7.05	6.9	7.26	6.85	6.98	7.61
Field Conductivity	µS/cm	-		-	NV	924	816	752	919	950	1235	1118	1205	1260	1330	1250	1028	1250	1070	1151	1124

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	26-III 20-Apr-22	26-III 12-Oct-22	26-III 19-Apr-23	26-III 12-Oct-23	26-III 16-Apr-24	26-III 10-Oct-24	26-III 16-Apr-25	26-III 30-Sep-25	27-II 25-Apr-16	27-II 20-Oct-16	27-II 12-Apr-17	27-II 05-Oct-17	27-II 10-Apr-18	27-II 01-Oct-18	27-II 22-Apr-19	27-II 08-Oct-19
Alkalinity	mg/L	500	OG	351	NV	**652**	**538**	**702**	**622**	**720**	**610**	**789**	**666**	217	226	216	226	201	221	202	216
Conductivity	µS/cm	-		-	NV	1530	1250	1620	1410	1620	1360	1700	1480	478	498	477	495	465	488	466	484
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.47	7.6	7.42	7.4	7.48	7.73	7.55	7.54	7.95	8	8.05	8.02	7.99	7.87	8.02	7.91
TDS	mg/L	500	AO	362	NV	**867**	**745**	**915**	**765**	**884**	**739**	**929**	**807**	262	282	262	253	240	246	241	252
DOC	mg/L	5		3.7	NV	**11.6**	3.5	**7.1**	**11.2**	**27.7**	**12.8**	**12.9**	**16.2**	1.1	1.2	1.9	1.8	2.2	1.9	1.6	2.5
COD	mg/L	-		-	NV	57	53	62	64	83	47	97	52	< 5	< 5	< 5	< 5	< 5	< 5	6	< 5
Phenols	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	**0.004**	< 0.001	< 0.002	< 0.002	< 0.002
Chloride	mg/L	250	AO	128	NV	99.8	89	110	92.3	106	92.1	102	103	7	7	8	7	7	8.3	7.4	5.2
Ammonia, total	mg/L	-		-	NV	1.71	0.02	0.36	0.2	0.07	0.14	0.07	0.07	0.01	0.03	< 0.01	< 0.01	0.02	0.02	0.05	0.02
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
Fluoride	mg/L	2.4	MAC	0.7	NV	< 0.1	< 0.1	< 1	<0.1	<0.1	<0.1	<0.7	<0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Sulphate	mg/L	500	AO	255	NV	21	34	< 10	27	16	31	13	21	16	14	16	11	13	14	16	13
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.40	<0.05	< 0.1	< 0.1	0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.40	<0.05	1.8	2.1	1.8	2.2	2.28	2.19	1.98	2.48
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	< 0.4	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	2.1	0.7	1.3	0.9	1.1	0.7	1.1	0.9	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.1
Hardness	mg/L	500	OG	361	NV	**784**	**677**	**851**	**701**	**782**	**658**	**796**	**691**	252	290	248	247	247	224	237	255
Aluminum	mg/L	0.1	OG	0.07	0.075	0.06	0.06	**0.14**	0.06	***0.07***	0.06	0.06	**0.1**	0.02	0.04	0.05	0.04	0.05	0.05	0.04	0.06
Antimony	mg/L	0.006	IMAC	0.002	0.02	0.0001	0.0002	< 0.0001	0.0001	<0.0001	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	0.025	IMAC	0.006	0.005	0.0005	0.0007	0.0005	0.0008	0.0006	0.0006	0.0005	0.0011	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	MAC	0.3	NV	***0.352***	***0.311***	***0.38***	***0.321***	***0.352***	***0.288***	***0.34***	***0.333***	0.05	0.07	0.08	0.07	0.057	0.057	0.052	0.064
Beryllium	mg/L	-		-	1.1	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	IMAC	1.3	0.2	**0.235**	0.19	**0.25**	**0.247**	**0.277**	**0.277**	**0.31**	**0.299**	< 0.005	0.039	0.07	0.06	0.052	0.044	0.066	0.074
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000015	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015
Calcium	mg/L	-		-	NV	217	191	235	189	211	176	216	184	85	98	83	82	83.3	74.8	79.8	85.5
Chromium	mg/L	0.05	MAC	0.013	0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	0.0008	**0.0011**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (VI)	mg/L			-		< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-
Cobalt	mg/L	-		-	0.0009	**0.038**	**0.029**	**0.03**	**0.0298**	**0.0281**	**0.019**	**0.0267**	**0.0186**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.005**	**0.01**	< 0.005
Copper	mg/L	1	AO	0.5	0.005	0.0012	0.0012	0.0014	0.0007	0.0008	0.0016	0.0018	0.0006	0.001	0.001	0.0011	0.0006	0.0011	0.0014	0.0016	0.0007
Iron	mg/L	0.3	AO	0.15	0.3	**2.99**	**3.23**	**3.06**	**5.69**	**4.9**	**5.56**	**3.31**	**12.9**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Lead	mg/L	0.01	MAC	0.003	0.005	0.00004	0.00004	< 0.00004	0.00004	0.00003	0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Magnesium	mg/L	-		-	NV	58.8	48.7	64.2	55.5	62.2	53.1	62.2	56.1	9.5	11.1	10.1	10	9.38	9.09	9.02	10
Manganese	mg/L	0.05	AO	0.03	NV	**2.85**	**2.37**	**2.63**	**2.02**	**2.25**	**1.77**	**2.17**	**1.57**	< 0.001	0	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Mercury	mg/L	0.001	MAC	0.0003	0.0002	< 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	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	-		-	0.04	0.0003	0.0004	0.0003	0.0003	0.0004	0.0004	0.0004	0.0005	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	< 0.01	0.0079	0.0096	0.0071	0.0098	0.0068	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Potassium	mg/L	-		-	NV	2.5	2.2	2.3	2.5	2.4	2.4	2.5	2.4	1.3	1.5	1.3	1.5	1.1	1.4	1.2	1.6
Phosphorus-Total	mg/L	-		-	0.03	**1.13**	**1.12**	**0.95**	**0.77**	<0.1	<0.1	<0.1	<0.1	0.03	**0.22**	**0.12**	**0.28**	**0.13**	**0.15**	**0.08**	**0.09**
Selenium	mg/L	0.01	MAC	0.003	0.1	0.002	0.002	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	< 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	0.00003	< 0.00002	0.00003	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV	68.6	51.8	62.1	63.5	66.8	52	64.3	62.4	5.6	6.1	5.8	6.1	5.7	5.9	6.4	6.9
Strontium	mg/L	-		-	NV	0.596	0.488	0.603	0.568	0.64	0.531	0.604	0.573	0.16	0.18	0.14	0.15	0.136	0.138	0.135	0.157
Thallium	mg/L	-		-	0.0003	< 0.00005	< 0.005	< 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	0.0005	0.0006	< 0.0004	0.001	0.0004	0.0004	0.0004	0.0006	0.0009	0.0008	0.0009	0.0009	0.0002	0.0003	0.0003	0.0003
Zinc	mg/L	5	AO	2.5	0.02	< 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	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	8.1	12.3	8.2	10.6	9.1	10.6	7.3	12	6.1	11.3	6.6	12.6	-	-	7.6	11.2
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	6.85	6.88	7.02	6.79	7.29	7.22	7.85	6.9	8.06	7.99	7.97	7.95	7.99	7.87	7.85	7.68
Field Conductivity	µS/cm	-		-	NV	1440	1297	1430	1182	1660	1004	1105	1443	435	465	393	458	457	454	660	500

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	27-II	27-II	27-II	27-II	27-II	27-II	27-II	27-II	27-II	27-II	27-II	27-II	29-II	29-II	29-II	29-II
						13-Apr-20	14-Oct-20	21-Apr-21	18-Oct-21	20-Apr-22	12-Oct-22	19-Apr-23	12-Oct-23	16-Apr-24	10-Oct-24	16-Apr-25	30-Sep-25	25-Apr-16	20-Oct-16	12-Apr-17	05-Oct-17
Alkalinity	mg/L	500	OG	351	NV	209	225	221	235	219	228	220	243	228	237	227	229	***393***	***398***	***410***	***403***
Conductivity	µS/cm	-		-	NV	479	533	476	472	493	473	491	504	498	485	500	487	876	894	918	901
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.93	7.86	7.92	7.92	7.64	7.82	7.91	7.47	7.86	7.96	7.83	7.95	7.75	7.87	7.83	7.8
TDS	mg/L	500	AO	362	NV	254	265	260	272	258	267	262	261	258	251	259	252	***492***	**520**	**518**	***487***
DOC	mg/L	5		3.7	NV	1.9	2.2	***3.7***	0.6	2.4	1.1	1.5	***3.7***	***3.7***	2.6	1.9	***3.7***	2.6	3	***3.8***	**9.2**
COD	mg/L	-		-	NV	6	< 5	10	< 5	< 5	32	18	7	10	7	18	<5	119	6	98	177
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	<0.001	<0.001	< 0.001	**0.005**	< 0.001	**0.004**
Chloride	mg/L	250	AO	128	NV	12	7.9	7.1	7.7	6.8	7.3	7.3	8.1	9.4	8.2	8.4	7.1	31	30	32	27
Ammonia, total	mg/L	-		-	NV	< 0.01	0.04	0.03	0.04	1.01	< 0.01	0.48	2.57	0.09	0.1	0.06	0.36	0.07	0.07	0.04	0.06
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	-	-	-	-
Fluoride	mg/L	2.4	MAC	0.7	NV	< 0.1	< 0.1	< 0.1	< 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
Sulphate	mg/L	500	AO	255	NV	19	17	16	16	18	14	< 10	13	13	13	17	14	44	42	40	31
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	***0.4***	< 0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	1.95	1.93	1.99	2.18	2.13	2.92	< 0.5	1.76	1.93	2	1.62	2.1	< 0.1	< 0.1	< 0.1	< 0.05
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	< 0.4	-	-	-
TKN	mg/L	-		-	NV	0.1	0.3	0.2	0.2	1.1	0.3	0.7	2.8	0.2	0.3	0.2	0.6	0.7	0.6	0.8	0.7
Hardness	mg/L	500	OG	361	NV	237	258	258	266	250	271	268	265	244	251	241	252	***444***	**510**	***486***	***452***
Aluminum	mg/L	0.1	OG	0.07	0.075	0.05	0.03	0.05	0.03	0.02	0.02	0.05	0.03	0.02	0.03	0.02	0.06	0.03	**0.14**	***0.09***	***0.1***
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 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	0.0002	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0003	0.0002	0.0004
Barium	mg/L	1	MAC	0.3	NV	0.057	0.07	0.062	0.072	0.064	0.076	0.067	0.07	0.062	0.067	0.061	0.067	0.13	0.17	0.23	0.17
Beryllium	mg/L	-		-	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	IMAC	1.3	0.2	0.118	0.108	0.081	0.074	0.075	0.059	0.08	0.081	0.066	0.076	0.063	0.059	0.099	0.148	0.179	0.173
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014
Calcium	mg/L	-		-	NV	79.1	85.8	86.7	90	83.4	91.7	89.6	89	81.5	82.9	80.4	84.5	139	159	150	139
Chromium	mg/L	0.05	MAC	0.013	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	< 0.0002	0.0009	**0.0016**	< 0.001
Chromium (VI)	mg/L			-		-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-
Cobalt	mg/L	-		-	0.0009	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	**0.007**	< 0.005	0.0002	0.0002	0.0002	0.0001	0.0002	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	AO	0.5	0.005	0.0011	0.0036	0.0017	0.0014	0.0013	0.0011	0.001	0.0013	0.0008	0.0014	0.0008	0.0008	0.0004	0.0004	0.0001	0.0003
Iron	mg/L	0.3	AO	0.15	0.3	< 0.005	< 0.005	0.012	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.91**	**1.12**	**0.97**	**1.16**
Lead	mg/L	0.01	MAC	0.003	0.005	< 0.00002	0.00002	0.00004	< 0.00002	< 0.00002	0.00004	< 0.00002	0.00005	<0.00002	<0.00002	<0.00002	<0.00002	0.00004	0.00009	< 0.00002	0.00006
Magnesium	mg/L	-		-	NV	9.57	10.5	10.1	10	10.1	10.2	10.8	10.4	9.81	10.6	9.58	10	23.8	27.5	27	25.5
Manganese	mg/L	0.05	AO	0.03	NV	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	0.001	***0.03***	***0.04***	***0.04***	***0.03***
Mercury	mg/L	0.001	MAC	0.0003	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	0.00003	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	-		-	0.04	< 0.0001	0.0002	0.0002	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002
Nickel	mg/L	-		-	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0003	0.0009	0.0003	0.0008	0.0008	< 0.01	< 0.01	< 0.01	< 0.01
Potassium	mg/L	-		-	NV	1.3	1.8	1.4	1.8	1.5	1.8	1.3	1.8	1.5	1.9	1.4	1.7	1.9	2.2	2.2	2.1
Phosphorus-Total	mg/L	-		-	0.03	< 0.01	**0.06**	< 0.1	< 0.1	**0.04**	0.02	< 0.01	**0.04**	<0.1	<0.1	<0.1	<0.1	**15.4**	**12.1**	**21.1**	**13.3**
Selenium	mg/L	0.01	MAC	0.003	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	< 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	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Sodium	mg/L	200	AO	102	NV	7.2	7.4	5.7	6.1	5.1	4.9	4.8	5.5	5	5.8	4.7	4.8	16.3	19.4	18.2	18.3
Strontium	mg/L	-		-	NV	0.144	0.167	0.152	0.16	0.154	0.161	0.156	0.17	0.158	0.165	0.144	0.159	0.36	0.38	0.38	0.34
Thallium	mg/L	-		-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.005	< 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	0.0004	0.0003	0.0002	0.0003	0.0003	< 0.0001	0.0004	0.0002	0.0003	0.0002	0.0003	0.0013	0.0012	0.0012	0.0014
Zinc	mg/L	5	AO	2.5	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	< 0.005	< 0.005	0.01	0.01
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	7.1	9.6	5	11	6.4	13.1	7.3	10.3	8.5	13.1	6.8	11.6	5.2	9.9	7	10
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.05	7.7	7.95	7.8	7.71	7.73	7.74	7.91	8.12	7.69	8.2	7.53	7.79	7.61	7.46	7.4
Field Conductivity	µS/cm	-		-	NV	469	1070	440	511	475	515	435	875	571	441	394	484	670	765	670	765

ODWQS Ontario Drinking Water Quality Objectives
MAC Maximum Acceptable Concentration
IMAC Interim Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operatioal Guidelines
Bold / Highlighting for ODWQS exceeded parameters
Bold / Underlined for PWQO exceeded parameters
Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	29-II	29-II	29-II	29-II	29-II	29-II	29-II	29-II	29-II	29-II	29-II	29-II	29-II	29-II	29-II	29-II
						10-Apr-18	01-Oct-18	22-Apr-19	08-Oct-19	13-Apr-20	14-Oct-20	21-Apr-21	18-Oct-21	20-Apr-22	12-Oct-22	19-Apr-23	12-Oct-23	16-Apr-24	10-Oct-24	16-Apr-25	30-Sep-25
Alkalinity	mg/L	500	OG	351	NV	***395***	***413***	***407***	***385***	***388***	***408***	***413***	***429***	***405***	***417***	***417***	***451***	***432***	***431***	***435***	***413***
Conductivity	µS/cm	-		-	NV	886	892	899	870	890	912	896	877	911	880	926	965	945	925	941	912
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.8	7.72	7.84	7.77	7.72	7.78	7.82	7.71	7.69	7.79	7.78	7.46	7.74	7.98	7.78	7.85
TDS	mg/L	500	AO	362	NV	***491***	***484***	***495***	**501**	***487***	**519**	**507**	**531**	***497***	**530**	**520**	**514**	**502**	***491***	***500***	***484***
DOC	mg/L	5		3.7	NV	**5.6**	***4.3***	3.6	**5.3**	2.3	***3.7***	6	2	***4.3***	2.2	***3.9***	**6.6**	**6.8**	**5.9**	3.5	**7.3**
COD	mg/L	-		-	NV	33	74	94	24	94	84	185	25	195	219	186	39	194	944	209	60
Phenols	mg/L	-		-	0.001	< 0.001	**0.015**	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloride	mg/L	250	AO	128	NV	26.8	29.2	29.4	40.9	32.5	32.9	29.7	32.3	28.7	32.6	31	29.9	30.2	35.7	36.4	35
Ammonia, total	mg/L	-		-	NV	0.06	0.1	0.08	0.06	0.05	0.09	0.05	0.16	0.05	0.02	0.28	0.37	<0.05	<0.05	0.08	0.16
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	<0.01
Fluoride	mg/L	2.4	MAC	0.7	NV	< 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	<0.1
Sulphate	mg/L	500	AO	255	NV	31	34	33	33	33	37	37	38	33	36	35	36	37	40	42	42
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 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	<0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05	< 0.05	0.06	< 0.05	< 0.05	0.12	<0.05	<0.05	<0.05	<0.05	<0.05
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	0.9	1.2	0.7	0.4	0.7	0.6	1.4	1.3	1.9	0.7	0.6	0.8	1	2.9	1.5	2.8
Hardness	mg/L	500	OG	361	NV	***476***	***417***	***456***	***469***	***451***	***482***	***454***	***477***	***454***	***495***	***486***	***475***	***456***	***458***	***449***	***462***
Aluminum	mg/L	0.1	OG	0.07	0.075	**0.09**	0.06	**0.08**	**0.1**	***0.07***	0.06	**0.08**	**0.08**	0.04	**0.11**	**0.1**	0.04	0.05	**0.09**	0.04	**0.09**
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 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	<0.0001	<0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0002	0.0004	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0003	0.0004	0.0002	0.0003	0.0003	0.0005	0.0003
Barium	mg/L	1	MAC	0.3	NV	0.159	0.158	0.159	0.157	0.156	0.18	0.156	0.177	0.172	0.189	0.184	0.177	0.17	0.169	0.182	0.173
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	IMAC	1.3	0.2	0.173	0.161	0.176	0.192	0.189	**0.219**	0.196	**0.216**	0.197	**0.218**	**0.225**	**0.233**	**0.217**	**0.225**	**0.217**	**0.221**
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Calcium	mg/L	-		-	NV	149	128	144	146	140	149	142	149	142	157	151	149	144	142	142	147
Chromium	mg/L	0.05	MAC	0.013	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	<0.001
Chromium (VI)	mg/L			-		-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	mg/L	-		-	0.0009	< 0.005	**0.008**	**0.007**	< 0.005	< 0.0001	**0.005**	< 0.005	< 0.005	**0.008**	< 0.005	< 0.005	0.0004	0.0004	0.0004	0.0004	0.0003
Copper	mg/L	1	AO	0.5	0.005	0.0019	0.0014	0.0012	0.0003	0.0011	0.0004	0.0012	0.0005	0.0004	0.0005	0.0003	0.0007	0.0017	0.0009	0.0004	0.0004
Iron	mg/L	0.3	AO	0.15	0.3	**0.888**	**0.938**	**0.977**	**1.17**	**1.15**	**1.15**	**1.08**	**1.4**	**1.24**	**1.5**	**1.3**	**1.5**	**1.3**	**1.52**	**1.29**	**1.42**
Lead	mg/L	0.01	MAC	0.003	0.005	0.00031	0.00002	0.00004	0.00008	0.00008	0.00003	0.00007	0.00002	0.00004	0.00011	< 0.00002	0.00003	0.0001	0.00011	0.00004	<0.00002
Magnesium	mg/L	-		-	NV	25.2	23.7	23.3	25.2	24.6	27	24.2	25.5	24.2	24.7	26.4	25	23.5	24.7	23.2	23.1
Manganese	mg/L	0.05	AO	0.03	NV	***0.034***	***0.028***	***0.029***	***0.034***	***0.03***	***0.032***	***0.034***	***0.033***	***0.032***	***0.041***	***0.033***	***0.033***	***0.034***	***0.036***	***0.036***	***0.029***
Mercury	mg/L	0.001	MAC	0.0003	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	<0.00002
Molybdenum	mg/L	-		-	0.04	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	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	0.005	0.0053	0.0048	0.0055	0.0047
Potassium	mg/L	-		-	NV	1.9	2.1	2	2.2	2.1	2.4	2.1	2.4	2.2	2.3	2	2.3	2.1	2.2	2.1	2.1
Phosphorus-Total	mg/L	-		-	0.03	**2.31**	**14.8**	**11.5**	**6.59**	**10.5**	**10.2**	< 0.1	< 0.1	**38.2**	**7.03**	**9.69**	**7.83**	<0.1	<0.1	<0.1	<0.1
Selenium	mg/L	0.01	MAC	0.003	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	<0.001
Silver	mg/L	-		-	0.0001	< 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	<0.0001	<0.0001	<0.0001
Sodium	mg/L	200	AO	102	NV	18.4	18.5	18	21.3	21	24.9	23.2	24.7	23	24.6	22.8	25.8	24.1	23.7	23.3	23.3
Strontium	mg/L	-		-	NV	0.334	0.318	0.33	0.359	0.342	0.39	0.344	0.338	0.342	0.348	0.353	0.367	0.354	0.341	0.331	0.337
Thallium	mg/L	-		-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	**0.006**	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-		-	0.006	< 0.0001	0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0003	0.0001	<0.0001	<0.0001	0.0002	0.0001	<0.0001
Zinc	mg/L	5	AO	2.5	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	<0.005	<0.005	<0.005	<0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	-	-	8.1	10.6	8.4	9.7	6.1	9.6	7.3	13.2	5.7	10.8	7.9	9.8	5.6	13.6
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.8	7.72	7.52	7.39	8.5	7.35	7.57	7.85	7.49	7.26	7.56	7.47	7.71	7.45	7.47	7.23
Field Conductivity	µS/cm	-		-	NV	882	849	880	720	850	820	880	790	864	933	1105	1046	1022	882	678	893

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	29-III 25-Apr-16	29-III 20-Oct-16	29-III 12-Apr-17	29-III 05-Oct-17	29-III 10-Apr-18	29-III 01-Oct-18	29-III 22-Apr-19	29-III 08-Oct-19	29-III 13-Apr-20	29-III 14-Oct-20	29-III 21-Apr-21	29-III 18-Oct-21	29-III 20-Apr-22	29-III 12-Oct-22	29-III 19-Apr-23	29-III 12-Oct-23
Alkalinity	mg/L	500	OG	351	NV	286	295	298	292	276	297	283	283	289	297	299	310	302	313	318	330
Conductivity	µS/cm	-		-	NV	626	655	655	652	641	663	660	651	688	677	682	656	712	681	735	713
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.99	8.02	7.99	8.02	7.93	7.8	7.99	7.87	7.86	7.9	7.92	7.85	7.86	7.83	7.88	7.55
TDS	mg/L	500	AO	362	NV	346	***370***	***367***	350	345	356	356	***367***	***369***	***382***	***382***	***399***	***379***	***401***	***410***	***370***
DOC	mg/L	5		3.7	NV	2.1	2.7	3	**5.5**	3.2	3.6	3.5	***4.7***	3	***3.8***	**5.2**	***3.8***	***3.9***	3.3	2	**5.7**
COD	mg/L	-		-	NV	43	8	48	92	7	16	37	22	9	70	18	6	10	44	43	16
Phenols	mg/L	-		-	0.001	< 0.001	**0.006**	< 0.001	**0.004**	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001
Chloride	mg/L	250	AO	128	NV	16	16	17	15	15.9	18.5	18.9	24.9	21.8	21.5	22	22.8	22.4	22	24.1	20.8
Ammonia, total	mg/L	-		-	NV	0.04	0.11	0.03	0.09	0.06	0.07	0.04	0.05	0.02	0.04	0.04	0.06	0.64	0.05	0.35	0.09
Unionized Ammonia	mg/L	-		-	0.02	-	-	-	-	-	-	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	<0.01
Fluoride	mg/L	2.4	MAC	0.7	NV	< 0.1	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1	<0.1
Sulphate	mg/L	500	AO	255	NV	29	30	31	25	26	31	31	32	33	34	34	37	33	37	13	33
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 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	< 0.05	<0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.17	<0.05
Bromide	mg/L	-		-	NV	< 0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	0.5	0.6	0.7	0.8	0.5	0.4	0.4	0.5	0.2	0.3	0.4	0.3	1.2	0.3	0.7	0.4
Hardness	mg/L	500	OG	361	NV	322	361	350	333	347	314	342	351	350	***367***	***369***	***374***	354	***382***	***403***	***369***
Aluminum	mg/L	0.1	OG	0.07	0.075	0.03	0.05	***0.07***	**0.1**	0.06	0.06	***0.07***	**0.08**	0.06	0.05	***0.07***	**0.08**	0.03	0.04	**0.08**	0.03
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 0.0001	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	< 0.0001	<0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0003	0.0004	< 0.0001	0.0003	0.0001	0.0002	< 0.0001	0.0003	0.0001	0.0004	0.0002	0.0002	< 0.0001	0.0003	0.0001	0.0003
Barium	mg/L	1	MAC	0.3	NV	0.11	0.15	0.19	0.16	0.14	0.146	0.131	0.142	0.139	0.161	0.143	0.162	0.141	0.172	0.163	0.163
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	<0.0001
Boron	mg/L	5	IMAC	1.3	0.2	< 0.005	0.029	0.034	0.033	0.026	0.027	0.029	0.026	0.036	0.043	0.034	0.04	0.041	0.047	0.045	0.05
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015
Calcium	mg/L	-		-	NV	102	114	110	104	110	98	110	110	111	115	117	118	112	121	127	116
Chromium	mg/L	0.05	MAC	0.013	0.001	< 0.0002	0.0005	**0.0012**	< 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	-		-	0.0009	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.007**	< 0.005	0.0006	< 0.005	< 0.005	< 0.005	< 0.005	**0.006**	< 0.005	0.0006
Copper	mg/L	1	AO	0.5	0.005	0.0003	0.0004	0.0003	0.0006	0.0007	0.0006	0.0009	0.0002	0.0004	0.0004	0.0012	0.0009	0.0009	0.0006	0.0003	0.0006
Iron	mg/L	0.3	AO	0.15	0.3	**0.39**	**0.54**	0.03	**0.33**	0.134	0.128	0.101	**0.792**	**0.465**	**1.09**	**0.925**	**0.624**	**0.38**	**0.472**	**0.959**	**1.02**
Lead	mg/L	0.01	MAC	0.003	0.005	< 0.00002	0.00004	< 0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004	< 0.00002	0.00003	0.00003	< 0.00002	<0.00002
Magnesium	mg/L	-		-	NV	16.4	18.8	18.3	17.8	17.4	16.9	16.3	18.4	17.7	19.2	18.6	19.3	17.8	19.3	20.9	19.3
Manganese	mg/L	0.05	AO	0.03	NV	**0.07**	**0.07**	***0.05***	**0.07**	**0.065**	**0.071**	**0.093**	**0.051**	**0.073**	***0.045***	**0.052**	**0.069**	**0.083**	**0.069**	**0.062**	**0.052**
Mercury	mg/L	0.001	MAC	0.0003	0.0002	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	< 0.00002	< 0.00002	<0.00002
Molybdenum	mg/L	-		-	0.04	0.0003	0.0004	0.0004	0.0005	< 0.0001	0.0006	0.0003	0.0003	0.0002	0.0003	0.0002	0.0003	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	< 0.01	0.0018
Potassium	mg/L	-		-	NV	1.5	2	1.9	2.1	1.4	2.2	1.6	2	1.8	2.1	1.6	2.2	1.7	2.2	1.6	2
Phosphorus-Total	mg/L	-		-	0.03	**1.19**	**3.05**	**1.15**	**6.35**	**3.89**	**1.28**	**1.55**	**2.61**	**0.35**	**1.02**	< 0.1	< 0.1	**0.18**	**0.5**	**1.04**	**1.34**
Selenium	mg/L	0.01	MAC	0.003	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	<0.001
Silver	mg/L	-		-	0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Sodium	mg/L	200	AO	102	NV	9.2	11.6	10.5	10.7	8	10.4	8.1	9.5	10.2	11	9.1	12.5	8.9	10.6	9.3	10.8
Strontium	mg/L	-		-	NV	0.24	0.27	0.24	0.25	0.24	0.232	0.239	0.257	0.264	0.29	0.272	0.258	0.273	0.271	0.288	0.276
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	< 0.005	< 0.00005	<0.00005
Vanadium	mg/L	-		-	0.006	0.0009	0.0007	0.001	0.001	0.0001	0.0002	0.0002	0.0001	0.0001	0.0001	< 0.0001	< 0.0001	0.0001	0.0002	0.0001	0.0001
Zinc	mg/L	5	AO	2.5	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	< 0.005	< 0.005	< 0.005	<0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	5.1	11.1	5.5	11.6	-	-	7	11.5	8.6	10.7	5.7	10.1	6.8	13.3	5.2	11.4
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	8.04	7.61	8.03	7.58	7.93	7.8	7.48	7.6	7.2	7.45	6.35	7.61	7.7	7.49	7.64	7.67
Field Conductivity	µS/cm	-		-	NV	500	570	527	560	640	641	660	545	651	640	320	540	688	736	889	795

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	29-III 16-Apr-24	29-III 10-Oct-24	29-III 16-Apr-25	29-III 30-Sep-25	30-I 25-Apr-16	30-I 20-Oct-16	30-I 12-Apr-17	30-I 06-Oct-17	30-I 11-Apr-18	30-I 02-Oct-18	30-I 23-Apr-19	30-I 09-Oct-19	30-I 13-Apr-20	30-I 15-Oct-20	30-I 21-Apr-21	30-I 18-Oct-21
Alkalinity	mg/L	500	OG	351	NV	322	***374***	341	326	223	214	214	224	217	210	237	209	191	285	204	290
Conductivity	µS/cm	-		-	NV	731	767	746	724	567	592	584	586	571	596	567	575	561	606	550	564
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.89	7.96	7.92	7.94	7.97	7.98	8.01	7.68	7.94	7.87	7.97	7.91	7.87	7.74	7.88	7.6
TDS	mg/L	500	AO	362	NV	***381***	***402***	***390***	***377***	295	318	304	298	291	304	306	318	283	337	285	328
DOC	mg/L	5		3.7	NV	**5.6**	**6.2**	3.1	**6.1**	**8.4**	**8.2**	**5.8**	**9.3**	**7.7**	**8.2**	**7.5**	**8.1**	**5.2**	**45.8**	**5.8**	**25.3**
COD	mg/L	-		-	NV	39	66	50	21	72	25	71	52	53	86	61	50	54	170	51	120
Phenols	mg/L	-		-	0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	**0.006**	< 0.001	**0.004**	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Chloride	mg/L	250	AO	128	NV	22.3	18.3	26.7	24.1	44	56	54	44	44.7	57.3	48.8	75.7	54.9	23.2	49.4	21.5
Ammonia, total	mg/L	-		-	NV	<0.05	0.24	0.09	0.07	0.32	0.3	0.29	0.4	0.31	0.34	0.29	0.35	0.28	0.33	0.3	0.37
Unionized Ammonia	mg/L	-		-	0.02	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01
Fluoride	mg/L	2.4	MAC	0.7	NV	<0.1	<0.1	<0.1	<0.1	0.2	0.2	0.3	0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Sulphate	mg/L	500	AO	255	NV	33	29	36	35	6	5	7	2	6	7	9	< 1	8	4	5	2
Nitrite (N)	mg/L	1	MAC	0.3	NV	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	<0.05	0.06	<0.05	<0.05	0.1	< 0.1	< 0.1	0.1	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.05	0.06
Bromide	mg/L	-		-	NV	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	0.4	0.6	0.3	0.4	1.3	1.1	1.3	1	1.4	1.7	1.1	1.3	1.4	2.7	1.3	2.2
Hardness	mg/L	500	OG	361	NV	359	***368***	***366***	***380***	277	319	288	288	276	285	266	286	261	334	265	321
Aluminum	mg/L	0.1	OG	0.07	0.075	0.03	0.03	**0.09**	**0.08**	0.02	0.06	0.06	***0.07***	0.05	0.04	0.05	0.06	0.05	***0.07***	***0.07***	**0.08**
Antimony	mg/L	0.006	IMAC	0.002	0.02	<0.0001	0.0001	<0.0001	<0.0001	< 0.0001	0.0003	< 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	IMAC	0.006	0.005	0.0001	0.0003	0.0001	0.0003	0.0006	0.0009	0.0002	0.0005	0.0001	0.0001	0.0002	0.0003	< 0.0001	0.001	0.0001	0.0005
Barium	mg/L	1	MAC	0.3	NV	0.15	0.171	0.151	0.169	0.11	0.15	0.18	0.16	0.128	0.146	0.126	0.152	0.135	0.133	0.124	0.12
Beryllium	mg/L	-		-	1.1	<0.0001	<0.0001	<0.0001	<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	IMAC	1.3	0.2	0.048	0.092	0.053	0.058	0.057	0.133	0.115	0.138	0.094	0.118	0.086	0.124	0.087	0.059	0.087	0.053
Cadmium	mg/L	0.005	MAC	0.001	0.0005	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Calcium	mg/L	-		-	NV	113	113	115	119	77	88.1	75.7	77.6	74.3	76.7	73.3	77.1	69.7	108	72	106
Chromium	mg/L	0.05	MAC	0.013	0.001	<0.001	<0.001	<0.001	<0.001	< 0.0002	0.0004	0.0007	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001
Chromium (VI)	mg/L			-		<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/L	-		-	0.0009	0.0007	0.0007	0.0006	0.0005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	AO	0.5	0.005	0.0004	0.001	0.0005	0.0004	0.0002	0.0001	0.0016	0.0005	0.0006	0.0003	0.0004	0.0002	0.0012	0.0005	0.0011	0.0004
Iron	mg/L	0.3	AO	0.15	0.3	**0.822**	**0.373**	**0.83**	**0.941**	**1.53**	**1.4**	**1.52**	**1.77**	**1.17**	**1.28**	**1.11**	**1.61**	**1.19**	**1.73**	**1.45**	**1.72**
Lead	mg/L	0.01	MAC	0.003	0.005	0.00003	<0.00002	0.00008	<0.00002	< 0.00002	0.00003	< 0.00002	0.00004	< 0.00002	0.00003	0.00005	0.00004	0.00005	0.00013	0.00007	0.00003
Magnesium	mg/L	-		-	NV	18.8	20.7	18.8	20	20.5	24	24.1	22.8	22	22.8	20.2	22.7	21.2	15.6	20.6	13.7
Manganese	mg/L	0.05	AO	0.03	NV	**0.092**	**0.078**	**0.088**	**0.055**	***0.05***	**0.07**	***0.05***	**0.06**	***0.046***	***0.048***	***0.04***	***0.045***	***0.035***	**0.201**	**0.053**	**0.22**
Mercury	mg/L	0.001	MAC	0.0003	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	< 0.00002
Molybdenum	mg/L	-		-	0.04	0.0002	0.0004	0.0001	0.0002	< 0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	0.0002	0.0005	< 0.0001	0.0003	< 0.0001	0.0001
Nickel	mg/L	-		-	0.025	0.0016	0.0032	0.0024	0.0019	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Potassium	mg/L	-		-	NV	1.7	2.4	1.7	2	1.9	2.5	2.2	2.4	1.8	2.4	2	2.6	2.1	2	2.1	1.3
Phosphorus-Total	mg/L	-		-	0.03	<0.1	<0.1	<0.1	<0.1	**7.58**	**0.37**	**0.72**	**0.41**	**0.98**	**0.82**	**0.67**	**1.31**	**1.05**	**0.79**	**0.75**	**0.35**
Selenium	mg/L	0.01	MAC	0.003	0.1	<0.001	<0.001	<0.001	<0.001	< 0.001	0	< 0.001	< 0.001	0.002	0.002	0.001	0.002	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	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV	9.8	12	9.7	10.7	9.3	12.1	10.3	11	10.6	10.9	9.7	12.4	10.6	10.9	11.7	7.8
Strontium	mg/L	-		-	NV	0.285	0.279	0.273	0.287	0.79	0.9	0.86	0.8	0.795	0.84	0.793	0.875	0.81	0.586	0.771	0.483
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	< 0.00005
Vanadium	mg/L	-		-	0.006	<0.0001	0.0002	0.0003	<0.0001	0.0008	0.0007	0.0005	0.001	0.0001	0.00016	0.0001	0.0003	0.0002	0.0012	0.0002	0.0008
Zinc	mg/L	5	AO	2.5	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	< 0.005	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	7.8	10	5.3	14.1	5.2	12.9	6.7	12.3	-	-	7.1	11.9	7.9	11.7	6.7	11.6
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.7	7.34	7.74	7.54	8.05	7.59	7.5	7.57	7.94	7.87	7.8	7.75	7.44	7.05	8.05	7.26
Field Conductivity	µS/cm	-		-	NV	819	681	581	677	460	525	448	520	567	597	430	495	621	540	550	611

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	30-I	30-I	30-I	30-I	30-I	30-I	30-I	30-I	31-I	31-I	31-I	31-I	31-I	31-I	31-I	31-I
						20-Apr-22	12-Oct-22	19-Apr-23	12-Oct-23	16-Apr-24	10-Oct-24	16-Apr-25	30-Sep-25	25-Apr-16	20-Oct-16	12-Apr-17	06-Oct-17	11-Apr-18	02-Oct-18	23-Apr-19	09-Oct-19
Alkalinity	mg/L	500	OG	351	NV	219	216	202	296	216	229	219	216	**708**	**837**	**843**	**861**	**902**	**904**	**808**	**893**
Conductivity	µS/cm	-		-	NV	550	545	561	614	562	565	556	564	1790	2100	2130	2190	2080	2320	2150	2280
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.65	7.78	7.92	7.16	8.07	7.89	7.93	7.99	7.51	7.48	7.46	7.17	7.84	7.32	7.48	7.4
TDS	mg/L	500	AO	362	NV	287	290	294	319	291	293	288	292	**1020**	**1240**	**1220**	**1262**	**1240**	**1360**	**1225**	**1355**
DOC	mg/L	5		3.7	NV	**8.6**	***4.1***	8	9	**7.9**	**10.6**	**9.2**	**8.3**	**10.8**	**11.2**	**13.3**	**16.5**	**18.3**	**21.3**	**15.9**	**20.8**
COD	mg/L	-		-	NV	50	114	50	160	92	211	85	71	215	67	341	164	188	351	468	839
Phenols	mg/L	-		-	0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	**0.009**	**0.017**	**0.008**	< 0.001	**0.013**	< 0.002	< 0.002
Chloride	mg/L	250	AO	128	NV	42.4	39.3	48	21.2	45.3	45.7	47.5	56.5	***175***	***192***	***198***	***179***	***180***	***214***	***209***	**262**
Ammonia, total	mg/L	-		-	NV	1.52	0.39	0.34	0.64	1.46	0.96	0.16	0.36	0.65	0.76	0.67	0.9	0.71	1.06	0.81	0.96
Unionized Ammonia	mg/L	-		-	0.02	0.02	< 0.01	< 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	< 0.01	< 0.01
Fluoride	mg/L	2.4	MAC	0.7	NV	< 0.1	0.3	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.1	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 1
Sulphate	mg/L	500	AO	255	NV	4	6	43	10	5	6	11	6	31	40	51	52	56	77	66	28
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.05	< 0.05	< 0.5	0.06	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	**1.1**	< 0.05	< 0.05	0.07	< 0.05	< 0.5
Nitrate (N)	mg/L	10	MAC	4.0	NV	< 0.05	< 0.05	< 0.5	<0.05	<0.05	0.09	0.12	<0.05	< 0.1	< 0.1	1.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	2.2	1.9	1.2	2.6	2.4	4.4	0.9	1.4	4.8	4.3	9.6	3.7	6	10.1	9.5	17.5
Hardness	mg/L	500	OG	361	NV	263	272	279	329	239	262	250	263	**852**	**1080**	**988**	**1050**	**936**	**1050**	**953**	**990**
Aluminum	mg/L	0.1	OG	0.07	0.075	0.02	0.02	0.05	0.05	0.03	0.03	0.02	0.04	0.05	**0.09**	**0.12**	**0.14**	**0.14**	**0.08**	**0.11**	**0.13**
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 0.0001	< 0.0001	< 0.0001	0.0001	<0.0001	0.0001	<0.0001	<0.0001	< 0.0001	0.0004	< 0.0001	< 0.0001	0.0001	0.0002	< 0.0001	< 0.0002
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0002	0.0002	0.0002	0.0005	<0.0001	0.0003	0.0001	0.0002	0.0012	0.0005	0.0011	0.0012	0.0006	0.001	0.0002	0.0009
Barium	mg/L	1	MAC	0.3	NV	0.125	0.143	0.142	0.14	0.123	0.142	0.126	0.147	***0.31***	***0.43***	***0.54***	***0.56***	***0.347***	***0.565***	***0.449***	***0.557***
Beryllium	mg/L	-		-	1.1	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	IMAC	1.3	0.2	0.078	0.116	0.091	0.067	0.09	0.107	0.081	0.131	**0.246**	**0.485**	**0.425**	**0.479**	**0.448**	**0.459**	**0.394**	**0.529**
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000059
Calcium	mg/L	-		-	NV	73.1	74.3	75.7	105	64.3	71	69.2	71	227	287	256	280	241	276	254	261
Chromium	mg/L	0.05	MAC	0.013	0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	**0.005**	< 0.0002	**0.0025**	**0.0042**	< 0.001	< 0.001	**0.002**	< 0.001	0.001
Chromium (VI)	mg/L			-		< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-
Cobalt	mg/L	-		-	0.0009	< 0.005	< 0.005	< 0.005	0.0004	0.0001	0.0002	0.0001	0.0002	< 0.005	< 0.005	**0.007**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	AO	0.5	0.005	0.0003	0.0004	0.0001	0.0006	0.0004	0.0008	0.0003	0.0003	0.0006	0.001	0.0006	0.0012	0.0017	0.0003	0.0011	0.0012
Iron	mg/L	0.3	AO	0.15	0.3	**1.37**	**1.15**	**1.31**	**1.69**	**1.09**	**1.2**	**1.17**	**1.14**	**3.79**	**4.2**	**4.14**	**5.24**	0.051	**4.46**	**4.21**	**6.05**
Lead	mg/L	0.01	MAC	0.003	0.005	0.00005	0.00003	0.00003	0.00005	0.00003	<0.00002	0.00005	<0.00002	< 0.00002	0.00003	< 0.00002	0.00003	0.00003	0.00005	0.00004	< 0.0002
Magnesium	mg/L	-		-	NV	19.6	20.9	21.8	16.3	19	20.6	18.8	20.8	69.4	88.9	84.6	86.3	81.2	87	77.4	82.2
Manganese	mg/L	0.05	AO	0.03	NV	**0.067**	**0.054**	**0.051**	**0.194**	***0.048***	**0.065**	**0.059**	**0.051**	**0.06**	**0.08**	**0.08**	**0.09**	***0.039***	**0.096**	**0.082**	**0.091**
Mercury	mg/L	0.001	MAC	0.0003	0.0002	< 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	< 0.00002	< 0.00002
Molybdenum	mg/L	-		-	0.04	< 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	0.0004	< 0.0001	0.0007
Nickel	mg/L	-		-	0.025	< 0.01	< 0.01	< 0.01	0.0007	0.0006	<0.0002	0.0005	0.0031	< 0.01	< 0.01	< 0.01	0.01	0.01	0.01	< 0.01	< 0.01
Potassium	mg/L	-		-	NV	2	2.6	1.9	1.6	2	2.4	1.9	2.5	4.5	7.1	6.1	7.8	6.6	8.8	6	9.1
Phosphorus-Total	mg/L	-		-	0.03	**0.85**	**0.93**	**0.32**	**0.71**	<0.1	<0.1	<0.1	<0.1	**3.64**	**1.46**	**7.12**	**1.33**	**2.38**	**4.7**	**5.84**	**10.8**
Selenium	mg/L	0.01	MAC	0.003	0.1	0.001	0.001	0.001	0.001	<0.001	<0.001	0.001	0.001	< 0.001	0	< 0.001	< 0.001	***0.004***	0.002	0.002	***0.004***
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	< 0.0001	< 0.0001	< 0.0002
Sodium	mg/L	200	AO	102	NV	10.7	14.1	10.8	9.1	11.4	13	10.3	12.9	81.3	***123***	***108***	***134***	***133***	***148***	***123***	***169***
Strontium	mg/L	-		-	NV	0.732	0.805	0.77	0.62	0.731	0.757	0.691	0.784	2.35	3.25	2.99	2.73	2.89	2.83	2.87	2.87
Thallium	mg/L	-		-	0.0003	< 0.00005	< 0.005	< 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	0.0003	0.0019	0.0008	0.0001	0.0004	0.0002	0.0001	0.0025	0.0033	0.0035	0.0058	0.0013	0.00323	0.0012	0.0019
Zinc	mg/L	5	AO	2.5	0.02	< 0.005	< 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	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	5.3	14.9	6.9	12.2	10.9	12.4	5	13.4	3.9	12	5.2	12.7	-	-	7.2	13.5
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.95	7.87	7.95	7.39	7.5	7.58	8.05	6.9	7.58	7.14	7.28	7.06	7.84	7.32	6.9	6.85
Field Conductivity	µS/cm	-		-	NV	545	593	659	553	533	495	556	609	1210	1730	1619	1770	2030	2200	2040	1560

ODWQS Ontario Drinking Water Quality Objectives
MAC Maximum Acceptable Concentration
IMAC Interim Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operatioal Guidelines
Bold / Highlighting for ODWQS exceeded parameters
Bold / Underlined for PWQO exceeded parameters
Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	31-I 13-Apr-20	31-I 15-Oct-20	31-I 21-Apr-21	31-I 18-Oct-21	31-I 20-Apr-22	31-I 12-Oct-22	31-I 19-Apr-23	31-I 12-Oct-23	31-I 16-Apr-24	31-I 10-Oct-24	31-I 16-Apr-25	31-I 30-Sep-25	32-I 25-Apr-16	32-I 20-Oct-16	32-I 12-Apr-17	32-I 06-Oct-17
Alkalinity	mg/L	500	OG	351	NV	**819**	**851**	**820**	**946**	**847**	**904**	**853**	**891**	**871**	**927**	**944**	**1020**	197	-	164	337
Conductivity	µS/cm	-		-	NV	2200	2090	2040	2070	2130	2140	2110	2090	2130	2180	2220	2310	391	-	342	654
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.4	7.44	7.49	7.43	7.34	7.38	7.35	7.22	7.46	7.56	7.38	7.42	7.84	-	7.93	7.42
TDS	mg/L	500	AO	362	NV	**1256**	**1283**	**1180**	**1373**	**1221**	**1281**	**1181**	**1150**	**1180**	**1210**	**1230**	**1280**	218	-	180	***365***
DOC	mg/L	5		3.7	NV	**11.1**	**11.6**	**13.9**	**15.6**	**13.2**	6	**14.4**	**19**	**26.5**	**34.2**	**14.4**	**42.2**	***4.2***	-	**5.7**	**16.3**
COD	mg/L	-		-	NV	272	235	418	571	385	582	4340	478	439	401	513	701	183	-	444	265
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	<0.001	<0.001	< 0.001	-	< 0.001	**0.006**
Chloride	mg/L	250	AO	128	NV	***214***	***198***	***189***	***205***	***185***	***171***	***178***	***178***	***185***	***203***	***221***	***195***	2	-	2	2
Ammonia, total	mg/L	-		-	NV	0.81	1.03	0.79	1.36	1.66	1.71	1.78	2.21	2	3.95	2.61	7.75	0.11	-	0.16	0.23
Unionized Ammonia	mg/L	-		-	0.02	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	0.02	<0.01	**0.03**	<0.01	-	-	-	-
Fluoride	mg/L	2.4	MAC	0.7	NV	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5	< 1	<0.1	<0.7	<0.7	<0.7	<0.7	0.1	-	< 0.1	< 0.1
Sulphate	mg/L	500	AO	255	NV	64	61	57	47	46	51	< 10	39	48	35	51	32	7	-	9	7
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.05	< 0.05	0.08	< 0.05	< 0.3	< 0.3	< 0.5	<0.05	<0.40	<0.40	<0.40	<0.40	< 0.1	-	0.2	< 0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	< 0.05	< 0.05	0.08	< 0.05	< 0.3	< 0.3	< 0.5	<0.05	<0.40	<0.40	<0.40	<0.40	0.1	-	0.3	0.6
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	< 0.4	-	-	-
TKN	mg/L	-		-	NV	6.8	5.9	9.3	12.8	8.8	11.6	9.8	12.8	10.5	10.6	10.7	18.5	4.1	-	13	6.2
Hardness	mg/L	500	OG	361	NV	**928**	**946**	**829**	**1050**	**915**	**937**	**875**	**927**	**886**	**895**	**886**	**959**	224	206	168	***378***
Aluminum	mg/L	0.1	OG	0.07	0.075	***0.1***	**0.13**	**0.13**	**0.33**	***0.07***	**0.08**	**0.14**	***0.07***	**0.08**	***0.07***	***0.07***	**0.12**	0.03	**0.78**	0.05	**0.09**
Antimony	mg/L	0.006	IMAC	0.002	0.02	0.0001	0.0002	0.0002	< 0.0001	0.0002	< 0.0001	0.0002	0.0002	<0.0001	0.0002	0.0001	0.0002	< 0.0001	0.0005	< 0.0001	0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0003	0.0007	0.0007	0.0011	0.0004	< 0.0003	0.0011	0.0009	0.0004	0.0008	0.0008	0.0005	0.0003	0.0006	0.0001	0.001
Barium	mg/L	1	MAC	0.3	NV	***0.524***	***0.566***	***0.503***	***0.64***	***0.542***	***0.506***	***0.604***	***0.686***	***0.537***	***0.791***	***0.677***	***0.901***	0.01	0.02	0.01	0.03
Beryllium	mg/L	-		-	1.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	IMAC	1.3	0.2	**0.371**	**0.612**	**0.371**	**0.529**	**0.402**	**0.714**	**0.416**	**0.543**	**0.479**	**0.561**	**0.457**	**0.605**	< 0.005	0.031	0.016	0.027
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	0.00009	< 0.00002	< 0.000014
Calcium	mg/L	-		-	NV	244	244	219	289	235	244	227	243	228	228	227	250	85.8	78.4	64.3	145
Chromium	mg/L	0.05	MAC	0.013	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	< 0.0002	0.001	**0.013**	< 0.001
Chromium (VI)	mg/L			-		-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-
Cobalt	mg/L	-		-	0.0009	0.0006	**0.006**	< 0.005	< 0.005	**0.009**	**0.007**	< 0.005	**0.0015**	**0.001**	**0.0015**	**0.0012**	**0.0015**	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	AO	0.5	0.005	0.0022	0.0009	0.0013	0.0024	0.0006	0.0003	0.0004	0.0003	0.001	0.0016	0.0003	0.0019	0.0008	0.0023	0.0007	0.0012
Iron	mg/L	0.3	AO	0.15	0.3	**6.12**	**5.29**	**4.89**	**6.01**	**6.7**	**5.36**	**6.95**	**7.15**	**5.9**	**6.31**	**6.11**	**6.43**	**0.33**	**0.59**	0.07	**1.41**
Lead	mg/L	0.01	MAC	0.003	0.005	< 0.00009	0.0001	0.00014	0.00109	0.00005	< 0.00009	0.00009	0.00004	<0.00004	0.00004	0.00006	<0.00004	< 0.00002	0.00038	< 0.00002	0.00003
Magnesium	mg/L	-		-	NV	77.4	81.5	68.6	79	79.8	79.6	74.8	77.8	77	79.1	77.2	81.3	2.3	2.5	1.8	3.7
Manganese	mg/L	0.05	AO	0.03	NV	**0.089**	**0.09**	**0.085**	**0.141**	**0.093**	**0.091**	**0.087**	**0.099**	**0.085**	**0.093**	**0.09**	**0.091**	***0.03***	0.01	***0.04***	**0.13**
Mercury	mg/L	0.001	MAC	0.0003	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	< 0.0002	0.0002	0.0004	0.0003	< 0.0002	< 0.0002	0.0003	0.0002	<0.0001	0.0003	0.0002	<0.0001	0.0003	0.003	0.0003	0.0009
Nickel	mg/L	-		-	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0074	0.0071	0.0068	0.0077	0.0078	< 0.01	< 0.01	< 0.01	< 0.01
Potassium	mg/L	-		-	NV	6.8	9	6.7	10.5	7.3	8.7	7.6	11.6	8	15.6	10.2	19.3	0.3	1.6	0.4	0.7
Phosphorus-Total	mg/L	-		-	0.03	**3.05**	**2.8**	**5.51**	**7.16**	**5.94**	**4.03**	**11.9**	**4.46**	<0.1	<0.1	<0.1	<0.1	**4.2**	-	**6.81**	**2.76**
Selenium	mg/L	0.01	MAC	0.003	0.1	0.002	0.002	0.001	0.003	0.003	***0.004***	0.002	<0.001	<0.001	<0.001	0.002	0.002	< 0.001	0	< 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	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Sodium	mg/L	200	AO	102	NV	***152***	***171***	***141***	***167***	***151***	***177***	***132***	***158***	***150***	***155***	***158***	***172***	1.7	7.1	1.7	2.6
Strontium	mg/L	-		-	NV	2.55	2.85	2.31	2.76	2.68	3.04	2.33	2.69	2.82	2.64	2.62	3.01	0.2	0.19	0.14	0.31
Thallium	mg/L	-		-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.005	< 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	0.0017	0.0023	0.0026	0.0049	0.0015	0.0012	< 0.0001	0.0019	0.0015	0.002	0.0022	0.0018	0.0013	0.0031	0.0011	0.0029
Zinc	mg/L	5	AO	2.5	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	< 0.005	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	7.8	11.7	5.8	12.4	7.8	14.1	4.9	11.9	8.8	10.3	11.1	15.7	4.3	12.3	4.7	13.4
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.54	6.72	7.07	6.8	7.2	6.97	7.19	7.13	7.73	6.94	7.7	6.36	7.95	7.6	8.08	7.45
Field Conductivity	µS/cm	-		-	NV	1946	1600	1620	2200	2068	2310	2360	2020	2050	1744	919	1986	335	370	284	575

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	32-I 11-Apr-18	32-I 02-Oct-18	32-I 23-Apr-19	32-I 09-Oct-19	32-I 13-Apr-20	32-I 15-Oct-20	32-I 21-Apr-21	32-I 18-Oct-21	32-I 20-Apr-22	32-I 12-Oct-22	32-I 19-Apr-23	32-I 12-Oct-23	32-I 16-Apr-24	32-I 10-Oct-24	32-I 16-Apr-25	32-I 30-Sep-25
Alkalinity	mg/L	500	OG	351	NV	178	219	200		161	***369***	218	***396***	180						278	
Conductivity	µS/cm	-		-	NV	364	515	423		339	698	416	689	370						533	
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.83	7.55	7.83		7.73	7.53	7.62	7.51	7.34						7.71	
TDS	mg/L	500	AO	362	NV	200	263	229		172	***389***	231	***412***	195						276	
DOC	mg/L	5		3.7	NV	**6.2**	**8.9**	**6.4**		**5.9**	**10**	**10.3**	**14.3**	**8.9**						**6.7**	
COD	mg/L	-		-	NV	170	152	282		33	108	1020	220	214						538	
Phenols	mg/L	-		-	0.001	< 0.001	**0.002**	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	< 0.001						<0.001	
Chloride	mg/L	250	AO	128	NV	1.5	1.6	1.8		1.6	1.3	1.4	2.4	1.3						2.5	
Ammonia, total	mg/L	-		-	NV	0.06	0.26	0.15		0.07	0.09	0.2	0.26	1.28						0.22	
Unionized Ammonia	mg/L	-		-	0.02	-	-	< 0.01		< 0.01	< 0.01	-	< 0.01	< 0.01						<0.01	
Fluoride	mg/L	2.4	MAC	0.7	NV	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1						<0.1	
Sulphate	mg/L	500	AO	255	NV	5	22	7		4	3	4	2	4						12	
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05						<0.05	
Nitrate (N)	mg/L	10	MAC	4.0	NV	0.21	3.95	0.14		0.14	0.13	0.09	0.08	0.12						0.23	
Bromide	mg/L	-		-	NV	-	-	-		-	-	-	-	-						-	
TKN	mg/L	-		-	NV	5.3	4.7	6.6		9.9	2.3	2.4	5.7	5.1						5.6	
Hardness	mg/L	500	OG	361	NV	214	267	247		172	***403***	234	***414***	195						255	
Aluminum	mg/L	0.1	OG	0.07	0.075	0.06	0.05	0.06		0.05	***0.07***	0.06	**0.08**	0.02						0.06	
Antimony	mg/L	0.006	IMAC	0.002	0.02	< 0.0001	0.0001	< 0.0001		< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001						0.0002	
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0002	0.0002	0.0003		0.0002	0.0005	0.0004	0.0019	0.0003						0.0003	
Barium	mg/L	1	MAC	0.3	NV	0.013	0.025	0.016		0.013	0.035	0.019	0.039	0.018						0.019	
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	5	IMAC	1.3	0.2	0.011	0.022	0.014		0.013	0.025	0.01	0.02	0.008						0.021	
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000014	< 0.000015	0.000024		< 0.000015	0.000052	0.000018	< 0.000015	< 0.000015						<0.000015	
Calcium	mg/L	-		-	NV	82.2	102	94.6		65.9	154	89.5	159	74.2						96.5	
Chromium	mg/L	0.05	MAC	0.013	0.001	< 0.001	0.001	< 0.001	Dry	< 0.001	< 0.001	0.001	< 0.001	< 0.001	Dry	Destroyed	Destroyed	Destroyed	Destroyed	<0.001	Dry
Chromium (VI)	mg/L			-		-	-	-		-	-	-	-	< 0.001						<0.01	
Cobalt	mg/L	-		-	0.0009	< 0.005	< 0.005	< 0.005		< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005						0.0003	
Copper	mg/L	1	AO	0.5	0.005	0.0011	0.0017	0.0011		0.002	0.0018	0.0015	0.0008	0.0008						0.0015	
Iron	mg/L	0.3	AO	0.15	0.3	***0.228***	0.029	**0.811**		0.067	0.141	**0.429**	**3.15**	***0.205***						0.097	
Lead	mg/L	0.01	MAC	0.003	0.005	< 0.00002	0.00003	0.00003		0.00004	< 0.00002	0.00006	< 0.00002	< 0.00002						0.0001	
Magnesium	mg/L	-		-	NV	2.11	2.8	2.46		1.79	4.19	2.47	4.08	2.22						3.39	
Manganese	mg/L	0.05	AO	0.03	NV	***0.032***	0.006	**0.118**		0.024	**0.103**	**0.1**	**0.239**	**0.122**						**0.164**	
Mercury	mg/L	0.001	MAC	0.0003	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	< 0.0001	0.0003	0.0002		0.0001	0.0003	0.0001	0.0005	0.0002						0.0017	
Nickel	mg/L	-		-	0.025	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01						0.0007	
Potassium	mg/L	-		-	NV	0.3	1.4	0.5		0.8	1.5	1.3	1.9	1.3						0.9	
Phosphorus-Total	mg/L	-		-	0.03	**2.74**	**1.36**	**3.1**		**3.65**	**0.82**	**14.4**	**2.03**	**2.19**						<0.1	
Selenium	mg/L	0.01	MAC	0.003	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	< 0.00002	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001						<0.0001	
Sodium	mg/L	200	AO	102	NV	1.4	1.6	1.4		1.2	2.1	1.4	2	1.2						10.6	
Strontium	mg/L	-		-	NV	0.166	0.253	0.214		0.145	0.385	0.19	0.363	0.165						0.27	
Thallium	mg/L	-		-	0.0003	< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005						<0.00005	
Vanadium	mg/L	-		-	0.006	0.0008	0.00115	0.0007		0.0011	0.0015	0.0011	0.0019	0.0007						0.0009	
Zinc	mg/L	5	AO	2.5	0.02	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005						<0.005	
TSS	mg/L	-	-	-	NV	-	-	-		-	-	-	-	-						-	
Field Temperature	°C	-	AO	-	NV	-	-	7.9		8.5	11.5	5.7	13.2	7.9						4.1	
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.83	7.55	8.4		7.35	7.07	7.79	6.98	7.48						7.91	
Field Conductivity	µS/cm	-		-	NV	383	485	430		382	650	440	740	357						542	

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	33-II 20-Oct-16	33-II 12-Apr-17	33-II 05-Oct-17	33-II 10-Apr-18	33-II 02-Oct-18	33-II 22-Apr-19	33-II 08-Oct-19	33-II 13-Apr-20	33-II 14-Oct-20	33-II 21-Apr-21	33-II 18-Oct-21	33-II 20-Apr-22	33-II 12-Oct-22	33-II 19-Apr-23	33-II 12-Oct-23	33-II 16-Apr-24
Alkalinity	mg/L	500	OG	351	NV	238	250	242	265	232				230	225	238	217	232	224	233	226
Conductivity	µS/cm	-		-	NV	478	489	488	468	480				471	466	458	465	452	459	454	459
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	8.01	8.09	8.05	7.81	7.97				7.95	7.98	7.89	7.81	7.83	8	7.42	7.95
TDS	mg/L	500	AO	362	NV	270	273	255	276	255				258	252	268	245	261	247	235	237
DOC	mg/L	5		3.7	NV	2.2	2.5	***4.5***	2.8	2.4				***3.8***	**5.2**	3	2	2	1.1	***3.7***	3.1
COD	mg/L	-		-	NV	8	105	119	128	30				645	144	159	44	228	113	123	99
Phenols	mg/L	-		-	0.001	**0.014**	< 0.001	**0.004**	< 0.001	< 0.002				< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001
Chloride	mg/L	250	AO	128	NV	3	3	3	2.8	4.2				4.5	4.4	5.2	3.9	5.3	3.6	4.3	3.1
Ammonia, total	mg/L	-		-	NV	0.08	0.05	0.04	0.05	0.04				0.1	0.09	0.1	0.87	1.09	0.19	0.33	2.23
Unionized Ammonia	mg/L	-		-	0.02	-	-	-	-	-				< 0.01	-	< 0.01	0.01	0.02	< 0.01	<0.01	**0.04**
Fluoride	mg/L	2.4	MAC	0.7	NV	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
Sulphate	mg/L	500	AO	255	NV	11	11	9	9	11				14	13	14	11	12	< 10	12	10
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 0.1	***0.3***	< 0.05	< 0.05	< 0.05				< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	<0.05	<0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	0.1	0.2	0.4	0.49	0.37				0.24	0.94	0.27	0.91	0.7	< 0.5	0.2	0.57
Bromide	mg/L	-		-	NV	-	-	-	-	-				-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	3.5	4	1.1	2.4	0.4				7.3	1.7	2.6	2.3	2.5	0.7	0.8	1.9
Hardness	mg/L	500	OG	361	NV	288	279	253	272	257				254	251	268	242	262	253	244	230
Aluminum	mg/L	0.1	OG	0.07	0.075	**0.08**	**0.09**	0.06	0.05	0.05				0.03	**0.08**	**0.17**	0.02	**0.09**	0.05	0.02	0.03
Antimony	mg/L	0.006	IMAC	0.002	0.02	0.0004	< 0.0001	< 0.0001	< 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	IMAC	0.006	0.005	0.0004	0.0003	0.0002	0.0002	0.0001				0.0004	0.0004	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002
Barium	mg/L	1	MAC	0.3	NV	0.07	0.1	0.05	0.068	0.057				0.065	0.048	0.065	0.048	0.066	0.056	0.062	0.049
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	<0.0001	<0.0001
Boron	mg/L	5	IMAC	1.3	0.2	0.011	0.031	0.01	0.015	0.008				0.018	0.018	0.009	0.025	0.011	< 0.005	0.016	0.01
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015				< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015
Calcium	mg/L	-		-	NV	93.4	88.3	84.2	90.9	86.9				84.9	85.1	91.8	80.8	89.9	85.8	83.6	78.2
Chromium	mg/L	0.05	MAC	0.013	0.001	0.001	0.001	< 0.001	< 0.001	0.001	Broken	Broken	Broken	< 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	<0.01
Cobalt	mg/L	-		-	0.0009	**0.005**	< 0.005	< 0.005	**0.006**	**0.008**				< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	0.0002
Copper	mg/L	1	AO	0.5	0.005	0.0005	0.0025	0.002	0.001	0.0007				0.0019	**0.0053**	0.0015	0.0008	0.001	0.0005	0.0012	0.0009
Iron	mg/L	0.3	AO	0.15	0.3	0.03	0.15	< 0.005	0.011	0.007				< 0.005	0.092	***0.253***	< 0.005	0.108	< 0.005	0.019	<0.005
Lead	mg/L	0.01	MAC	0.003	0.005	0.00009	0.00005	< 0.00002	< 0.00002	< 0.00002				0.00003	0.00034	0.00032	0.00002	0.00016	< 0.00002	0.00003	0.00004
Magnesium	mg/L	-		-	NV	13.2	14.2	10.3	10.9	9.71				10.1	9.39	9.33	9.77	8.99	9.44	8.58	8.44
Manganese	mg/L	0.05	AO	0.03	NV	***0.05***	**0.06**	0.01	0.013	0.012				**0.051**	**0.159**	0.017	0.018	***0.037***	0.016	0.003	0.014
Mercury	mg/L	0.001	MAC	0.0003	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
Molybdenum	mg/L	-		-	0.04	0.0009	0.0019	0.0003	0.0003	0.0004				0.0006	0.0007	0.0002	0.0002	0.0003	0.0002	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	0.0003	0.0009
Potassium	mg/L	-		-	NV	1.2	1	1.1	0.8	1.1				1.6	1.4	1.5	1.5	1.3	0.9	1.4	1
Phosphorus-Total	mg/L	-		-	0.03	**3.66**	**16.9**	**7.83**	**15.1**	**2.71**				**16.2**	**4.52**	**18.4**	**6.98**	**12.4**	**5.92**	**6.47**	<0.1
Selenium	mg/L	0.01	MAC	0.003	0.1	< 0.001	< 0.001	< 0.001	0.001	< 0.001				< 0.001	< 0.001	< 0.001	0.002	< 0.001	0.001	<0.001	0.001
Silver	mg/L	-		-	0.0001	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.0001				< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001
Sodium	mg/L	200	AO	102	NV	4.1	3.3	2.6	2.7	2.5				4.5	3.5	3.4	6.2	3.1	2.4	3.1	2.7
Strontium	mg/L	-		-	NV	0.23	0.2	0.22	0.213	0.217				0.221	0.212	0.207	0.292	0.201	0.193	0.201	0.196
Thallium	mg/L	-		-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005				< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.005	< 0.00005	<0.00005	<0.00005
Vanadium	mg/L	-		-	0.006	0.001	0.0012	0.0014	0.0005	0.00062				0.0008	0.0006	0.0011	0.0006	0.0008	< 0.0004	0.0008	0.0005
Zinc	mg/L	5	AO	2.5	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	<0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-				-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	11.3	6.1	11.2	-	-				12.2	6	11.9	7.9	13.1	5.6	11.4	7.6
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.87	7.84	7.69	7.81	7.97				7.89	8	7.68	7.88	7.81	8.07	7.98	8.02
Field Conductivity	µS/cm	-		-	NV	460	370	425	509	477				520	510	491	462	516	552	519	618

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PARAMETER	UNITS	ODWQS		RUP	PWQO	33-II	33-I	33-II	33-I	33-II	35	35	35	35	35	35	35	35	35	35	35
						10-Oct-24	16-Apr-25	16-Apr-25	30-Sep-25	30-Sep-25	11-Apr-18	02-Oct-18	23-Apr-19	09-Oct-19	13-Apr-20	15-Oct-20	21-Apr-21	18-Oct-21	20-Apr-22	12-Oct-22	19-Apr-23
Alkalinity	mg/L	500	OG	351	NV	247	288	237	278	252	***451***	344	***399***	336	***388***	***396***	***434***	***434***	***410***	***390***	**505**
Conductivity	µS/cm	-		-	NV	482	1660	461	1650	476	1010	858	955	802	936	882	1010	943	999	894	1200
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.72	8.03	7.98	8.11	8.04	7.39	7.63	7.8	7.78	7.69	7.84	7.8	7.57	7.6	7.85	7.63
TDS	mg/L	500	AO	362	NV	249	**908**	238	**905**	246	**571**	***474***	**511**	***471***	**502**	**512**	**569**	**566**	**542**	**505**	**673**
DOC	mg/L	5		3.7	NV	3	<0.8	1.6	2.6	4	9	**10.5**	**6.7**	**7.2**	**6.1**	***4.5***	**7.6**	**5.8**	**5.6**	3.4	4
COD	mg/L	-		-	NV	191	38	223	15	100	44	555	575	725	360	696	601	723	801	154	425
Phenols	mg/L	-		-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001
Chloride	mg/L	250	AO	128	NV	2.6	**421**	2.8	**435**	2.7	45.7	35.1	44.3	46.1	46.9	45	54.9	63.5	54.3	41.4	72.2
Ammonia, total	mg/L	-		-	NV	0.31	1.2	0.11	1.17	<0.05	0.02	0.05	0.06	0.08	0.02	0.1	0.08	0.09	0.26	0.02	0.29
Unionized Ammonia	mg/L	-		-	0.02	<0.01	0.02	<0.01	0.01	<0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01
Fluoride	mg/L	2.4	MAC	0.7	NV	<0.1	***1.7***	<0.1	***1.7***	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1
Sulphate	mg/L	500	AO	255	NV	9	<1	11	<1	9	25	53	32	47	30	37	35	35	31	32	22
Nitrite (N)	mg/L	1	MAC	0.3	NV	<0.05	<0.05	<0.05	<0.20	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	0.39	<0.05	0.42	<0.20	0.16	< 0.05	0.14	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	0.8	1.7	1.2	1.6	0.5	0.9	15.7	18.9	17.2	7.7	15.1	14.3	21.5	17.7	2.4	9.6
Hardness	mg/L	500	OG	361	NV	252	158	232	167	254	**534**	***424***	***460***	***414***	***444***	***453***	**506**	***487***	***482***	***462***	**626**
Aluminum	mg/L	0.1	OG	0.07	0.075	0.02	0.01	0.02	0.03	0.06	**0.09**	0.05	**0.09**	**0.08**	**0.08**	0.05	**0.14**	**0.08**	**0.24**	0.04	**0.11**
Antimony	mg/L	0.006	IMAC	0.002	0.02	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0003	0.0002	0.0003	0.0002
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0002	0.0011	0.0001	0.0026	0.0001	0.0002	0.0002	0.0002	0.0003	0.0001	0.0002	0.0002	0.0003	0.0004	0.0002	0.0001
Barium	mg/L	1	MAC	0.3	NV	0.058	0.025	0.051	0.026	0.057	0.19	0.142	0.154	0.134	0.148	0.158	0.174	0.18	0.179	0.158	0.23
Beryllium	mg/L	-		-	1.1	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 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	IMAC	1.3	0.2	0.008	**2.19**	0.009	**2.24**	0.008	0.075	0.112	0.076	0.114	0.081	0.103	0.083	0.083	0.074	0.097	0.095
Cadmium	mg/L	0.005	MAC	0.001	0.0005	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.000014	< 0.000015	0.000016	< 0.000015	0.000031	0.000043	0.000057	0.000097	0.000089	0.000114	0.000157
Calcium	mg/L	-		-	NV	86.8	31.4	79.2	33.6	87.5	157	125	135	121	127	130	147	141	138	134	177
Chromium	mg/L	0.05	MAC	0.013	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	< 0.001
Chromium (VI)	mg/L			-		<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	-		-	0.0009	0.0002	<0.0001	0.0002	<0.0001	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	**0.0042**	**0.009**	**0.006**	**0.006**	**0.011**	**0.008**	**0.013**
Copper	mg/L	1	AO	0.5	0.005	0.0007	0.0003	0.0006	<0.0001	0.0007	0.0036	0.0047	**0.0059**	0.0023	**0.0081**	0.0039	**0.016**	0.0042	**0.0341**	0.0024	0.0048
Iron	mg/L	0.3	AO	0.15	0.3	<0.005	0.074	<0.005	**0.456**	0.008	0.012	0.012	0.055	0.012	0.023	< 0.005	0.128	0.017	***0.279***	0.048	0.041
Lead	mg/L	0.01	MAC	0.003	0.005	<0.00002	0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	0.00002	0.00008	< 0.00002	0.00005	< 0.00002	0.00016	0.00003	0.00024	0.00003	< 0.00004
Magnesium	mg/L	-		-	NV	8.57	19.3	8.23	20.1	8.68	34.5	27.2	29.7	27.2	30.8	31.5	33.8	32.7	33.3	31.1	44.7
Manganese	mg/L	0.05	AO	0.03	NV	***0.033***	0.005	0.005	0.007	0.007	**0.615**	**0.515**	**0.757**	**0.794**	**1.01**	**1.15**	**1.48**	**1.51**	**1.71**	**1.56**	**2.26**
Mercury	mg/L	0.001	MAC	0.0003	0.0002	<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	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	-		-	0.04	0.0001	0.0072	0.0002	0.0062	0.0002	< 0.0001	0.0004	0.0002	0.0004	0.0002	0.0003	0.0002	0.0004	0.0002	0.0003	0.0002
Nickel	mg/L	-		-	0.025	0.0003	0.0003	0.0008	0.0004	0.0009	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01
Potassium	mg/L	-		-	NV	1.3	9.8	0.9	11	1	2.1	2.4	2	2.2	2.1	2.5	2.2	2.5	2.3	2.4	2.4
Phosphorus-Total	mg/L	-		-	0.03	<0.1	<0.1	<0.1	<0.1	<0.1	**0.95**	**6.14**	**4.93**	**7.61**	**1.61**	**6.32**	**9.52**	**8.17**	8	**2.08**	**4.1**
Selenium	mg/L	0.01	MAC	0.003	0.1	0.001	***0.005***	0.002	***0.006***	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	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV	2.9	**260**	2.6	**272**	2.8	35	24.1	28.3	24.6	31	28.1	34.1	29.2	34.1	27.9	43.5
Strontium	mg/L	-		-	NV	0.191	1.84	0.177	1.93	0.193	0.778	0.615	0.679	0.605	0.678	0.693	0.723	0.701	0.708	0.657	0.874
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	0.00006	0.00013	0.00009	< 0.005	0.00013
Vanadium	mg/L	-		-	0.006	0.0005	<0.0001	0.0006	<0.0001	0.0006	0.0002	0.00102	0.0011	0.0008	0.0008	0.0006	0.0018	0.0049	0.0043	0.0013	0.0006
Zinc	mg/L	5	AO	2.5	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	< 0.005	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	10.7	5.9	6	11.1	11.4	-	-	8.3	11.7	9.05	11.5	7.2	11.2	7.9	14.4	6.1
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.66	8.17	7.85	7.73	7.55	7.39	7.63	7.23	7.58	7.1	7.61	7.25	7.56	7.1	7.32	7.37
Field Conductivity	µS/cm	-		-	NV	464	1001	391	1506	456	1030	847	930	770	1039	852	920	855	930	930	1451

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Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	35	35	35	35	35	36	36	36	36	36	36	36	36	36	36	36
						12-Oct-23	16-Apr-24	10-Oct-24	16-Apr-25	30-Sep-25	10-Apr-18	01-Oct-18	22-Apr-19	08-Oct-19	13-Apr-20	14-Oct-20	21-Apr-21	18-Oct-21	20-Apr-22	12-Oct-22	19-Apr-23
Alkalinity	mg/L	500	OG	351	NV	***424***	**525**	***404***	**577**	***380***	225	305	227	262	198	293	252	327	249	293	218
Conductivity	µS/cm	-		-	NV	954	1220	921	1300	868	471	619	508	629	460	661	557	685	568	654	494
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.5	7.62	7.88	7.66	7.9	7.48	7.57	7.74	7.51	7.72	7.78	7.95	7.65	7.67	7.59	7.81
TDS	mg/L	500	AO	362	NV	**508**	**661**	***489***	**706**	***459***	270	***363***	279	***365***	250	***368***	311	***424***	314	***386***	269
DOC	mg/L	5		3.7	NV	**7.1**	**13.5**	**6.8**	**7.7**	**7.7**	**14.8**	**14.4**	**11.1**	**10.3**	**12**	**22.4**	**10.6**	**18.9**	**9.8**	**11.6**	**10.9**
COD	mg/L	-		-	NV	110	330	144	207	158	418	2430	910	1070	211	336	232	233	27	194	214
Phenols	mg/L	-		-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	**0.011**	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001
Chloride	mg/L	250	AO	128	NV	48.9	74	51.4	91.6	44.8	10.3	24.3	12.7	20.7	12.4	17.9	14.8	20.2	13.7	14.1	10.5
Ammonia, total	mg/L	-		-	NV	2.21	0.16	0.26	0.1	<0.05	0.2	0.35	0.2	0.18	0.11	0.22	0.12	0.21	2.23	0.18	0.29
Unionized Ammonia	mg/L	-		-	0.02	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
Fluoride	mg/L	2.4	MAC	0.7	NV	<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	0.2	< 0.1
Sulphate	mg/L	500	AO	255	NV	33	27	33	30	33	15	23	20	60	22	31	22	47	22	47	55
Nitrite (N)	mg/L	1	MAC	0.3	NV	<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	0.07
Nitrate (N)	mg/L	10	MAC	4.0	NV	<0.05	<0.05	<0.05	0.05	<0.05	0.05	0.07	< 0.05	< 0.05	0.07	< 0.05	0.08	0.06	< 0.05	< 0.05	0.26
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	3.6	6.4	0.2	2.4	1.9	45.2	56.9	8.7	24.4	3.5	6	4.6	5.3	2.2	3	3
Hardness	mg/L	500	OG	361	NV	***465***	**558**	***431***	**583**	***415***	262	322	265	313	227	336	300	***368***	306	351	249
Aluminum	mg/L	0.1	OG	0.07	0.075	0.04	***0.07***	0.04	0.06	***0.07***	0.06	0.05	0.05	***0.07***	0.05	0.05	0.06	***0.07***	0.03	0.05	0.05
Antimony	mg/L	0.006	IMAC	0.002	0.02	0.0003	0.0001	0.0002	0.0004	0.0004	< 0.0001	0.0002	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0002	0.0002	0.0002	0.0003	0.0003	0.0009	**0.0059**	0.0016	0.0038	0.0008	0.0012	0.0006	0.0012	0.0008	0.0012	0.0003
Barium	mg/L	1	MAC	0.3	NV	0.159	0.204	0.148	0.223	0.144	0.088	0.169	0.117	0.176	0.104	0.177	0.125	0.159	0.156	0.154	0.089
Beryllium	mg/L	-		-	1.1	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 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	IMAC	1.3	0.2	0.111	0.109	0.114	0.122	0.118	0.027	0.039	0.032	0.05	0.039	0.057	0.025	0.078	0.028	0.143	0.077
Cadmium	mg/L	0.005	MAC	0.001	0.0005	0.000099	0.000105	0.000136	0.000199	0.000137	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	0.00001
Calcium	mg/L	-		-	NV	132	158	120	165	118	88.9	106	89	102	74.7	112	97.8	124	98.6	117	82.5
Chromium	mg/L	0.05	MAC	0.013	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	< 0.001
Chromium (VI)	mg/L			-		<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	-		-	0.0009	**0.009**	**0.012**	**0.0087**	**0.0133**	**0.0076**	< 0.005	< 0.005	**0.007**	< 0.005	0.0002	**0.007**	< 0.005	< 0.005	< 0.005	**0.006**	< 0.005
Copper	mg/L	1	AO	0.5	0.005	0.0027	**0.0069**	0.0027	**0.0061**	0.003	0.0008	0.0006	0.0008	0.0003	0.0016	0.0042	0.0035	0.0008	0.0015	0.0006	0.0006
Iron	mg/L	0.3	AO	0.15	0.3	0.066	0.074	0.077	0.085	0.082	**1.46**	2	**1.19**	**0.59**	**0.832**	0.065	**0.702**	**1.9**	**1.31**	**2.32**	**0.503**
Lead	mg/L	0.01	MAC	0.003	0.005	0.00003	0.00005	0.00002	0.00005	<0.00002	0.00004	0.00007	0.00005	0.00003	0.00007	0.00007	0.00006	0.00003	0.00004	0.00004	0.00003
Magnesium	mg/L	-		-	NV	32.9	39.5	32.2	41.8	29.2	9.75	13.9	10.4	14	9.85	13.9	13.6	14	14.4	14.5	10.3
Manganese	mg/L	0.05	AO	0.03	NV	**1.57**	**2.04**	**1.47**	2	**1.31**	**0.062**	**0.107**	**0.088**	**0.082**	**0.068**	***0.049***	**0.094**	**0.077**	**0.099**	**0.086**	***0.04***
Mercury	mg/L	0.001	MAC	0.0003	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	< 0.00002
Molybdenum	mg/L	-		-	0.04	0.0003	0.0002	0.0004	0.0002	0.0004	0.0007	0.0026	0.001	0.0027	0.0011	0.0007	0.0008	0.0008	0.0011	0.0022	0.0006
Nickel	mg/L	-		-	0.025	0.0091	0.0131	0.0087	0.0145	0.008	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Potassium	mg/L	-		-	NV	2.5	2.5	2.5	2.7	2.4	1	1.8	1.2	1.9	1.2	1.9	1.4	2.5	1.7	2.6	2
Phosphorus-Total	mg/L	-		-	0.03	**2.38**	<0.1	<0.1	<0.1	<0.1	**10.3**	**14.6**	**3.88**	**13.2**	**3.8**	**4.37**	**3.83**	**4.25**	**0.17**	**1.62**	**2.1**
Selenium	mg/L	0.01	MAC	0.003	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	< 0.001
Silver	mg/L	-		-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV	31.2	45.9	29.6	50	27.6	8.9	8.8	8.3	8.8	9.7	15.5	9.8	18.1	9.9	13.1	10.7
Strontium	mg/L	-		-	NV	0.71	0.856	0.653	0.868	0.61	0.14	0.196	0.15	0.189	0.138	0.214	0.176	0.22	0.183	0.205	0.135
Thallium	mg/L	-		-	0.0003	0.00007	0.00009	0.00007	0.00008	0.00008	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.005	< 0.00005
Vanadium	mg/L	-		-	0.006	0.001	0.0006	0.0011	0.0008	0.0013	0.0004	0.00313	0.0021	0.0044	0.001	0.0012	0.0014	0.0018	0.0011	0.0011	0.0026
Zinc	mg/L	5	AO	2.5	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	< 0.005	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	11.1	9.5	12.5	9.7	14.7	-	-	5.9	11.6	8.5	10.8	3.9	11.9	5.2	13.5	4.3
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.63	7.42	7.39	7.69	7.28	7.48	7.57	7.53	7.24	7.36	7.27	7.64	7.32	7.55	7.42	7.73
Field Conductivity	µS/cm	-		-	NV	1026	1210	731	746	888	505	653	530	520	567	666	580	743	522	715	649

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Bold / Highlighting for ODWQS exceeded parameters
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Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	36	36	36	36	36 Dup	36	37	37	37	37	37	37	37	37	37	37
						12-Oct-23	16-Apr-24	10-Oct-24	16-Apr-25	16-Apr-25	30-Sep-25	10-Apr-18	01-Oct-18	22-Apr-19	08-Oct-19	13-Apr-20	14-Oct-20	21-Apr-21	18-Oct-21	20-Apr-22	12-Oct-22
Alkalinity	mg/L	500	OG	351	NV	***405***	254	***401***	268	271	312	***438***	***463***	***385***	***361***	287	336	***392***	***389***	340	***378***
Conductivity	µS/cm	-		-	NV	814	532	776	532	529	659	895	937	874	836	729	751	827	744	759	779
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.35	7.73	7.9	7.88	7.73	8.03	7.43	7.42	7.48	7.44	7.54	7.75	7.82	7.52	7.52	7.65
TDS	mg/L	500	AO	362	NV	***428***	276	***407***	276	274	342	**538**	**569**	**531**	**530**	***427***	***444***	***485***	***489***	***413***	***499***
DOC	mg/L	5		3.7	NV	**21.4**	**14.9**	**14.1**	**12.8**	**12.6**	**6.9**	**65.4**	**71.8**	**50.6**	**57.6**	**31.8**	**48.5**	**29.8**	**20.4**	**49.1**	**13.4**
COD	mg/L	-		-	NV	282	342	500	483	485	337	280	468	650	195	153	172	186	197	160	165
Phenols	mg/L	-		-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	**0.004**	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001
Chloride	mg/L	250	AO	128	NV	13.8	9.4	13.4	10.9	10.8	17.4	13.1	13.3	11.3	13	9.6	8.5	10.1	9.5	9.1	10.8
Ammonia, total	mg/L	-		-	NV	0.32	0.22	0.41	0.16	0.16	0.12	0.52	0.8	0.65	0.55	0.41	0.44	0.27	0.65	0.67	0.39
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	< 0.01
Fluoride	mg/L	2.4	MAC	0.7	NV	<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	< 0.1
Sulphate	mg/L	500	AO	255	NV	30	12	16	22	22	23	27	41	77	81	78	57	44	40	38	50
Nitrite (N)	mg/L	1	MAC	0.3	NV	0.11	<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
Nitrate (N)	mg/L	10	MAC	4.0	NV	<0.05	0.1	<0.05	0.16	0.16	<0.05	< 0.05	< 0.05	< 0.05	0.07	0.09	0.18	0.23	0.06	0.12	0.24
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	4.8	6.1	5.6	6.9	7.1	6.1	13.8	8.8	9.8	2.1	2.7	2.8	2.8	3	2.9	2.2
Hardness	mg/L	500	OG	361	NV	***424***	276	***397***	254	253	349	***498***	**506**	***433***	***489***	***362***	***398***	***457***	***452***	***383***	***489***
Aluminum	mg/L	0.1	OG	0.07	0.075	0.05	0.04	0.05	0.06	0.06	***0.07***	**0.1**	**0.12**	**0.09**	**0.11**	***0.07***	**0.08**	**0.11**	**0.11**	***0.07***	**0.08**
Antimony	mg/L	0.006	IMAC	0.002	0.02	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	< 0.0001	< 0.0001	0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	0.0009	0.0006	0.0012	0.0003	0.0003	0.0007	0.0025	**0.0053**	0.0008	0.0015	0.001	0.0011	0.0005	0.0011	0.0007	0.0007
Barium	mg/L	1	MAC	0.3	NV	0.178	0.133	0.212	0.117	0.118	0.172	0.248	0.281	0.192	0.254	0.131	0.158	0.168	0.198	0.135	0.213
Beryllium	mg/L	-		-	1.1	<0.0001	<0.0001	<0.0001	<0.0001	<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	5	IMAC	1.3	0.2	0.187	0.07	0.105	0.074	0.071	0.035	0.024	0.033	0.02	0.028	0.013	0.023	0.014	0.024	0.011	0.019
Cadmium	mg/L	0.005	MAC	0.001	0.0005	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	< 0.000014	< 0.000015	< 0.000015	< 0.000029	< 0.000015	0.000015	< 0.000015	< 0.000015	0.000015	0.000015
Calcium	mg/L	-		-	NV	142	90.7	129	83.3	83.3	112	180	184	159	176	132	146	166	166	139	177
Chromium	mg/L	0.05	MAC	0.013	0.001	<0.001	<0.001	<0.001	**0.002**	<0.001	<0.001	0.001	**0.004**	**0.002**	**0.003**	0.001	< 0.001	0.001	**0.002**	**0.002**	< 0.001
Chromium (VI)	mg/L			-		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	< 0.001	< 0.001
Cobalt	mg/L	-		-	0.0009	0.0006	0.0003	0.0005	0.0003	0.0003	0.0003	< 0.005	< 0.005	< 0.005	< 0.005	0.0008	< 0.005	< 0.005	< 0.005	**0.006**	< 0.005
Copper	mg/L	1	AO	0.5	0.005	0.0008	0.0004	0.0008	0.0007	0.0006	0.0006	0.0011	0.0005	0.0012	0.0006	**0.0103**	0.0029	0.0043	0.0008	**0.0054**	0.001
Iron	mg/L	0.3	AO	0.15	0.3	**2.22**	**1.11**	**2.67**	**0.824**	**0.81**	**1.38**	**15.1**	**21.2**	**10.1**	**11.1**	**0.517**	**0.422**	**0.913**	**10.8**	**0.506**	**5.28**
Lead	mg/L	0.01	MAC	0.003	0.005	0.00005	0.00008	0.00004	0.00007	0.00007	<0.00002	0.00007	0.00008	0.00007	< 0.00009	0.00006	0.00042	0.00008	0.00007	0.00007	0.00003
Magnesium	mg/L	-		-	NV	16.8	12.1	18	11.1	11	16.9	11.6	11.3	8.73	11.9	7.87	8.11	10.1	9.11	8.46	11.1
Manganese	mg/L	0.05	AO	0.03	NV	**0.084**	**0.082**	**0.11**	**0.055**	**0.054**	**0.084**	**1.45**	**1.56**	**1.49**	**1.2**	**0.946**	**0.995**	**0.798**	**1.15**	**0.863**	**1.06**
Mercury	mg/L	0.001	MAC	0.0003	0.0002	<0.00002	<0.00002	<0.00002	0.00002	0.00004	<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	0.0008	0.001	0.0014	0.0006	0.0006	0.0012	0.0021	0.0016	0.0013	0.0027	0.0018	0.0016	0.001	0.001	0.0013	0.0016
Nickel	mg/L	-		-	0.025	0.0016	0.001	0.0014	0.0019	0.0014	0.0018	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Potassium	mg/L	-		-	NV	3.2	2	3	2.1	2.1	1.7	1	1.3	0.8	1.8	0.8	1.1	1.3	1.3	0.9	1.7
Phosphorus-Total	mg/L	-		-	0.03	**2.13**	<0.1	<0.1	<0.1	<0.1	<0.1	**7.3**	**5.15**	**9.97**	**2.17**	**1.29**	**0.96**	**1.46**	**0.93**	1	**0.63**
Selenium	mg/L	0.01	MAC	0.003	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	< 0.001
Silver	mg/L	-		-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	200	AO	102	NV	17	9.5	10.9	7.8	7.7	7.9	24.3	38.2	31	27.5	25	20.2	16.7	16.5	11	14.4
Strontium	mg/L	-		-	NV	0.269	0.17	0.254	0.147	0.146	0.216	0.317	0.35	0.277	0.341	0.265	0.279	0.284	0.288	0.235	0.299
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	< 0.005
Vanadium	mg/L	-		-	0.006	0.0009	0.0007	0.0016	0.0006	0.0005	0.0006	**0.0063**	**0.0138**	0.0034	**0.0075**	0.0042	0.0049	0.0016	**0.0072**	0.003	0.004
Zinc	mg/L	5	AO	2.5	0.02	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	0.013	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	12.1	5.5	13.3	3.1	3.1	13.3	-	-	6.1	12.3	8	10.8	4	12.1	5.4	13.6
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.46	7.87	7.64	7.9	7.9	7.48	7.43	7.42	7.29	7.17	7.01	7.06	7.36	7.23	7.29	7.35
Field Conductivity	µS/cm	-		-	NV	793	661	614	632	632	632	913	983	890	723	990	700	760	830	686	892

ODWQS Ontario Drinking Water Quality Objectives
MAC Maximum Acceptable Concentration
IMAC Interim Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operatioal Guidelines
Bold / Highlighting for ODWQS exceeded parameters
Bold / Underlined for PWQO exceeded parameters
Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	37	37	37	37	37	37	201	201	201	201	201	201	201	201	201	201
						19-Apr-23	12-Oct-23	16-Apr-24	10-Oct-24	16-Apr-25	30-Sep-25	04-Nov-19	13-Apr-20	14-Oct-20	21-Apr-21	18-Oct-21	20-Apr-22	12-Oct-22	19-Apr-23	12-Oct-23	16-Apr-24
Alkalinity	mg/L	500	OG	351	NV	321	***366***	***371***	***373***	***372***	234	188	181	188	197	224	210	228	211	225	215
Conductivity	µS/cm	-		-	NV	742	774	804	736	736	557	398	397	399	405	463	458	461	452	444	457
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	7.79	7.3	7.81	7.81	7.67	7.88	8.08	7.99	7.95	8.03	7.94	7.86	7.82	8.02	7.44	7.98
TDS	mg/L	500	AO	362	NV	***444***	***405***	***422***	***384***	***384***	289	210	202	214	216	267	240	260	244	229	236
DOC	mg/L	5		3.7	NV	**21.1**	**59.5**	**40.6**	**56.5**	**47.7**	**46**	2.3	0.9	1.8	3.3	2.1	1.8	2.3	1.2	3.4	2.8
COD	mg/L	-		-	NV	197	169	151	234	199	2700	700	94	90	69	9	9	46	46	10	45
Phenols	mg/L	-		-	0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001
Chloride	mg/L	250	AO	128	NV	9.6	10	10.2	8.9	10.7	13.8	3.3	4.3	5	4	12.4	7	7.3	7.4	7.9	8.2
Ammonia, total	mg/L	-		-	NV	0.36	6.32	0.14	0.93	0.39	0.68	0.07	0.04	0.05	0.05	0.06	1.54	0.06	< 0.01	1.85	<0.05
Unionized Ammonia	mg/L	-		-	0.02	< 0.01	**0.03**	<0.01	<0.01	<0.01	<0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	**0.03**	< 0.01	< 0.01	**0.04**	<0.01
Fluoride	mg/L	2.4	MAC	0.7	NV	< 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	<0.1
Sulphate	mg/L	500	AO	255	NV	11	48	44	31	35	40	8	9	10	9	14	11	11	19	11	10
Nitrite (N)	mg/L	1	MAC	0.3	NV	< 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	< 0.5	<0.05	<0.05
Nitrate (N)	mg/L	10	MAC	4.0	NV	1.59	<0.05	0.11	0.09	0.51	<0.05	1.39	1.62	1.46	1.49	1.45	1.53	1.79	< 0.5	<0.05	1.35
Bromide	mg/L	-		-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		-	NV	2.7	9	1.9	3.1	2.7	80.4	6.9	1.6	1.8	2.2	0.7	2	0.5	0.5	2	0.5
Hardness	mg/L	500	OG	361	NV	***446***	***389***	***412***	***396***	***399***	301	215	204	216	215	264	237	257	247	229	227
Aluminum	mg/L	0.1	OG	0.07	0.075	**0.12**	***0.07***	0.06	**0.09**	0.06	0.06	0.06	0.05	0.03	0.05	0.06	0.03	0.05	0.05	0.02	0.03
Antimony	mg/L	0.006	IMAC	0.002	0.02	0.0002	0.0002	<0.0001	0.0002	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	IMAC	0.006	0.005	0.0006	0.0005	0.0004	0.0012	0.0004	0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001
Barium	mg/L	1	MAC	0.3	NV	0.157	0.147	0.15	0.165	0.132	0.172	0.054	0.045	0.055	0.049	0.065	0.061	0.065	0.063	0.059	0.057
Beryllium	mg/L	-		-	1.1	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001
Boron	mg/L	5	IMAC	1.3	0.2	0.01	0.023	0.015	0.026	0.015	0.046	0.005	0.007	0.012	0.008	0.037	0.023	0.057	0.054	0.068	0.034
Cadmium	mg/L	0.005	MAC	0.001	0.0005	< 0.000010	<0.000015	<0.000015	0.000015	<0.000015	0.000022	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015
Calcium	mg/L	-		-	NV	162	142	148	145	144	109	72.7	67.8	72	72.2	88.8	78.9	86.5	82.2	76.3	75.7
Chromium	mg/L	0.05	MAC	0.013	0.001	0.001	0.001	**0.002**	**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
Chromium (VI)	mg/L			-		< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01
Cobalt	mg/L	-		-	0.0009	< 0.005	0.0007	0.0004	0.0007	0.0004	**0.0011**	0.0003	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0003	0.0002
Copper	mg/L	1	AO	0.5	0.005	0.0035	0.002	0.0041	0.0009	0.0042	0.0009	0.0012	0.0016	0.0009	0.0013	0.0013	0.0032	0.0014	0.0009	0.0014	0.0008
Iron	mg/L	0.3	AO	0.15	0.3	**2.54**	**2.99**	**1.02**	**9.13**	**1.08**	0.058	< 0.005	0.011	< 0.005	< 0.005	0.022	< 0.005	0.031	< 0.005	<0.005	<0.005
Lead	mg/L	0.01	MAC	0.003	0.005	0.00009	0.00003	0.00003	0.00004	0.00003	<0.00002	0.00003	0.00005	< 0.00002	0.00003	< 0.00002	0.00003	0.00006	< 0.00002	<0.00002	0.00003
Magnesium	mg/L	-		-	NV	10	8.17	10.2	8.44	9.27	7.05	8.02	8.39	8.87	8.51	10.1	9.57	9.95	10.1	9.32	9.27
Manganese	mg/L	0.05	AO	0.03	NV	**0.503**	**0.648**	**0.184**	**1.03**	**0.21**	**0.398**	**0.081**	< 0.001	< 0.001	< 0.001	0.002	< 0.001	0.005	< 0.001	<0.001	<0.001
Mercury	mg/L	0.001	MAC	0.0003	0.0002	< 0.00002	<0.00002	<0.00002	<0.00002	0.00003	<0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002
Molybdenum	mg/L	-		-	0.04	0.0012	0.0012	0.0011	0.0016	0.001	0.0013	0.0006	0.0001	0.0002	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.0002
Nickel	mg/L	-		-	0.025	< 0.01	0.0021	0.0016	0.0018	0.0026	0.0019	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0004	0.0007
Potassium	mg/L	-		-	NV	1	1.2	1.3	1.1	1.3	2.1	1.5	1	1.4	1.1	1.3	1.2	1.3	1.2	1.5	1.3
Phosphorus-Total	mg/L	-		-	0.03	**1.55**	**0.59**	<0.1	<0.1	<0.1	<0.1	**22**	**8.28**	**7.94**	**6.1**	**1.93**	**3.5**	**1.36**	**1.49**	**1.26**	<0.1
Selenium	mg/L	0.01	MAC	0.003	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	<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	<0.0001	<0.0001
Sodium	mg/L	200	AO	102	NV	10.7	10.8	11.6	9.8	10.2	12.3	3.6	3.2	3.8	3.3	5.4	4.2	6.6	5.5	5.9	4
Strontium	mg/L	-		-	NV	0.268	0.262	0.269	0.265	0.25	0.206	0.116	0.115	0.129	0.12	0.143	0.134	0.14	0.133	0.14	0.135
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	< 0.005	< 0.00005	<0.00005	<0.00005
Vanadium	mg/L	-		-	0.006	0.0003	0.0028	0.0012	**0.0077**	0.0015	0.0031	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	< 0.0004	0.0003	0.0003
Zinc	mg/L	5	AO	2.5	0.02	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005
TSS	mg/L	-	-	-	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	-	NV	4.6	12.8	8.1	13.1	3.8	14.9	9.6	7.6	12.8	7	11	7.9	14	9.9	13.1	11.1
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.42	7.3	7.02	7.48	7.66	6.62	8.38	7.61	7.98	7.89	8.3	8.04	7.63	8.06	7.99	7.66
Field Conductivity	µS/cm	-		-	NV	920	687	741	588	776	887	367	450	370	377	452	450	555	403	422	429

ODWQS Ontario Drinking Water Quality Objectives
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Bold / Red / Italics for RUP exceeded parameters

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS		RUP	PWQO	201	201	201
						10-Oct-24	16-Apr-25	30-Sep-25
Alkalinity	mg/L	500	OG	351	NV	263	221	244
Conductivity	µS/cm	-		-	NV	547	463	521
pH	pH Units	6.5-8.5	OG	-	6.5 - 8.5	8	7.99	8.02
TDS	mg/L	500	AO	362	NV	283	239	270
DOC	mg/L	5		3.7	NV	3.1	2	**5.5**
COD	mg/L	-		-	NV	115	82	58
Phenols	mg/L	-		-	0.001	<0.001	<0.001	<0.001
Chloride	mg/L	250	AO	128	NV	12	9.4	10.4
Ammonia, total	mg/L	-		-	NV	0.27	0.1	0.2
Unionized Ammonia	mg/L	-		-	0.02	<0.01	<0.01	<0.01
Fluoride	mg/L	2.4	MAC	0.7	NV	<0.1	<0.1	<0.1
Sulphate	mg/L	500	AO	255	NV	18	13	16
Nitrite (N)	mg/L	1	MAC	0.3	NV	<0.05	<0.05	0.1
Nitrate (N)	mg/L	10	MAC	4.0	NV	0.97	1.51	1.06
Bromide	mg/L	-		-	NV	-	-	-
TKN	mg/L	-		-	NV	0.3	0.7	0.7
Hardness	mg/L	500	OG	361	NV	256	242	256
Aluminum	mg/L	0.1	OG	0.07	0.075	0.03	**0.55**	0.05
Antimony	mg/L	0.006	IMAC	0.002	0.02	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.025	IMAC	0.006	0.005	<0.0001	0.0001	<0.0001
Barium	mg/L	1	MAC	0.3	NV	0.069	0.068	0.077
Beryllium	mg/L	-		-	1.1	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	IMAC	1.3	0.2	**0.224**	0.041	0.155
Cadmium	mg/L	0.005	MAC	0.001	0.0005	<0.000015	<0.000015	<0.000015
Calcium	mg/L	-		-	NV	84.1	80.6	85.2
Chromium	mg/L	0.05	MAC	0.013	0.001	<0.001	<0.001	<0.001
Chromium (VI)	mg/L			-		<0.01	<0.01	<0.01
Cobalt	mg/L	-		-	0.0009	0.0004	0.0009	0.0004
Copper	mg/L	1	AO	0.5	0.005	0.0022	0.0024	0.0022
Iron	mg/L	0.3	AO	0.15	0.3	0.007	**0.693**	0.007
Lead	mg/L	0.01	MAC	0.003	0.005	<0.00002	0.00064	<0.00002
Magnesium	mg/L	-		-	NV	11.2	9.78	10.5
Manganese	mg/L	0.05	AO	0.03	NV	<0.001	**0.053**	0.001
Mercury	mg/L	0.001	MAC	0.0003	0.0002	<0.00002	0.00003	<0.00002
Molybdenum	mg/L	-		-	0.04	0.0002	0.0001	0.0001
Nickel	mg/L	-		-	0.025	0.0009	0.0015	0.0007
Potassium	mg/L	-		-	NV	1.5	1.6	2.4
Phosphorus-Total	mg/L	-		-	0.03	<0.1	<0.1	<0.1
Selenium	mg/L	0.01	MAC	0.003	0.1	<0.001	<0.001	<0.001
Silver	mg/L	-		-	0.0001	<0.0001	<0.0001	<0.0001
Sodium	mg/L	200	AO	102	NV	13.2	4.1	8.2
Strontium	mg/L	-		-	NV	0.163	0.136	0.169
Thallium	mg/L	-		-	0.0003	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-		-	0.006	0.0003	0.001	0.0002
Zinc	mg/L	5	AO	2.5	0.02	<0.005	<0.005	<0.005
TSS	mg/L	-	-	-	NV	-	-	-
Field Temperature	°C	-	AO	-	NV	11.3	8.5	12.1
Field pH	pH Units	6.5-8.5	OG	-	6.5-8.5	7.74	7.74	6.74
Field Conductivity	µS/cm	-		-	NV	469	457	552

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Bedrock Ground Water Quality Data

PARAMETER	UNITS	ODWQS		10-I 25-Apr-16	10-I 19-Oct-16	10-I 12-Apr-17	10-I 06-Oct-17	10-I 10-Apr-18	10-I 01-Oct-18	10-I 22-Apr-19	10-I 08-Oct-19	10-I 13-Apr-20	10-I 15-Oct-20	10-I 21-Apr-21	10-I 18-Oct-21	10-I 20-Apr-22	10-I 12-Oct-22	10-I 19-Apr-23	10-I 12-Oct-23	10-I 16-Apr-24	10-I 10-Oct-24
Alkalinity	mg/L	500	OG	256	253	239	261	247	271	256	255	230	264	248	276	244	268	246	289	252	268
Conductivity	µS/cm	-		1880	3850	1440	2590	1630	2350	3330	2680	1050	1570	7820	2040	1350	2930	3410	1720	3080	5360
pH	pH Units	6.5-8.5	OG	7.77	7.73	7.71	7.66	7.91	7.81	7.78	7.8	7.85	7.76	7.69	7.68	7.47	7.75	7.76	7.37	7.59	7.86
TDS	mg/L	500	AO	**726**	**1370**	**1180**	**1700**	**818**	**1189**	**1713**	**1549**	481	**835**	**4315**	**1167**	**654**	**1532**	**1771**	**942**	**1720**	**3040**
DOC	mg/L	5		0.2	0.5	0.6	0.3	1.6	1.5	1.7	2.3	1.4	0.2	1.7	1.9	1.4	0.4	< 0.2	2.6	2.3	2.4
COD	mg/L	-		< 5	30	< 5	14	20	9	14	< 5	10	< 5	53	11	10	< 5	42	<5	38	29
Phenols	mg/L	-		< 0.001	0.013	0.072	0.012	< 0.001	< 0.01	< 0.002	< 0.002	0.003	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001
Chloride	mg/L	250	AO	**280**	**717**	**572**	**818**	**319**	**527**	**916**	**815**	169	**341**	**2640**	**543**	**254**	**795**	**994**	**370**	**838**	**1710**
Ammonia, total	mg/L	-		0.69	1.19	1.88	2.17	1.8	2.56	0.94	0.6	0.43	0.55	5.03	0.55	1.9	0.55	2.5	0.68	2.44	0.84
Unionized Ammonia	mg/L	-		-	-	-	-	-	-	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	0.02	< 0.01	0.04	<0.01	0.02	<0.01
Fluoride	mg/L	2.4	MAC	0.4	0.5	< 0.5	< 1	0.2	0.2	< 0.5	< 1	< 0.1	0.1	< 1	0.3	< 0.1	1.4	< 1	0.2	<0.7	<1.8
Sulphate	mg/L	500	AO	22	26	19	16	14	21	19	< 10	23	18	15	22	20	22	14	16	16	9
Nitrite (N)	mg/L	1	MAC	< 0.1	< 0.1	**1.4**	< 0.5	< 0.05	0.42	< 0.3	< 0.5	< 0.05	< 0.05	< 0.5	0.11	< 0.05	< 0.3	< 0.05	0.05	<0.40	<1.00
Nitrate (N)	mg/L	10	MAC	0.4	0.3	1	< 0.5	0.13	0.17	< 0.3	< 0.5	0.18	0.19	< 0.5	0.09	0.26	< 0.3	1.58	<0.05	<0.40	<1.00
Bromide	mg/L	-		3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		1	1.5	2.3	2.3	2.2	3	1.3	0.8	0.6	0.8	7.2	0.7	2	0.9	3.7	0.9	2.9	1.1
Hardness	mg/L	500	OG	377	**504**	492	**681**	373	**507**	**576**	**530**	320	495	**1230**	480	337	389	314	415	486	**859**
Aluminum	mg/L	0.1	OG	0.03	0.04	0.07	0.08	**0.12**	0.06	0.08	0.08	0.05	0.05	0.07	0.02	0.02	0.04	0.05	0.07	0.04	0.05
Antimony	mg/L	0.006	IMAC	< 0.0001	0.0002	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	0.0004	< 0.0001	< 0.0001	< 0.0001	0.0002	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.025	IMAC	0.0004	0.0003	0.0005	0.0062	0.0001	0.0002	< 0.0001	< 0.0005	< 0.0001	0.0002	< 0.0005	< 0.0003	< 0.0001	< 0.0003	< 0.0003	0.0003	0.0002	0.0001
Barium	mg/L	1	MAC	0.03	0.06	0.07	0.12	0.042	0.072	0.098	0.082	0.027	0.064	0.239	0.072	0.047	0.101	0.029	0.062	0	0.175
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	< 0.002	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	IMAC	0.111	0.27	0.062	0.372	0.153	0.252	0.27	0.36	0.139	0.211	0.54	0.285	0.174	0.336	0.189	0.246	0.231	0.436
Cadmium	mg/L	0.005	MAC	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000059	< 0.000015	< 0.000015	< 0.000059	< 0.000029	< 0.000015	< 0.000029	< 0.000029	<0.000015	<0.000015	<0.000015
Calcium	mg/L	-		92.6	112	137	153	97.5	124	139	118	76.1	132	267	118	81.9	127	128	102	138	192
Chromium	mg/L	0.05	MAC	< 0.0002	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	< 0.001	<0.001	<0.001	<0.001
Chromium (VI)	mg/L			-	-	-	-	-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01
Cobalt	mg/L	-		< 0.005	< 0.005	< 0.005	< 0.005	0.008	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	0.006	0.006	< 0.005	< 0.005	< 0.005	0.0002	0.0002	0.0002
Copper	mg/L	1	AO	0.0004	0.0006	0.0014	0.0032	0.0008	0.0007	0.0012	0.0004	0.0014	0.0003	0.0012	0.0003	0.0007	0.0004	0.0003	0.0009	0.0009	0.0009
Iron	mg/L	0.3	AO	0.12	< 0.005	0.05	**0.66**	0.043	0.007	< 0.005	< 0.005	0.014	0.093	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005
Lead	mg/L	0.01	MAC	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0002	0.00003	< 0.00004	0.00028	< 0.00009	0.00003	< 0.00009	< 0.00009	0.00003	0.00003	<0.00002
Magnesium	mg/L	-		35.4	54.1	36.3	72.6	31.4	47.9	55.7	57.2	31.6	40	136	45	32.1	56.3	33.1	39	47.2	92
Manganese	mg/L	0.05	AO	0	< 0.001	0	0.01	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.006	0.008	< 0.001	< 0.001	0.001	0.001	<0.001	0.001	0.004
Mercury	mg/L	0.001	MAC	< 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	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	-		0.0002	0.0001	0.0006	0.0003	< 0.0001	0.0003	0.0002	< 0.0004	0.0002	0.0002	0.0005	0.0003	0.0001	< 0.0002	< 0.0002	0.0001	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	< 0.01	< 0.01	< 0.01	<0.0002	<0.0002	<0.0002
Potassium	mg/L	-		7.3	11.6	9	17.1	8.4	12.5	14.9	16.5	5.5	8.6	31.7	12.1	6.8	13.6	14.8	9.6	11.7	23.2
Phosphorus-Total	mg/L	-		0.16	0.09	0.13	0.11	0.13	0.1	0.11	0.1	0.05	0.05	1.47	0.08	0.19	0.11	0.1	0.08	<0.1	<0.1
Selenium	mg/L	0.01	MAC	< 0.001	0.006	< 0.001	0.005	0.002	0.004	0.003	0.003	0.002	0.004	<0.02	0.004	0.002	0.004	< 0.001	0.002	<0.001	<0.001
Silver	mg/L	-		< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 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
Sodium	mg/L	200	AO	132	**292**	**251**	**463**	197	**291**	**414**	**388**	37.4	137	**1070**	**260**	110	**356**	18.6	161	**337**	**670**
Strontium	mg/L	-		1.28	4.63	0.98	6.85	2.4	3.93	5.55	5.07	1.21	2.34	16.6	3.49	1.81	4.95	1.03	2.58	4.64	9.93
Thallium	mg/L	-		< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00009	< 0.00005	< 0.00005	< 0.005	< 0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-		0.0009	0.0009	0.0012	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0007	< 0.0001	< 0.0001	< 0.0007	< 0.0004	< 0.0001	< 0.0004	0.0001	<0.0001	<0.0001	<0.0001
Zinc	mg/L	5	AO	< 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	<0.005	<0.005
TSS	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (Total)	mg/L	0.2	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BOD(5 day)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	5.8	12	6.4	11.4	-	-	9.6	10.4	6.4	10.9	5.6	10.2	7.8	11.8	4.9	11.8	6.7	11.3
Field pH	pH Units	6.5-8.5	OG	7.85	7.72	7.82	7.85	7.91	7.81	7.56	7.71	7.81	7.96	7.49	7.68	7.75	7.43	8.08	7.53	7.79	7.37
Field Conductivity	µS/cm	-		625	860	827	3045	1540	2200	3360	630	1800	960	1038	2471	1200	2793	712	693	1088	2872

Bold text indicates values exceeding the ODWO.

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Bold / Highlighting for ODWQS exceeded parameters

Bold / Red / Italics for RUP exceeded parameters

Bedrock Ground Water Quality Data

PARAMETER	UNITS	ODWQS		10-I 16-Apr-25	10-I 30-Sep-25	11-I 25-Apr-16	11-I 19-Oct-16	11-I 12-Apr-17	11-I 06-Oct-17	11-I 10-Apr-18	11-I 01-Oct-18	11-I 22-Apr-19	11-I 08-Oct-19	11-I 13-Apr-20	11-I 15-Oct-20	11-I 21-Apr-21	11-I 18-Oct-21	11-I 20-Apr-22	11-I 12-Oct-22	11-I 19-Apr-23	11-I 12-Oct-23	11-I 16-Apr-24
Alkalinity	mg/L	500	OG	245	255	224	215	213	218	205	213	250	221	204	199	201	203	202	217	215	221	216
Conductivity	µS/cm	-		2130	4080	680	687	592	740	545	596	1060	833	638	490	471	434	551	643	616	538	573
pH	pH Units	6.5-8.5	OG	7.57	7.8	8.06	8.07	8.08	7.98	8.12	7.89	8.12	8.01	8.03	7.89	8.04	7.88	7.58	7.9	7.91	7.4	7.92
TDS	mg/L	500	AO	**1180**	**2300**	350	318	266	344	279	316	**558**	472	337	255	244	246	276	321	373	279	297
DOC	mg/L	5		1	2.5	0.6	1.1	**7.7**	1.2	1.7	1.4	1.5	1.9	1.5	2.5	3.1	2.4	1.7	< 0.2	1.3	3.6	3.1
COD	mg/L	-		49	75	115	5	< 5	19	32	6	16	< 5	6	< 5	12	10	9	< 5	121	72	33
Phenols	mg/L	-		0.003	<0.001	< 0.001	0.014	0.004	0.003	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001
Chloride	mg/L	250	AO	**511**	**1250**	47	46	27	62	34.7	44	183	140	61	22.7	16	14.1	35.7	55.3	55.2	31.5	37.4
Ammonia, total	mg/L	-		0.7	1.51	0.43	0.24	0.41	0.74	0.52	0.17	0.61	0.14	0.21	0.09	0.28	0.04	1.21	0.13	0.6	<0.05	0.25
Unionized Ammonia	mg/L	-		<0.01	<0.01	-	-	-	-	-	-	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	0.02	< 0.01	0.01	<0.01	<0.01
Fluoride	mg/L	2.4	MAC	<0.7	<0.7	0.2	0.2	0.1	0.1	< 0.1	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	<0.1	<0.1
Sulphate	mg/L	500	AO	22	18	13	13	13	10	11	15	14	10	13	13	12	13	12	10	10	12	12
Nitrite (N)	mg/L	1	MAC	<0.40	<0.40	< 0.1	< 0.1	0.3	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05
Nitrate (N)	mg/L	10	MAC	0.58	<0.40	1.3	1.5	1.6	1.7	1.64	1.65	0.44	0.66	1.02	1.57	1.73	2.05	1.7	1.24	2.06	<0.05	1.69
Bromide	mg/L	-		-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		1.4	2.2	0.6	0.4	0.6	0.8	1.1	0.3	0.9	0.3	0.5	0.4	0.5	0.3	1.4	0.2	2.4	0.3	0.5
Hardness	mg/L	500	OG	489	**749**	174	229	219	189	160	190	142	179	165	220	207	211	199	225	218	219	200
Aluminum	mg/L	0.1	OG	0.07	0.07	0.01	0.02	0.05	**0.66**	0.03	**0.19**	0.02	0.03	0.02	0.02	0.04	0.04	0.01	< 0.01	**0.11**	0.02	0.02
Antimony	mg/L	0.006	IMAC	<0.0001	<0.0001	0.0003	0.0006	0.0002	0.0005	0.0003	0.0004	0.0004	0.0002	0.0003	0.0006	0.0004	0.0003	0.0003	0.0003	0.0005	0.0004	0.0002
Arsenic	mg/L	0.025	IMAC	<0.0001	<0.0001	0.0008	0.0008	0.0003	0.0012	0.0008	0.0007	0.0005	0.0004	0.0005	0.0005	0.0006	0.0005	0.0005	0.0005	0.0004	0.0004	0.0005
Barium	mg/L	1	MAC	0.072	0.14	0.05	0.06	0.07	0.05	0.035	0.043	0.041	0.048	0.046	0.051	0.046	0.049	0.048	0.06	0.069	0.063	0
Beryllium	mg/L	-		<0.0001	<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	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001
Boron	mg/L	5	IMAC	0.158	0.372	0.147	0.065	0.025	0.121	0.094	0.098	0.261	0.223	0.168	0.04	0.042	0.043	0.075	0.089	0.219	0.057	0.071
Cadmium	mg/L	0.005	MAC	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015	<0.000015
Calcium	mg/L	-		124	166	45.8	69.4	68.3	52.9	41.6	54.4	34.3	46.4	42.9	65.8	61.4	62.7	56.1	65.1	56.9	65.2	54.8
Chromium	mg/L	0.05	MAC	<0.001	<0.001	< 0.0002	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	< 0.001	<0.001	<0.001
Chromium (VI)	mg/L			<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01
Cobalt	mg/L	-		0.0002	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	0.016	0.013	< 0.005	< 0.005	0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	0.0002
Copper	mg/L	1	AO	0.0005	0.0001	0.0009	0.0005	0.0034	0.0015	0.0013	0.0008	0.0008	0.0005	0.0021	0.0008	0.0012	0.0006	0.0009	0.0006	0.0015	0.0014	0.0021
Iron	mg/L	0.3	AO	0.092	<0.005	< 0.005	< 0.005	0.01	0.17	< 0.005	0.05	< 0.005	< 0.005	0.009	< 0.005	< 0.005	< 0.005	0.009	< 0.005	0.076	0.037	<0.005
Lead	mg/L	0.01	MAC	<0.00002	<0.00004	0.00004	0.00008	0.00004	0.00016	0.00415	0.00165	0.00005	0.00007	0.0001	< 0.00002	0.00006	0.00003	0.00004	0.00005	0.0004	0.00028	0.00146
Magnesium	mg/L	-		43.6	81.2	14.5	13.6	11.8	13.9	13.6	13.1	13.8	15.3	14.1	13.5	13	13.1	14.4	15.2	18.4	13.6	13.2
Manganese	mg/L	0.05	AO	0.002	0.005	< 0.001	0.007	< 0.001	0.001	< 0.001	< 0.001	0.008	0.004	0.008	< 0.001	< 0.001	0.001	< 0.001	0.001	0.02	0.003	0.002
Mercury	mg/L	0.001	MAC	<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	< 0.00002	< 0.00002	< 0.00002	< 0.00002	<0.00002	<0.00002
Molybdenum	mg/L	-		0.0003	0.0002	0.001	0.0004	0.0002	0.0011	0.0001	0.0009	0.0007	0.0003	0.0007	0.0004	0.0003	0.0003	0.0005	0.0005	0.0011	0.0004	0.0005
Nickel	mg/L	-		0.0007	0.0006	< 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	0.0004	0.001
Potassium	mg/L	-		8.1	18.6	5.1	2.5	1.7	4.2	3.9	3.9	7.3	6.4	5.3	2.6	2.5	2.5	3.1	3.4	6.8	3	3.1
Phosphorus-Total	mg/L	-		<0.1	<0.1	0.78	0.29	0.21	0.36	0.83	0.15	0.53	0.12	0.18	0.06	0.07	0.03	0.44	0.1	1.92	0.14	<0.1
Selenium	mg/L	0.01	MAC	0.002	0.003	< 0.001	0	< 0.001	0	0.003	0.002	0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	0.001	0.001	0.003	<0.001	<0.001
Silver	mg/L	-		<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	<0.0001
Sodium	mg/L	200	AO	**203**	**489**	84	38	8	68	50.2	57.1	155	121	77.2	18.1	18.6	18.3	32.5	41	93	28.2	35
Strontium	mg/L	-		3.22	8.23	1.02	0.72	0.44	0.8	0.755	0.73	0.985	1.06	0.961	0.585	0.642	0.643	0.801	0.834	0.929	0.625	0.76
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	< 0.00005	< 0.005	< 0.00005	<0.00005	<0.00005
Vanadium	mg/L	-		<0.0001	<0.0001	0.0009	0.0007	0.0009	0.0008	0.0003	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	< 0.0001	0.0002	0.0002	0.0003	0.0001	0.0004
Zinc	mg/L	5	AO	<0.005	<0.005	0.01	< 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
TSS	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (Total)	mg/L	0.2	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BOD(5 day)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	5.1	10.4	4.9	12.1	5.6	11.1	-	-	8.7	12.1	7.1	12.3	7.2	9.4	5.7	11.5	7.5	8.4	8.7
Field pH	pH Units	6.5-8.5	OG	7.26	7.4	8.28	7.98	7.79	7.88	8.12	7.89	7.83	7.96	7.93	7.98	8.26	7.01	8.18	7.95	8.23	8.06	7.9
Field Conductivity	µS/cm	-		679	847	585	480	351	660	517	585	530	424	634	410	540	761	540	677	685	633	463

Bold text indicates values exceeding the ODWO.

ODWQS Ontario Drinking Water Quality Objectives

MAC Maximum Acceptable Concentration

IMAC Interim Maximum Acceptable Concentration

AO Aesthetic Objective

OG Operatioal Guidelines

Bold / Highlighting for ODWQS exceeded parameters

Bold / Red / Italics for RUP exceeded parameters

Bedrock Ground Water Quality Data

PARAMETER	UNITS	ODWQS		11-I 10-Oct-24	11-I 16-Apr-25	11-I 30-Sep-25	13-I 25-Apr-16	13-I 20-Oct-16	13-I 12-Apr-17	13-I 05-Oct-17	13-I 11-Apr-18	13-I 02-Oct-18	13-I 23-Apr-19	13-I 09-Oct-19	13-I 13-Apr-20	13-I 15-Oct-20	13-I 21-Apr-21	13-I 18-Oct-21	13-I 20-Apr-22	13-I 12-Oct-22	13-I 19-Apr-23	13-I 12-Oct-23
Alkalinity	mg/L	500	OG	243	266	237	213	215	215	215	220	205	206	205	198	208	215	219	215	219	212	227
Conductivity	µS/cm	-		682	722	560	454	465	455	461	448	459	475	455	460	455	468	438	471	460	463	463
pH	pH Units	6.5-8.5	OG	8.05	7.52	8	8.03	8.11	8.01	8	8.03	8.03	8.05	7.95	7.94	7.92	7.96	7.84	7.5	7.9	7.92	7.38
TDS	mg/L	500	AO	354	376	290	241	257	245	237	245	239	242	237	230	246	250	251	246	254	246	239
DOC	mg/L	5		2.4	**14.1**	3.4	0.6	1	1.7	1.3	1.7	1.6	2.1	2.5	1.4	3.1	3.2	2.5	1.5	0.7	0.6	3.1
COD	mg/L	-		309	195	62	< 5	6	< 5	< 5	15	5	< 5	< 5	< 5	< 5	14	6	< 5	< 5	< 5	8
Phenols	mg/L	-		<0.001	0.068	<0.001	< 0.001	0.01	0.001	0.002	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001
Chloride	mg/L	250	AO	65.9	67.9	26	7	7	7	6	6.2	7.2	8.1	6.6	7.5	8.1	8.2	8.2	7.7	7.5	7	7.2
Ammonia, total	mg/L	-		0.69	0.28	0.63	0.24	0.05	0.04	< 0.01	0.02	0.03	0.33	0.05	< 0.01	0.01	0.25	0.04	1.6	< 0.01	0.24	<0.05
Unionized Ammonia	mg/L	-		<0.01	<0.01	<0.01	-	-	-	-	-	-	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	0.02	< 0.01	< 0.01	<0.01
Fluoride	mg/L	2.4	MAC	<0.1	<0.1	<0.1	0.2	0.2	0.3	0.1	< 0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.4	< 0.1	0.1
Sulphate	mg/L	500	AO	12	7	13	16	16	16	14	14	17	17	15	16	17	18	18	16	15	152	15
Nitrite (N)	mg/L	1	MAC	<0.05	<0.05	<0.05	< 0.1	< 0.1	0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.5	<0.05
Nitrate (N)	mg/L	10	MAC	1.33	0.19	0.94	0.2	0.3	0.3	0.5	0.39	0.79	0.45	0.85	0.89	0.69	0.6	0.71	0.75	0.94	< 0.5	0.7
Bromide	mg/L	-		-	-	-	< 0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		3.4	2	1	0.2	0.2	0.2	0.1	0.1	0.2	0.5	0.2	< 0.1	0.1	0.4	0.2	2	0.1	0.3	<0.1
Hardness	mg/L	500	OG	211	218	223	224	256	234	226	236	241	239	241	230	251	243	241	237	255	247	240
Aluminum	mg/L	0.1	OG	0.07	**0.16**	0.04	0.02	0.03	0.04	0.05	0.04	0.04	0.05	0.05	0.04	0.02	0.05	0.05	0.01	0.01	0.05	0.02
Antimony	mg/L	0.006	IMAC	0.0002	<0.0001	0.0003	< 0.0001	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	< 0.0001	<0.0001
Arsenic	mg/L	0.025	IMAC	0.0004	0.0006	0.0004	0.0002	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	< 0.0001	<0.0001
Barium	mg/L	1	MAC	0.074	0.061	0.059	0.08	0.09	0.13	0.1	0.087	0.094	0.088	0.092	0.092	0.098	0.093	0.099	0.096	0.104	0.096	0.098
Beryllium	mg/L	-		<0.0001	<0.0001	<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	< 0.002	< 0.002	< 0.002	<0.0001
Boron	mg/L	5	IMAC	0.204	0.129	0.03	0.019	0.05	0.045	0.037	0.04	0.03	0.039	0.028	0.028	0.033	0.037	0.033	0.028	0.029	0.033	0.033
Cadmium	mg/L	0.005	MAC	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	< 0.000010	<0.000015
Calcium	mg/L	-		56.4	62.1	70	60.3	68.7	61.9	60.3	64.6	65.8	67	66.6	63.5	69.9	67.2	67.9	65.4	71.9	67.3	67.2
Chromium	mg/L	0.05	MAC	<0.001	<0.001	<0.001	< 0.0002	0	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			<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01
Cobalt	mg/L	-		0.0005	0.0004	0.0002	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0006	< 0.005	< 0.005	< 0.005	0.007	< 0.005	< 0.005	0.0007
Copper	mg/L	1	AO	0.0006	0.0005	0.0006	0.0004	0.0004	< 0.0001	0.0003	0.0002	0.0011	0.0014	0.0003	0.0004	0.0007	0.0011	0.0007	0.0022	0.0004	0.0004	0.0008
Iron	mg/L	0.3	AO	0.059	0.049	0.029	< 0.005	< 0.005	0.01	< 0.005	0.007	< 0.005	0.019	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.027	0.005
Lead	mg/L	0.01	MAC	0.00053	0.00052	0.00017	< 0.00002	0.00008	< 0.00002	< 0.00002	< 0.00002	0.00002	0.00002	< 0.00002	< 0.00002	< 0.00002	0.00006	< 0.00002	0.00002	0.00003	< 0.00002	0.00003
Magnesium	mg/L	-		16.9	15.2	11.8	17.7	20.4	19.2	18.3	18.2	18.5	17.5	18.2	17.3	18.6	18.2	17.4	17.8	18.4	19.1	17.6
Manganese	mg/L	0.05	AO	**0.052**	0.042	0.006	**0.051**	**0.061**	**0.066**	**0.078**	**0.053**	**0.078**	**0.076**	**0.083**	**0.065**	**0.052**	**0.061**	**0.075**	**0.068**	**0.073**	**0.053**	**0.061**
Mercury	mg/L	0.001	MAC	<0.00002	<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	< 0.00002	< 0.00002	< 0.00002	<0.00002
Molybdenum	mg/L	-		0.001	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	< 0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Nickel	mg/L	-		0.0013	0.0013	0.0009	< 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	0.0006
Potassium	mg/L	-		6.2	5	2.2	2	2.2	2	1.8	1.7	1.7	1.9	1.8	1.7	1.9	2.1	1.9	1.9	2	1.9	1.8
Phosphorus-Total	mg/L	-		<0.1	<0.1	<0.1	0.39	0.11	0.16	0.1	0.12	0.18	0.07	0.03	< 0.01	0.03	0.05	0.01	0.03	0.09	< 0.01	0.03
Selenium	mg/L	0.01	MAC	<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	< 0.001	< 0.001	<0.001
Silver	mg/L	-		<0.0001	<0.0001	<0.0001	< 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	< 0.0001	< 0.0001	<0.0001
Sodium	mg/L	200	AO	96.4	67.7	14.2	9.2	11.4	7.9	7	7.5	6.1	6.4	6.2	5.4	6.2	7.3	6.4	5.8	6.2	8	5.8
Strontium	mg/L	-		1.04	0.923	0.424	0.76	0.91	0.76	0.75	0.749	0.74	0.727	0.755	0.721	0.73	0.773	0.739	0.737	0.777	0.767	0.758
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	< 0.00005	< 0.00005	< 0.005	< 0.00005	<0.00005
Vanadium	mg/L	-		0.0001	0.0001	0.0002	0.0009	0.0006	0.001	0.0011	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0003	0.0003	0.0036	0.0003
Zinc	mg/L	5	AO	<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	< 0.005	< 0.005	<0.005
TSS	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (Total)	mg/L	0.2	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BOD(5 day)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	10.6	3.8	9.3	6.9	10.5	7.8	10.8	-	-	8.8	9.3	8.9	9.8	8.9	9.8	9.6	12.1	7.3	8.5
Field pH	pH Units	6.5-8.5	OG	7.64	7.59	6.14	8.13	7.59	7.44	7.95	8.03	8.03	7.74	7.8	7.89	7.84	7.5	7.81	7.87	7.81	8.04	8.05
Field Conductivity	µS/cm	-		657	530	580	370	485	405	405	461	456	450	365	451	418	432	487	450	490	562	536

Bold text indicates values exceeding the ODWO.

ODWQS Ontario Drinking Water Quality Objectives

MAC Maximum Acceptable Concentration

IMAC Interim Maximum Acceptable Concentration

AO Aesthetic Objective

OG Operatioal Guidelines

Bold / Highlighting for ODWQS exceeded parameters

Bold / Red / Italics for RUP exceeded parameters

Bedrock Ground Water Quality Data

PARAMETER	UNITS	ODWQS		13-I 16-Apr-24	13-I 10-Oct-24	13-I 16-Apr-25	13-I 30-Sep-25	14-I 26-Apr-16	14-I 19-Oct-16	14-I 12-Apr-17	14-I 05-Oct-17	14-I 10-Apr-18	14-I 02-Oct-18	14-I 22-Apr-19	14-I 09-Oct-19	14-I 13-Apr-20	14-I 14-Oct-20	14-I 21-Apr-21	14-I 18-Oct-21	14-I 20-Apr-22	14-I 12-Oct-22	14-I 19-Apr-23
Alkalinity	mg/L	500	OG	218	221	223	217	379	463	386	**637**	443	**663**	435	449	440	464	460	**507**	**562**	468	
Conductivity	µS/cm	-		465	457	461	467	743	1790	1170	1250	1800	3670	3840	3400	3380	3360	3300	3190	4050	2730	
pH	pH Units	6.5-8.5	OG	7.91	8.01	7.83	8	6.96	6.94	7.06	6.86	7.2	7.25	7.09	7.14	7.1	7.22	7.34	6.89	7.1	7.17	
TDS	mg/L	500	AO	240	236	238	241	430	**974**	**768**	**678**	**939**	**1973**	**2151**	**2040**	**1958**	**1832**	**1877**	**2083**	**2171**	**1455**	
DOC	mg/L	5		2.1	1.7	1.5	3.1	3.7	**11.3**	**40.7**	**17**	**9.6**	**7.4**	4.1	3.8	**7.1**	2.4	**5.7**	**5.9**	3.6	0.6	
COD	mg/L	-		9	10	<5	<5	175	121	381	345	367	340	65	117	370	54	137	177	1460	87	
Phenols	mg/L	-		<0.001	<0.001	<0.001	<0.001	< 0.001	0.013	0.055	0.062	0.029	0.073	< 0.002	0.004	< 0.002	< 0.002	0.004	< 0.002	0.032	< 0.001	
Chloride	mg/L	250	AO	6.9	6.8	6.7	7.1	4	**288**	48	24	243	**774**	**1100**	**987**	**867**	**828**	**826**	**1060**	**949**	**539**	
Ammonia, total	mg/L	-		0.16	0.07	<0.05	<0.05	2.82	1.07	2.53	14.5	8.15	27.6	12.9	11.9	11.4	12.4	12.1	15.4	24	9.67	
Unionized Ammonia	mg/L	-		<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	0.02	< 0.01	< 0.01	0.02	-	0.06	0.03	0.02	
Fluoride	mg/L	2.4	MAC	<0.1	<0.1	<0.1	<0.1	0.1	0.2	< 0.1	0.3	< 0.1	< 1	< 1	< 1	< 0.1	< 1	< 0.1	< 1	< 1	1.1	
Sulphate	mg/L	500	AO	15	16	15	17	18	21	180	4	33	11	39	< 10	7	< 10	19	< 10	< 10	17	
Nitrite (N)	mg/L	1	MAC	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	0.4	< 0.05	< 0.05	< 0.5	< 0.5	< 0.5	< 0.05	< 0.5	< 0.05	< 0.5	< 0.5	< 0.3	
Nitrate (N)	mg/L	10	MAC	0.8	1.04	0.82	1.21	0.1	0.1	0.1	< 0.05	< 0.05	< 0.5	< 0.5	< 0.5	< 0.05	< 0.5	< 0.05	< 0.5	< 0.5	< 0.3	
Bromide	mg/L	-		-	-	-	-	< 0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	
TKN	mg/L	-		0.3	0.2	0.2	0.2	6.9	30.8	12.8	21.6	21.9	37	15.7	13.5	23.2	16	15.3	15.8	59.2	13	
Hardness	mg/L	500	OG	229	233	223	242	370	**509**	**550**	**510**	**530**	**833**	**959**	**917**	**907**	**843**	**817**	**788**	**881**	**704**	
Aluminum	mg/L	0.1	OG	0.02	0.02	0.02	0.03	0.04	**0.44**	**0.12**	**0.16**	0.1	0.08	**0.11**	**0.35**	**0.11**	0.09	**0.17**	**0.11**	0.07	0.06	
Antimony	mg/L	0.006	IMAC	<0.0001	<0.0001	<0.0001	<0.0001	< 0.0001	0.001	0.0002	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0001	0.0002	< 0.0001	0.0003	0.0013	0.0002	
Arsenic	mg/L	0.025	IMAC	<0.0001	<0.0001	<0.0001	<0.0001	0.0012	0.0045	0.0026	0.0021	0.0011	0.0005	0.0004	< 0.0005	< 0.0003	0.0003	0.0004	0.0003	0.0006	< 0.0003	
Barium	mg/L	1	MAC	0.094	0.091	0.091	0.098	0.15	0.42	0.15	0.24	0.182	0.553	0.452	0.427	0.388	0.348	0.329	0.321	0.422	0.281	
Beryllium	mg/L	-		<0.0001	<0.0001	<0.0001	<0.0001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.004	< 0.002	< 0.002	< 0.002	< 0.002	
Boron	mg/L	5	IMAC	0.03	0.029	0.028	0.025	0.088	0.541	0.307	0.947	0.303	0.685	1.08	1.25	1.25	1.21	1.31	1.39	1.86	1.35	
Cadmium	mg/L	0.005	MAC	<0.000015	<0.000015	<0.000015	<0.000015	< 0.00002	0.00004	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000059	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	
Calcium	mg/L	-		63.7	63.7	62.1	68.1	138	162	180	177	187	277	290	263	252	240	226	217	227	196	
Chromium	mg/L	0.05	MAC	<0.001	<0.001	<0.001	<0.001	< 0.0002	0.004	0.006	< 0.001	< 0.001	0.002	0.001	0.002	< 0.001	< 0.002	0.001	0.001	0.001	< 0.001	
Chromium (VI)	mg/L			<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	< 0.001	< 0.001	Broken
Cobalt	mg/L	-		0.0005	0.0005	0.0004	0.0004	< 0.005	0.006	0.009	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0007	< 0.01	< 0.005	< 0.005	0.007	< 0.005	
Copper	mg/L	1	AO	0.0003	0.0008	0.0003	0.0005	0.0009	0.0031	0.0005	0.0007	0.0063	0.0008	0.0062	0.0034	0.0041	0.0004	0.001	0.0006	0.0006	0.0002	
Iron	mg/L	0.3	AO	<0.005	<0.005	0.005	<0.005	**7.74**	**22.1**	**36.9**	**124**	**45**	**85**	**5.29**	**47.3**	**39.7**	**33.9**	**30.8**	**34.9**	**50.2**	**28.9**	
Lead	mg/L	0.01	MAC	0.00003	<0.00002	0.00002	<0.00002	0.00011	0.0029	0.00002	0.00078	0.00006	< 0.00002	0.0001	0.00144	< 0.00009	< 0.00009	0.00085	0.0001	0.00011	< 0.00009	
Magnesium	mg/L	-		16.9	18	16.6	17.4	6.1	25.6	24.4	16.4	15.1	34.2	57	63.2	67.4	59.1	61.4	59.8	76.2	51.8	
Manganese	mg/L	0.05	AO	**0.051**	0.045	0.037	0.041	**1.45**	**1.67**	**1.92**	**1.38**	**2.05**	**1.78**	**1.53**	**1.27**	**1.19**	**1.07**	**0.909**	**0.882**	**1.05**	**0.773**	
Mercury	mg/L	0.001	MAC	<0.00002	<0.00002	<0.00002	<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	< 0.00002	
Molybdenum	mg/L	-		0.0001	0.0002	0.0002	0.0001	0.0002	0.0004	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0004	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0002	< 0.0002	
Nickel	mg/L	-		0.0009	0.0004	0.0008	0.0009	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	
Potassium	mg/L	-		1.8	1.9	1.7	1.7	18.1	48.8	27.7	22	15.6	40.9	26.6	29.8	27.2	23.9	25.9	25.9	28.8	22.7	
Phosphorus-Total	mg/L	-		<0.1	<0.1	<0.1	<0.1	1.56	17.6	1.47	2.45	1.18	1	0.25	0.79	3.71	0.33	0.93	0.7	19.5	0.34	
Selenium	mg/L	0.01	MAC	<0.001	<0.001	0.001	<0.001	< 0.001	0.009	< 0.001	< 0.001	< 0.001	0.004	**0.013**	**0.024**	**0.014**	0.01	<0.02	<0.02	<0.03	< 0.02	
Silver	mg/L	-		<0.0001	<0.0001	<0.0001	<0.0001	< 0.00002	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	
Sodium	mg/L	200	AO	5.6	5.8	5.4	5.2	5	125	32	33	167	**400**	**353**	**411**	**417**	**352**	**396**	**381**	**471**	**304**	
Strontium	mg/L	-		0.73	0.732	0.676	0.723	0.34	1.85	0.73	1.25	0.587	1.63	4.24	5.07	5.78	4.36	5.24	4.86	6.98	4.19	
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	< 0.00005	< 0.00005	< 0.00005	< 0.005	
Vanadium	mg/L	-		0.0003	0.0003	0.0003	0.0003	0.0029	0.0085	0.0027	0.0047	0.0004	0.00019	0.0001	< 0.0007	0.0005	< 0.0004	0.0005	0.0006	0.0012	0.0006	
Zinc	mg/L	5	AO	<0.005	<0.005	<0.005	<0.005	< 0.005	0.01	< 0.005	0.02	0.006	< 0.005	< 0.005	0.016	< 0.005	< 0.01	0.007	< 0.005	0.005	< 0.005	
TSS	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cyanide (Total)	mg/L	0.2	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BOD(5 day)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Field Temperature	°C	-	AO	8.9	10.5	6.1	9.7	5.2	16.8	9.5	16.5	-	-	14.1	13.2	9.3	13.4	9.1	12	11	13.4	
Field pH	pH Units	6.5-8.5	OG	8.07	7.22	8.17	7.59	7.35	7.04	7.16	6.77	7.2	7.25	6.86	6.24	6.59	6.76	6.85	7.24	6.8	6.88	
Field Conductivity	µS/cm	-		533	1488	463	464	630	875	950	1250	1670	3380	3550	2220	>4000	2500	2400	1670	3840	2940	

Bold text indicates values exceeding the ODWO.

ODWQS Ontario Drinking Water Quality Objectives

MAC Maximum Acceptable Concentration

IMAC Interim Maximum Acceptable Concentration

AO Aesthetic Objective

OG Operatioal Guidelines

Bold / Highlighting for ODWQS exceeded parameters

Bold / Red / Italics for RUP exceeded parameters

Bedrock Ground Water Quality Data

PARAMETER	UNITS	ODWQS		14-I 12-Oct-23	14-I 16-Apr-24	14-I 10-Oct-24	14-I 16-Apr-25	14-I 30-Sep-25	16-I 25-Apr-16	16-I 19-Oct-16	16-I 22-Apr-19	16-I 04-Nov-19	16-I 13-Apr-20	16-I 14-Oct-20	16-I 21-Apr-21	16-I 18-Oct-21	16-I 20-Apr-22	16-I 12-Oct-22	16-I 19-Apr-23	16-I 12-Oct-23	16-I 16-Apr-24	16-I 10-Oct-24
Alkalinity	mg/L	500	OG			484		496	326	322		291	314	326	293	341	**552**	362	309	332	410	323
Conductivity	µS/cm	-				2630		2770	878	1940		870	958	1160	1570	2690	2000	862	950	858	1500	991
pH	pH Units	6.5-8.5	OG			7.5		7.26	7.74	7.71		7.95	7.74	7.73	7.95	7.58	7.56	7.73	7.74	7.45	7.91	7.86
TDS	mg/L	500	AO			**1460**		**1540**	453	**1080**		**562**	**546**	**699**	**786**	**1657**	**1158**	**507**	488	453	**820**	**528**
DOC	mg/L	5				**6.6**		**6.3**	1.4	0.6		**5.4**	**5.6**	**5.1**	3.1	**5.8**	4.1	1.9	3.1	**5.2**	**6.5**	3.5
COD	mg/L	-				234		129	< 5	12		350	35	53	28	11	14	53	78	15	47	80
Phenols	mg/L	-				<0.001		0.002	< 0.001	< 0.001		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001
Chloride	mg/L	250	AO			**602**		**683**	35	**446**		51.3	32.9	92.9	**253**	**730**	170	19.2	77.3	29.6	146	75.8
Ammonia, total	mg/L	-				9.22		8.09	0.11	0.99		0.41	0.42	0.24	0.61	0.2	1.87	0.14	1.63	0.17	1.11	0.42
Unionized Ammonia	mg/L	-				0.01		0.02	-	-		< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	0.01	<0.01	<0.01	<0.01
Fluoride	mg/L	2.4	MAC			<0.7		<0.7	0.1	0.2		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1	<0.1	<0.1	<0.1
Sulphate	mg/L	500	AO			4		4	63	74		123	121	145	93	120	215	67	34	75	94	90
Nitrite (N)	mg/L	1	MAC			<0.40		<0.40	< 0.1	< 0.1		< 0.05	< 0.05	< 0.05	0.23	0.58	< 0.3	< 0.05	< 0.05	<0.05	0.06	<0.05
Nitrate (N)	mg/L	10	MAC			<0.40		<0.40	1.1	0.6		0.94	4.11	1.86	1.27	0.55	4.14	2.08	2.61	1.73	4.53	1.96
Bromide	mg/L	-				-		-	< 0.4	-		-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-				12.2		10.6	0.2	1.1		4.2	1.5	1	1.4	0.5	2.4	0.7	2.1	0.5	1.6	0.9
Hardness	mg/L	500	OG			**621**		**677**	357	464		460	428	**510**	397	**620**	**703**	422	384	364	387	380
Aluminum	mg/L	0.1	OG			0.05		0.1	0.03	0.03		0.08	0.07	0.06	0.07	0.04	0.07	0.04	0.07	0.03	0.05	0.05
Antimony	mg/L	0.006	IMAC			0.0002		0.0001	< 0.0001	0.0003		0.0001	< 0.0001	0.0003	0.0004	0.0002	0.0008	0.0001	< 0.0001	<0.0001	<0.0001	0.0001
Arsenic	mg/L	0.025	IMAC			0.0003		0.0002	0.0002	0.0002		0.0002	0.0002	0.0002	0.0002	< 0.0003	0.0002	0.0001	< 0.0001	<0.0001	<0.0001	<0.0001
Barium	mg/L	1	MAC			0.243		0.254	0.07	0.11		0.137	0.089	0.093	0.12	0.167	0.507	0.134	0.139	0.099	0.485	0.083
Beryllium	mg/L	-				<0.0001		<0.0001	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	IMAC			1.31		1.33	0.145	0.378		0.778	0.667	1.14	0.592	1.07	0.667	0.322	0.263	0.24	0.303	0.197
Cadmium	mg/L	0.005	MAC			<0.000015		0.000022	< 0.00002	< 0.00002		< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000029	< 0.000029	< 0.000010	< 0.000010	<0.000015	<0.000015	<0.000015
Calcium	mg/L	-				162		182	112	111		146	140	154	118	156	231	138	126	119	130	124
Chromium	mg/L	0.05	MAC			<0.001		<0.001	< 0.0002	0.001		< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.013	< 0.001	< 0.001	0.001	0.005	<0.001
Chromium (VI)	mg/L			Broken	Broken	<0.01	Blocked	<0.01	-	-	broken	-	-	-	-	-	**0.012**	< 0.001	< 0.001	<0.01	<0.01	<0.01
Cobalt	mg/L	-				0.0006		0.0006	< 0.005	< 0.005		0.0025	0.0021	< 0.005	< 0.005	0.006	0.007	< 0.005	< 0.005	0.0005	0.0004	0.0004
Copper	mg/L	1	AO			0.0001		0.0004	0.0009	0.001		0.0024	0.0031	0.0033	0.0028	0.0024	0.0051	0.0017	0.0014	0.002	0.0025	0.0024
Iron	mg/L	0.3	AO			**20.8**		**15**	0.01	< 0.005		< 0.005	0.01	< 0.005	0.103	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	0.007
Lead	mg/L	0.01	MAC			<0.00004		0.00006	< 0.00002	< 0.00002		0.00002	< 0.00002	0.00029	0.00013	< 0.00009	< 0.00009	< 0.00002	< 0.00002	0.00002	0.00003	<0.00002
Magnesium	mg/L	-				52.2		54	18.6	45		23	18.9	30.2	24.8	55.8	30.8	18.7	16.8	16.2	15.2	17.2
Manganese	mg/L	0.05	AO			**0.586**		**0.571**	< 0.001	< 0.001		**0.198**	**0.767**	**0.205**	**0.855**	**0.151**	**0.688**	**0.09**	0.033	0.007	0.007	0.003
Mercury	mg/L	0.001	MAC			<0.00002		<0.00002	0.00003	0.00003		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	-				<0.0001		<0.0001	0.0006	0.0004		0.0044	0.0008	0.0008	0.0017	0.0006	0.0004	0.0009	0.0006	0.0008	0.0006	0.0009
Nickel	mg/L	-				0.0005		0.0007	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0015	0.0014	0.0018
Potassium	mg/L	-				21.7		22.7	8.6	14.7		12.4	8.4	13.9	14.8	25.1	118	32.7	15.3	23	146	16.2
Phosphorus-Total	mg/L	-				0.1		<0.1	0.03	0.01		13	1.47	1.33	1.04	0.29	0.45	1.47	1.16	0.81	<0.1	<0.1
Selenium	mg/L	0.01	MAC			<0.001		0.009	< 0.001	0.01		< 0.001	< 0.001	< 0.001	0.002	0.002	0.003	< 0.001	< 0.001	<0.001	<0.001	<0.001
Silver	mg/L	-				<0.0001		<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
Sodium	mg/L	200	AO			**272**		**300**	15	195		31	34.7	66.4	105	**364**	59.7	13.3	10.3	9.1	18.1	9
Strontium	mg/L	-				3.94		4.27	0.49	3.66		0.603	0.502	1.19	1.59	5.29	0.511	0.283	0.262	0.218	0.369	0.222
Thallium	mg/L	-				<0.00005		<0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005	0.00007	0.0001	< 0.00005	0.00008	< 0.005	< 0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-				0.0004		0.0003	0.001	0.001		0.0002	0.0002	0.0004	0.0001	< 0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002
Zinc	mg/L	5	AO			<0.005		0.009	< 0.005	< 0.005		0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005
TSS	mg/L	-	-			-		-	-	-		-	-	-	-	-	-	-	-	-	-	-
Cyanide (Total)	mg/L	0.2	MAC			-		-	-	-		-	-	-	-	-	-	-	-	-	-	-
BOD(5 day)	mg/L	-	-			-		-	-	-		-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO			12.2		17	5.5	11.8		7.1	9.7	10	5.9	10.1	7.8	12	8.9	11.7	10.5	9.2
Field pH	pH Units	6.5-8.5	OG			6.78		6.95	7.87	7.49		7.68	6.63	7.65	7.42	7.66	7.3	7.26	7.56	7.44	7.44	7.64
Field Conductivity	µS/cm	-				2880		2365	580	800		835	868	720	625	1950	1822	886	1242	762	1080	229

Bold text indicates values exceeding the ODWO.

ODWQS Ontario Drinking Water Quality Objectives

MAC Maximum Acceptable Concentration

IMAC Interim Maximum Acceptable Concentration

AO Aesthetic Objective

OG Operatioal Guidelines

Bold / Highlighting for ODWQS exceeded parameters

Bold / Red / Italics for RUP exceeded parameters

Bedrock Ground Water Quality Data

PARAMETER	UNITS	ODWQS		16-I	16-I	16-I Dup	26-I	26-I	26-I	26-I	26-I	26-I	26-I	26-I	26-I	26-I	26-I	26-I	26-I	26-I	26-I	26-I
				16-Apr-25	30-Sep-25	30-Sep-25	26-Apr-16	20-Oct-16	12-Apr-17	05-Oct-17	11-Apr-18	02-Oct-18	23-Apr-19	09-Oct-19	13-Apr-20	15-Oct-20	21-Apr-21	18-Oct-21	20-Apr-22	12-Oct-22	19-Apr-23	12-Oct-23
Alkalinity	mg/L	500	OG	295	320	324	227	211	219	220	210	215	211	214	210	222	230	240	233	245	248	258
Conductivity	µS/cm	-		929	922	923	805	930	919	881	912	799	959	943	953	953	903	932	906	747	873	781
pH	pH Units	6.5-8.5	OG	7.54	7.85	7.97	8.06	8.14	8.08	8.09	8.04	8.07	8.1	7.97	7.98	7.83	7.94	7.79	7.88	7.91	7.94	7.65
TDS	mg/L	500	AO	493	489	490	450	476	478	423	441	408	474	**520**	471	**507**	469	**525**	466	400	456	409
DOC	mg/L	5		2.3	4.5	4.8	0.5	0.7	1	1	1.9	1.1	1.7	2.4	1.4	1.2	2.5	1.7	1.2	< 0.2	0.6	2.8
COD	mg/L	-		182	46	29	< 5	< 5	< 5	< 5	6	7	8	< 5	< 5	< 5	13	< 5	< 5	< 5	< 5	7
Phenols	mg/L	-		<0.001	<0.001	<0.001	< 0.001	0.016	< 0.001	0.003	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001
Chloride	mg/L	250	AO	74.4	53.2	58.1	149	150	158	119	130	113	164	195	160	164	141	174	138	81.2	128	94.5
Ammonia, total	mg/L	-		0.34	0.11	0.15	1.3	1.5	1.57	1.46	1.58	1.39	1.63	1.59	1.56	1.62	1.52	1.71	2	1.34	1.94	1.42
Unionized Ammonia	mg/L	-		<0.01	<0.01	<0.01	-	-	-	-	-	-	< 0.01	0.03	0.01	0.02	-	0.03	0.02	0.03	0.04	0.01
Fluoride	mg/L	2.4	MAC	<0.1	<0.1	<0.1	0.4	0.3	0.6	0.3	0.2	0.4	0.2	< 0.1	< 0.1	0.1	0.2	0.2	< 0.1	0.4	0.2	0.5
Sulphate	mg/L	500	AO	67	93	95	5	5	6	5	5	5	6	1	6	5	6	7	6	5	51	3
Nitrite (N)	mg/L	1	MAC	0.07	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07	0.14	< 0.05	< 0.05	< 0.05	<0.05
Nitrate (N)	mg/L	10	MAC	2.1	2.18	2.24	< 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	0.6	<0.05
Bromide	mg/L	-		-	-		1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		5.2	0.9	0.5	1.4	1.6	1.7	1.4	1.7	1.5	1.7	1.8	1.8	1.8	1.8	1.7	2	1.5	2.2	1.6
Hardness	mg/L	500	OG	358	425	419	168	227	226	180	228	186	226	241	224	246	229	250	230	176	231	179
Aluminum	mg/L	0.1	OG	0.05	0.09	0.08	0.01	0.01	0.02	0.02	0.03	0.02	0.05	0.03	0.03	0.03	0.03	0.03	< 0.01	< 0.01	0.04	0.01
Antimony	mg/L	0.006	IMAC	<0.0001	<0.0001	<0.0001	< 0.0001	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	< 0.0001	<0.0001
Arsenic	mg/L	0.025	IMAC	<0.0001	<0.0001	<0.0001	0.0003	0.0002	0.0004	0.0007	< 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	MAC	0.11	0.096	0.094	0.02	0.02	0.06	0.02	0.016	0.017	0.018	0.018	0.018	0.021	0.018	0.019	0.02	0.025	0.017	0.019
Beryllium	mg/L	-		<0.0001	<0.0001	<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	< 0.002	< 0.002	< 0.002	<0.0001
Boron	mg/L	5	IMAC	0.273	0.229	0.222	0.558	0.567	0.533	0.576	0.471	0.516	0.467	0.494	0.472	0.553	0.506	0.508	0.483	0.638	0.536	0.659
Cadmium	mg/L	0.005	MAC	<0.000015	<0.000015	<0.000015	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000025	< 0.000010	<0.000015
Calcium	mg/L	-		114	140	138	35	46.6	45.2	35.7	47.3	37.4	47.6	49.6	45.7	49.3	47.6	51	46.8	36.8	46.4	36.6
Chromium	mg/L	0.05	MAC	0.007	0.001	0.001	< 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	< 0.001	< 0.001	<0.001
Chromium (VI)	mg/L			<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01
Cobalt	mg/L	-		0.0002	0.0003	0.0003	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.009	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.0001
Copper	mg/L	1	AO	0.0015	0.0018	0.0018	0.0008	0.0007	0.0006	0.0004	0.0013	0.0002	0.0009	0.0008	0.0017	0.0005	0.0011	0.0006	0.0003	0.0002	0.0002	0.0002
Iron	mg/L	0.3	AO	0.063	0.014	0.009	0.01	0.01	0.03	0.02	0.015	0.019	0.041	0.021	0.019	0.032	0.02	0.02	0.016	< 0.005	0.013	0.024
Lead	mg/L	0.01	MAC	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	< 0.00002	0.00003	0.00007	0.00005	< 0.00002	< 0.00002	0.00003	< 0.00002	<0.00002
Magnesium	mg/L	-		18	18.2	18	19.7	26.9	27.5	22	26.7	22.5	26	28.5	26.6	29.9	26.7	29.8	27.5	20.4	28	21.4
Manganese	mg/L	0.05	AO	**0.197**	0.003	0.002	< 0.001	0.004	0.002	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.002	< 0.001	0.001	0.002
Mercury	mg/L	0.001	MAC	<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	< 0.00002	< 0.00002	< 0.00002	<0.00002
Molybdenum	mg/L	-		0.0005	0.0012	0.0012	< 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	<0.0001
Nickel	mg/L	-		0.0016	0.0014	0.0014	< 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	0.0004
Potassium	mg/L	-		22.2	28.6	28.3	9.4	11.7	12.3	10.7	10.7	9.9	11.2	12.6	11.4	12.9	11.7	12.6	11.6	10.2	11.3	10.6
Phosphorus-Total	mg/L	-		<0.1	<0.1	<0.1	< 0.01	< 0.01	0.02	0.03	0.02	0.02	< 0.01	0.03	< 0.01	0.02	0.05	< 0.01	0.02	< 0.01	< 0.01	0.01
Selenium	mg/L	0.01	MAC	0.001	0.001	<0.001	< 0.001	0.007	< 0.001	0.001	0.001	0.002	0.003	0.006	0.003	0.003	0.002	0.004	0.003	0.002	0.003	0.002
Silver	mg/L	-		<0.0001	<0.0001	<0.0001	< 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	< 0.0001	< 0.0001	<0.0001
Sodium	mg/L	200	AO	40.3	12.8	12.6	94	106	95.2	96.6	92.3	89	89.9	102	93.8	111	95.9	104	93.7	97.3	87.1	103
Strontium	mg/L	-		0.8	0.268	0.265	1.86	2.58	2.43	2.04	2.38	1.99	2.48	2.64	2.48	2.85	2.46	2.67	2.53	1.9	2.41	2.05
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	< 0.00005	< 0.00005	< 0.005	< 0.00005	<0.00005
Vanadium	mg/L	-		0.0002	0.0002	0.0002	0.0008	0.0006	0.0006	0.0009	< 0.0001	< 0.00007	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	<0.0001
Zinc	mg/L	5	AO	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.011	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.005
TSS	mg/L	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (Total)	mg/L	0.2	MAC	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BOD(5 day)	mg/L	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	7	11.8	11.8	9.5	11.3	8.8	14.3	-	-	9.1	9.8	10.9	10	9.5	10.3	9.5	12.1	10.1	11
Field pH	pH Units	6.5-8.5	OG	7.8	6.78	6.78	8.44	8.01	8.09	7.07	8.04	8.07	7.1	8	7.66	7.9	8.01	7.9	7.69	7.95	8.08	7.59
Field Conductivity	µS/cm	-		708	894	894	685	790	736	736	851	776	910	793	870	830	823	854	990	723	778	728

Bold text indicates values exceeding the ODWO.

ODWQS Ontario Drinking Water Quality Objectives

MAC Maximum Acceptable Concentration

IMAC Interim Maximum Acceptable Concentration

AO Aesthetic Objective

OG Operatioal Guidelines

Bold / Highlighting for ODWQS exceeded parameters

Bold / Red / Italics for RUP exceeded parameters

Bedrock Ground Water Quality Data

PARAMETER	UNITS	ODWQS		27-I 25-Apr-16	27-I 20-Oct-16	27-I 12-Apr-17	27-I 05-Oct-17	27-I 10-Apr-18	27-I 01-Oct-18	27-I 22-Apr-19	27-I 08-Oct-19	27-I 13-Apr-20	27-I 14-Oct-20	27-I 21-Apr-21	27-I 18-Oct-21	27-I 20-Apr-22	27-I 12-Oct-22	27-I 19-Apr-23	27-I 12-Oct-23	27-I 16-Apr-24	27-I 10-Oct-24	27-I 16-Apr-25
Alkalinity	mg/L	500	OG	193	186	197	192	188	188	204	180	180	192	190	194	187	190	190	196	188	192	190
Conductivity	µS/cm	-		4690	5380	3860	4070	3980	4170	3820	4210	3810	3880	3840	3820	3820	4110	3950	4210	4020	4320	4080
pH	pH Units	6.5-8.5	OG	7.93	7.93	8.04	8	7.92	7.75	7.98	7.92	7.95	7.84	7.94	7.92	7.85	7.78	7.89	7.6	7.91	7.87	7.93
TDS	mg/L	500	AO	**3160**	**2230**	**1960**	**1964**	**2765**	**2119**	**1914**	**2113**	**1964**	**2067**	**1996**	**2268**	**1941**	**2125**	**2122**	**2370**	**2260**	**2430**	**2300**
DOC	mg/L	5		< 0.2	< 0.2	< 0.2	< 0.2	0.8	0.6	0.9	1.5	0.5	< 0.2	1.3	2	0.3	< 0.2	< 0.2	1.4	1.6	2	<0.8
COD	mg/L	-		5	17	< 5	56	76	17	121	23	20	8	22	< 5	17	11	34	19	25	65	94
Phenols	mg/L	-		< 0.001	0.051	0.041	0.129	< 0.001	0.026	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001
Chloride	mg/L	250	AO	**1840**	**1220**	**1150**	**1070**	**1490**	**1250**	**1120**	**1200**	**1120**	**1170**	**1110**	**1350**	**1120**	**1160**	**1250**	**1300**	**1180**	**1380**	**1160**
Ammonia, total	mg/L	-		2.98	3.35	2.88	3.1	2.91	3.03	2.87	3.11	2.86	2.99	2.83	3.12	3.03	2.22	3.05	3.63	3.52	2.6	2.62
Unionized Ammonia	mg/L	-		-	-	-	-	-	-	< 0.01	0.03	0.02	0.03	-	0.03	0.03	0.03	0.03	<0.01	0.02	0.03	0.03
Fluoride	mg/L	2.4	MAC	3	1.3	< 1	< 1	< 1	0.9	1.1	< 1	< 1	< 1	0.8	< 1	< 1	4	< 1	0.5	<0.7	<0.7	<0.7
Sulphate	mg/L	500	AO	< 30	< 5	13	< 10	< 10	< 1	< 10	< 10	< 10	< 10	< 1	13	< 10	< 10	16	<1	3	<2	<2
Nitrite (N)	mg/L	1	MAC	< 3	< 0.5	< 1	< 0.5	< 0.5	0.07	< 0.5	< 0.5	< 0.5	< 0.5	0.35	< 0.5	< 0.5	< 0.5	< 0.05	0.29	<0.40	<0.40	<0.40
Nitrate (N)	mg/L	10	MAC	< 3	< 0.5	< 1	< 0.5	< 0.5	< 0.05	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.5	< 0.5	< 0.5	2.02	<0.05	<0.40	<0.40	<0.40
Bromide	mg/L	-		20.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		3.2	4.5	3	3.2	3.3	3.4	3	3.3	3.3	3.4	3.1	3.2	3.9	3.5	3.8	4.1	4.6	3.7	3.4
Hardness	mg/L	500	OG	**597**	429	349	359	**587**	352	330	410	329	329	362	369	330	416	375	395	351	400	346
Aluminum	mg/L	0.1	OG	0.02	0.03	0.05	0.06	0.07	0.05	0.05	0.06	0.05	< 0.01	0.05	0.05	0.01	0.02	0.04	0.02	0.02	0.02	0.02
Antimony	mg/L	0.006	IMAC	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0004	0.0005	0.0003	0.0002	0.0002	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.025	IMAC	0.0005	0.0004	0.003	0.0074	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0005	< 0.0003	< 0.0003	< 0.0005	< 0.0003	< 0.0003	< 0.0003	<0.0003	<0.0003	<0.0003	<0.0001
Barium	mg/L	1	MAC	0.04	0.05	0.06	0.05	0.066	0.048	0.044	0.056	0.044	0.046	0.051	0.054	0.046	0.065	0.052	0.055	0.05	0.054	0.049
Beryllium	mg/L	-		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.004	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	IMAC	1.16	1.36	1.33	1.26	1.92	1.11	1.16	1.31	1.18	1.25	1.25	1.25	1.19	1.28	1.34	1.33	1.25	1.3	1.18
Cadmium	mg/L	0.005	MAC	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000059	< 0.000059	< 0.000029	< 0.000029	< 0.000059	< 0.000029	< 0.000029	< 0.000029	<0.000030	<0.000030	<0.000030	<0.000015
Calcium	mg/L	-		123	90.4	72.5	74.2	120	73.4	71.9	87.5	69.7	68	77.2	78.4	69.4	91.6	78.6	82.9	74.2	81.5	73.8
Chromium	mg/L	0.05	MAC	< 0.0002	0.001	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	<0.001	<0.001
Chromium (VI)	mg/L			-	-	-	-	-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01
Cobalt	mg/L	-		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.0001	< 0.01	< 0.005	< 0.005	0.005	< 0.005	< 0.005	0.0002	0.0001	0.0001	0.0001
Copper	mg/L	1	AO	0.004	0.0057	0.0051	0.0028	0.0075	0.0006	0.0034	0.0046	0.0059	0.0004	0.0006	0.0005	0.0016	0.0003	< 0.0002	0.0003	0.0044	0.0003	0.0004
Iron	mg/L	0.3	AO	0.1	0.06	0.12	0.11	< 0.005	0.098	0.089	0.123	0.091	0.076	0.073	0.108	0.107	0.113	0.114	0.122	0.107	0.115	0.104
Lead	mg/L	0.01	MAC	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00008	< 0.0002	< 0.0002	< 0.00009	< 0.00009	< 0.0002	< 0.00009	< 0.00009	< 0.00009	<0.00009	<0.00009	<0.00009	<0.00004
Magnesium	mg/L	-		70.5	49.5	40.7	42.2	69.9	41.1	36.5	46.5	37.7	38.7	41	42.2	38.1	45.5	43.4	45.7	40.4	47.8	39.4
Manganese	mg/L	0.05	AO	< 0.001	0.004	0.003	0.002	0.004	0.002	0.002	0.003	0.002	< 0.002	0.002	0.003	0.002	0.002	0.002	0.003	0.003	0.002	0.002
Mercury	mg/L	0.001	MAC	0.00003	0.00003	0.00008	< 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	<0.00002
Molybdenum	mg/L	-		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0004	< 0.0004	< 0.0002	< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0002	<0.0002	<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	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0014	0.0007	<0.0002	0.0006
Potassium	mg/L	-		22.2	20.7	19.1	19.3	24.7	19	17.1	20.9	18.5	17.7	19.7	20.5	17.3	19.7	18.5	21.2	19.4	21.9	17.5
Phosphorus-Total	mg/L	-		0.02	0.22	0.03	0.02	0.06	0.03	0.01	0.01	< 0.01	0.02	0.02	0.02	0.02	0.01	< 0.01	<0.01	<0.1	<0.1	<0.1
Selenium	mg/L	0.01	MAC	< 0.001	**0.067**	< 0.001	**0.012**	0.002	**0.029**	**0.023**	**0.045**	**0.022**	**0.02**	<0.04	<0.03	<0.03	< 0.02	<0.02	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	-		< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00007	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	0.0001	0.0016	< 0.0001	<0.0001	<0.0001	<0.0001	0.0001
Sodium	mg/L	200	AO	**562**	**723**	**542**	**640**	**945**	**619**	**546**	**649**	**605**	**655**	**631**	**648**	**578**	**683**	**621**	**741**	**652**	**677**	**624**
Strontium	mg/L	-		4.52	6.16	4.78	5.2	7.91	4.95	4.56	5.86	4.71	4.89	5.08	5.24	4.66	5.56	4.99	5.83	5.15	5.73	4.7
Thallium	mg/L	-		< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00018	0.00016	0.00023	0.00008	< 0.00005	< 0.005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-		0.0004	0.0002	0.0005	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0007	< 0.0007	< 0.0004	< 0.0004	< 0.0007	< 0.0004	< 0.0004	0.0003	<0.0004	<0.0004	<0.0004	<0.0001
Zinc	mg/L	5	AO	< 0.005	< 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	< 0.005	<0.005	<0.005	<0.005	<0.005
TSS	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (Total)	mg/L	0.2	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BOD(5 day)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	7.1	10.1	7.5	10	-	-	7.1	9	9.1	8.5	6.9	8.9	8.2	13.1	8.3	9.2	9.8	9.5	7.3
Field pH	pH Units	6.5-8.5	OG	8.29	7.99	7.3	8.12	7.92	7.75	7.21	7.77	7.55	7.81	7.92	7.8	7.84	7.71	7.75	7.78	7.45	7.84	7.87
Field Conductivity	µS/cm	-		2610	3270	2991	3160	4860	3840	3560	2800	>4000	2900	2940	>4000	3745	3928	3418	3492	3592	2459	2084

Bold text indicates values exceeding the ODWO.

ODWQS Ontario Drinking Water Quality Objectives

MAC Maximum Acceptable Concentration

IMAC Interim Maximum Acceptable Concentration

AO Aesthetic Objective

OG Operatioal Guidelines

Bold / Highlighting for ODWQS exceeded parameters

Bold / Red / Italics for RUP exceeded parameters

Bedrock Ground Water Quality Data

PARAMETER	UNITS	ODWQS		27-I 30-Sep-25	29-I 25-Apr-16	29-I 20-Oct-16	29-I 12-Apr-17	29-I 05-Oct-17	29-I 10-Apr-18	29-I 01-Oct-18	29-I 22-Apr-19	29-I 08-Oct-19	29-I 13-Apr-20	29-I 14-Oct-20	29-I 21-Apr-21	29-I 18-Oct-21	29-I 20-Apr-22	29-I 12-Oct-22	29-I 19-Apr-23	29-I 12-Oct-23	29-I 16-Apr-24	29-I 10-Oct-24
Alkalinity	mg/L	500	OG	184	232	232	238	237	234	289	251	228	221	238	234	247	199	242	220	256	237	241
Conductivity	µS/cm	-		4610	1170	1200	1220	1230	1160	1200	1030	1170	1150	1230	1180	1170	975	1180	1150	1240	1190	1220
pH	pH Units	6.5-8.5	OG	7.96	8.38	8.4	8.39	8.38	8.32	8.1	8.27	8.26	8.22	8.13	8.19	8.18	8.2	8.15	8.26	7.91	8.24	8.18
TDS	mg/L	500	AO	**2600**	**599**	**656**	**614**	**600**	**587**	**652**	**553**	**712**	**574**	**680**	**644**	**684**	**513**	**659**	**590**	**670**	**642**	**659**
DOC	mg/L	5		1.7	< 0.2	1.8	0.9	4.7	1	1	0.8	1.9	0.8	0.6	1.6	**5.2**	0.4	< 0.2	< 0.2	1.5	1.9	1.7
COD	mg/L	-		65	80	< 5	46	99	54	52	41	9	19	7	23	< 5	11	59	65	16	77	42
Phenols	mg/L	-		<0.001	< 0.001	< 0.001	0.078	0.003	< 0.001	0.004	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001
Chloride	mg/L	250	AO	**1490**	220	222	209	194	192	227	200	**295**	227	248	239	**261**	184	244	232	241	230	221
Ammonia, total	mg/L	-		2.13	1.08	1.05	1.09	1.19	1.14	1.09	0.94	1.06	0.9	1.08	0.44	1.19	1.25	1.41	3.78	1.8	1.28	1.22
Unionized Ammonia	mg/L	-		<0.01	-	-	-	-	-	-	< 0.01	0.03	0.02	0.04	-	0.04	0.06	0.13	0.11	0.1	0.05	0.04
Fluoride	mg/L	2.4	MAC	<0.7	2.3	2.2	**2.8**	2.4	2	2.4	1.7	2.2	1.7	2.1	1.9	**2.7**	1.2	2.1	1.6	2.1	1.6	1.6
Sulphate	mg/L	500	AO	<2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	35	<1	<1	<1
Nitrite (N)	mg/L	1	MAC	<0.40	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	0.09	0.22	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05
Nitrate (N)	mg/L	10	MAC	<0.40	0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.09	< 0.05	< 0.05	< 0.05	< 0.05	0.12	<0.05	<0.05	<0.05
Bromide	mg/L	-		-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		3.7	1.7	1.6	1.4	2.1	2.3	2	1.5	1.3	1.5	1.5	1	1.4	1.6	1.9	5.1	2.1	2.1	1.5
Hardness	mg/L	500	OG	453	41	53	43	44	43	41	39	47	37	48	45	46	37	47	44	58.3	41.7	45.2
Aluminum	mg/L	0.1	OG	0.06	< 0.01	**0.59**	< 0.01	0.03	0.03	< 0.01	0.01	0.02	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	0.01	**0.11**	<0.01	<0.01
Antimony	mg/L	0.006	IMAC	<0.0001	< 0.0001	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	0.0002	0.0002	<0.0001	<0.0001
Arsenic	mg/L	0.025	IMAC	<0.0003	0.0005	0.0003	0.0006	0.0015	0.0001	< 0.0001	0.0001	< 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	MAC	0.066	0.015	0.022	0.03	0.027	0.027	0.016	0.013	0.016	0.013	0.018	0.016	0.017	0.015	0.024	0.015	0.018	0.016	0.015
Beryllium	mg/L	-		<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	< 0.002	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	IMAC	1.26	1.42	1.7	1.7	1.6	1.56	1.43	1.26	1.65	1.28	1.7	1.57	1.64	1.29	1.66	1.58	1.7	1.55	1.66
Cadmium	mg/L	0.005	MAC	<0.000030	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000029	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	<0.000015	<0.000015
Calcium	mg/L	-		96.5	8.88	11.5	8.59	8.8	8.96	8.27	8.58	9.82	7.65	9.75	9.33	9.45	7.71	9.98	9.15	13.9	8.55	8.97
Chromium	mg/L	0.05	MAC	<0.001	< 0.0002	0.0009	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			<0.01	-	-	-	-	-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01
Cobalt	mg/L	-		0.0002	< 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	< 0.005	0.0001	<0.0001	<0.0001
Copper	mg/L	1	AO	<0.0002	0.0015	0.0026	0.0013	0.001	0.003	0.0004	0.0015	0.0018	0.0026	0.0004	0.001	0.0006	0.0005	0.001	0.0002	0.0004	<0.0001	0.0004
Iron	mg/L	0.3	AO	0.128	0.006	**0.322**	0.016	0.019	0.006	< 0.005	< 0.005	0.019	0.019	< 0.005	0.033	0.012	0.009	< 0.005	0.005	0.145	<0.005	0.016
Lead	mg/L	0.01	MAC	<0.00009	< 0.00002	0.00017	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00009	< 0.00004	< 0.00004	0.00005	< 0.00004	< 0.00002	< 0.00004	< 0.00004	0.00012	0.00003	<0.00002
Magnesium	mg/L	-		51.5	4.65	6.01	5.27	5.34	5.01	4.97	4.19	5.44	4.42	5.7	5.23	5.4	4.34	5.33	5.16	5.72	4.95	5.53
Manganese	mg/L	0.05	AO	0.003	< 0.001	0.011	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	0.008	0.001	<0.001
Mercury	mg/L	0.001	MAC	<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	< 0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	-		<0.0002	< 0.0001	< 0.0001	< 0.0001	< 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	<0.0001	<0.0001
Nickel	mg/L	-		0.0009	< 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	0.0003	<0.0002	<0.0002
Potassium	mg/L	-		22.7	5.6	6.8	6.7	6.6	5.9	6.2	5.2	6.8	5.4	7	6.4	6.9	5.3	6.6	5.7	6.9	6.3	6.9
Phosphorus-Total	mg/L	-		<0.1	3.76	2.24	1.84	7.66	8.63	3	1.1	1.22	0.67	0.91	0.25	0.55	0.81	2.86	1.92	1.04	<0.1	<0.1
Selenium	mg/L	0.01	MAC	**0.024**	< 0.001	**0.012**	< 0.001	0.002	0.001	0.005	0.004	0.008	0.004	0.004	0.004	<0.02	0.004	0.005	0.005	<0.001	<0.001	<0.001
Silver	mg/L	-		0.0001	< 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	< 0.0001	< 0.0001	<0.0001	<0.0001	<0.0001
Sodium	mg/L	200	AO	**667**	**217**	**265**	**237**	**239**	**231**	**228**	182	**254**	194	**263**	**241**	**248**	190	**244**	**204**	**254**	**224**	**236**
Strontium	mg/L	-		6.31	0.566	0.682	0.585	0.607	0.56	0.555	0.503	0.635	0.514	0.67	0.613	0.607	0.5	0.614	0.553	0.659	0.588	0.618
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	< 0.005	< 0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-		<0.0004	0.0007	0.0012	0.0006	0.0009	0.0002	0.0003	0.0002	< 0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	<0.0001	<0.0001
Zinc	mg/L	5	AO	<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	<0.005	<0.005	<0.005
TSS	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (Total)	mg/L	0.2	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BOD(5 day)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	7.4	5.5	12	6.9	12	-	-	8.6	11.1	8.2	10.5	6.4	9.3	8.2	13.9	5.8	11.5	8.3	10.4
Field pH	pH Units	6.5-8.5	OG	7.47	8.73	8.27	8.6	7.21	8.32	8.1	7.3	8.21	8.16	8.28	8.45	8.33	8.5	8.59	8.36	8.44	8.35	8.22
Field Conductivity	µS/cm	-		455	845	1015	955	1033	1080	1190	1100	1010	835	1050	1050	1030	1060	1236	1266	1284	1219	1255

Bold text indicates values exceeding the ODWO.

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IMAC Interim Maximum Acceptable Concentration

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Bold / Highlighting for ODWQS exceeded parameters

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PARAMETER	UNITS	ODWQS		29-I 16-Apr-25	29-I 30-Sep-25	33-I 20-Oct-16	33-I 12-Apr-17	33-I 06-Oct-17	33-I 11-Apr-18	33-I 02-Oct-18	33-I 22-Apr-19	33-I 08-Oct-19	33-I 13-Apr-20	33-I 14-Oct-20	33-I 21-Apr-21	33-I 18-Oct-21	33-I 20-Apr-22	33-I 12-Oct-22	33-I 19-Apr-23	33-I 12-Oct-23	33-I 16-Apr-24	33-I 10-Oct-24
Alkalinity	mg/L	500	OG	225	254	236	295	288	291	302	306	309	290	304	311	318	284	299	289	315	289	291
Conductivity	µS/cm	-		1150	1220	1610	2040	1960	1870	1830	1820	1820	1780	1750	1720	1710	1740	1710	1750	1730	1740	1560
pH	pH Units	6.5-8.5	OG	8.28	8.34	8.14	8.11	7.98	8.04	8.04	8.13	7.95	8.02	7.94	8	8.06	8	7.96	8.03	7.73	8.04	8.06
TDS	mg/L	500	AO	**617**	**660**	**884**	**1030**	**909**	**934**	**942**	**920**	**1034**	**943**	**972**	**929**	**988**	**891**	**934**	**898**	**951**	**952**	**851**
DOC	mg/L	5		<0.8	2.3	0.3	0.7	1.3	1.5	1.2	1.5	2.2	0.9	0.6	1.7	1.5	0.8	< 0.2	< 0.2	1.8	2.6	1.7
COD	mg/L	-		45	23	5	188	10	12	14	18	< 5	10	5	14	< 5	10	9	16	6	23	21
Phenols	mg/L	-		<0.001	<0.001	< 0.001	< 0.001	0.006	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001
Chloride	mg/L	250	AO	250	239	**395**	**412**	**323**	**359**	**380**	**379**	**455**	**399**	**384**	**370**	**416**	**366**	**373**	**378**	**388**	**365**	**281**
Ammonia, total	mg/L	-		1.09	1.06	1.38	1.84	1.77	1.58	1.47	1.59	1.52	1.53	1.59	1.52	1.57	1.75	1.51	1.51	2.48	1.62	1.28
Unionized Ammonia	mg/L	-		<0.01	0.04	-	-	-	-	-	0.01	0.03	0.01	0.02	-	0.02	0.03	0.05	0.02	<0.01	0.03	<0.01
Fluoride	mg/L	2.4	MAC	2.1	1.2	0.8	1	0.7	1.2	< 0.1	< 0.1	< 1	0.9	1.3	1.3	1.7	1.1	1.2	< 1	1.4	1.2	1.3
Sulphate	mg/L	500	AO	<1	<1	29	24	10	11	10	6	< 10	2	1	1	< 1	< 1	< 10	11	<1	<1	<1
Nitrite (N)	mg/L	1	MAC	<0.05	<0.05	< 0.1	< 0.1	< 0.05	< 0.05	0.21	< 0.05	< 0.5	< 0.05	< 0.05	< 0.05	0.34	< 0.05	< 0.5	< 0.05	0.06	<0.05	<0.05
Nitrate (N)	mg/L	10	MAC	<0.05	<0.05	0.2	0.3	< 0.05	< 0.05	0.07	< 0.05	< 0.5	< 0.05	< 0.05	0.07	< 0.05	< 0.05	< 0.5	0.86	<0.05	<0.05	<0.05
Bromide	mg/L	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		1.5	1.4	1.8	5.8	2.1	1.9	2	2.2	2	2.2	2.1	2.1	2	2.2	2	2	3.3	1.9	1.7
Hardness	mg/L	500	OG	39.6	44.4	151	219	202	196	197	185	196	182	190	182	187	173	184	186	176	165	158
Aluminum	mg/L	0.1	OG	<0.01	<0.01	**0.19**	0.03	0.03	0.04	0.02	0.03	0.04	0.03	< 0.01	0.03	0.03	< 0.01	< 0.01	0.04	<0.01	<0.01	<0.01
Antimony	mg/L	0.006	IMAC	<0.0001	<0.0001	0.0014	0.0001	0.0001	0.0002	< 0.0001	0.0001	< 0.0001	0.0001	0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	0.0002	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.025	IMAC	<0.0001	<0.0001	0.0008	0.0026	0.0042	0.0017	0.0016	0.0014	0.0014	0.0009	0.0017	0.0007	0.001	0.0006	0.0012	0.0008	0.0016	0.0008	0.0035
Barium	mg/L	1	MAC	0.015	0.016	0.08	0.1	0.05	0.036	0.035	0.031	0.033	0.033	0.034	0.031	0.031	0.031	0.031	0.032	0.03	0.027	0.026
Beryllium	mg/L	-		<0.0001	<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	< 0.002	< 0.002	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	IMAC	1.47	1.63	1.23	2.53	2.43	2.39	2.2	2.21	2.38	2.24	2.49	2.29	2.36	2.23	2.41	2.48	2.43	2.33	2.28
Cadmium	mg/L	0.005	MAC	<0.000015	<0.000015	0.00008	0.0001	0.0001	0.000049	0.000018	0.000023	< 0.000029	0.000019	0.000015	0.000022	< 0.000015	< 0.000015	< 0.000012	< 0.000012	<0.000015	<0.000015	0.000015
Calcium	mg/L	-		8.04	9.1	36.4	43	39.7	38.6	38.4	37.3	39	35.9	36.7	36.5	37.1	33.6	36.5	35.8	34.1	31.6	31.4
Chromium	mg/L	0.05	MAC	<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	<0.001	<0.001	<0.001
Chromium (VI)	mg/L			<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01
Cobalt	mg/L	-		<0.0001	<0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	<0.0001	<0.0001	<0.0001
Copper	mg/L	1	AO	<0.0001	0.0002	0.0022	0.0026	0.0031	0.004	0.0004	0.0022	0.0022	0.0055	0.0003	0.0011	0.0004	0.0006	0.0002	0.0002	0.0003	0.0002	0.0003
Iron	mg/L	0.3	AO	0.011	0.01	0.09	0.05	0.01	0.013	0.022	0.005	0.005	0.012	0.194	0.005	0.006	0.007	0.267	0.019	**0.836**	0.058	**0.981**
Lead	mg/L	0.01	MAC	0.00002	<0.00002	0.00017	< 0.00002	0.00006	0.00005	0.00003	< 0.00002	< 0.00009	0.00008	< 0.00004	0.00006	0.00004	< 0.00004	< 0.00004	< 0.00004	<0.00004	0.00002	<0.00002
Magnesium	mg/L	-		4.74	5.27	14.7	27.1	25.1	24.2	24.5	22.3	23.9	22.5	23.9	22.2	22.9	21.8	22.6	23.4	22.1	20.9	19.5
Manganese	mg/L	0.05	AO	<0.001	0.001	0.02	0.02	0.02	0.017	0.017	0.02	0.016	0.008	0.016	0.011	0.013	0.01	0.013	0.013	0.011	0.009	0.009
Mercury	mg/L	0.001	MAC	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	< 0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	-		<0.0001	<0.0001	0.019	0.0416	0.0319	0.0235	0.0187	0.0167	0.0122	0.0139	0.0134	0.0099	0.0077	0.0095	0.0077	0.0084	0.0059	0.0062	0.0098
Nickel	mg/L	-		<0.0002	<0.0002	< 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	<0.0002	0.0003	<0.0002
Potassium	mg/L	-		5.7	6.8	8.9	13.5	12.2	11.1	11.3	10.9	11.9	11.7	12.2	11.3	11.8	10.7	11.4	10.9	11.6	11.2	10.6
Phosphorus-Total	mg/L	-		<0.1	<0.1	0.97	4.95	0.08	0.11	0.07	0.1	0.15	0.09	0.08	0.13	0.07	0.07	0.08	0.09	0.06	<0.1	<0.1
Selenium	mg/L	0.01	MAC	0.004	0.004	0.01	< 0.001	0	0.007	0.008	0.008	**0.013**	0.007	0.006	0.005	<0.02	<0.02	< 0.02	<0.01	<0.001	<0.001	<0.001
Silver	mg/L	-		<0.0001	<0.0001	< 0.00002	< 0.00002	< 0.00002	0.00003	< 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
Sodium	mg/L	200	AO	**209**	**238**	**254**	**331**	**322**	**313**	**295**	**278**	**317**	**296**	**328**	**298**	**305**	**285**	**308**	**276**	**307**	**288**	**260**
Strontium	mg/L	-		0.536	0.608	1.19	2.5	2.24	2.33	2.36	2.2	2.38	2.27	2.45	2.22	2.18	2.15	2.24	2.15	2.26	2.14	1.84
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	0.00006	< 0.00005	< 0.005	0.00009	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-		<0.0001	<0.0001	0.0009	0.0006	0.0006	< 0.0001	< 0.00007	< 0.0001	< 0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0006	<0.0001	<0.0001	<0.0001
Zinc	mg/L	5	AO	<0.005	<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	< 0.005	< 0.005	<0.005	<0.005	<0.005
TSS	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (Total)	mg/L	0.2	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BOD(5 day)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	5.7	13	10	7.2	13.5	-	-	11.2	13.6	6.3	9.9	6.2	10.6	8.4	13	6.2	9.8	7.9	10.2
Field pH	pH Units	6.5-8.5	OG	7.17	8.19	8.42	7.78	8.15	8.04	8.04	7.6	7.92	7.83	7.92	8.5	7.7	8.03	8.17	7.97	7.99	8.05	7.42
Field Conductivity	µS/cm	-		772	1145	1150	1450	1690	1720	1730	1750	1403	2100	1410	1700	1660	1620	1738	1911	1765	1668	1423

Bold text indicates values exceeding the ODWO.

ODWQS Ontario Drinking Water Quality Objectives

MAC Maximum Acceptable Concentration

IMAC Interim Maximum Acceptable Concentration

AO Aesthetic Objective

OG Operatioal Guidelines

Bold / Highlighting for ODWQS exceeded parameters

Bold / Red / Italics for RUP exceeded parameters

Bedrock Ground Water Quality Data

PARAMETER	UNITS	ODWQS		34 20-Oct-16	34 12-Apr-17	34 06-Oct-17	34 11-Apr-18	34 01-Oct-18	34 22-Apr-19	34 08-Oct-19	34 13-Apr-20	34 14-Oct-20	34 21-Apr-21	34 18-Oct-21	34 20-Apr-22	34 12-Oct-22	34 19-Apr-23	34 12-Oct-23	34 16-Apr-24	34 10-Oct-24	34 16-Apr-25	34 30-Sep-25
Alkalinity	mg/L	500	OG	309	353	255	217	303	226	288	190	274	246	297	289	328	263	298	260	289	278	310
Conductivity	µS/cm	-		3210	4800	1510	1160	3200	1590	2880	743	2020	1860	2930	3650	4050	2510	2010	2570	2700	2880	3630
pH	pH Units	6.5-8.5	OG	8.06	8.01	7.97	7.88	7.99	8.1	8.01	8.04	8.08	8.1	7.98	7.99	7.9	8.03	7.77	8.17	8.03	7.97	8.18
TDS	mg/L	500	AO	**1780**	**2500**	**731**	**612**	**1864**	**792**	**1568**	382	**1159**	**1044**	**1789**	**1813**	**1971**	**1305**	**1110**	**1430**	**1500**	**1610**	**2040**
DOC	mg/L	5		0.4	0.4	1.1	1.4	0.7	1.2	1.9	1.4	0.4	1.4	1.3	0.7	< 0.2	< 0.2	1.9	2	1.2	<0.8	2.2
COD	mg/L	-		6	24	7	7	14	11	14	5	15	17	6	33	16	23	10	38	55	42	55
Phenols	mg/L	-		0.002	0.018	0.005	< 0.001	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloride	mg/L	250	AO	**857**	**1380**	241	204	**891**	**339**	**851**	102	**487**	**437**	**936**	**998**	**957**	**680**	**472**	**682**	**748**	**898**	**1080**
Ammonia, total	mg/L	-		2.28	3.1	1	0.94	1.46	1.55	2.61	0.45	1.57	2.12	2.63	3.14	2.7	1.62	1.36	2.01	2.65	1.84	2.13
Unionized Ammonia	mg/L	-		-	-	-	-	-	< 0.01	0.03	< 0.01	0.03	-	0.05	0.03	0.02	0.02	0.04	0.07	0.02	<0.01	<0.01
Fluoride	mg/L	2.4	MAC	0.8	< 1	0.8	0.6	0.9	< 0.1	< 1	0.2	0.9	0.4	< 1	< 1	**4.1**	< 1	0.9	<0.7	<0.7	0.6	<0.7
Sulphate	mg/L	500	AO	16	< 10	14	18	8	18	< 10	24	11	17	14	< 10	24	27	9	11	7	8	4
Nitrite (N)	mg/L	1	MAC	< 0.5	< 1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	< 0.05	< 0.05	0.18	< 0.5	< 0.5	< 0.5	< 0.5	<0.05	<0.40	<0.40	<0.05	<0.40
Nitrate (N)	mg/L	10	MAC	< 0.5	< 1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	< 0.05	0.09	< 0.05	< 0.5	< 0.5	< 0.5	< 0.5	<0.05	<0.40	<0.40	<0.05	<0.40
Bromide	mg/L	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TKN	mg/L	-		3.2	3.4	1.1	1.2	2.1	1.9	3.1	0.8	3.2	2.7	2.7	3.9	3.2	2.2	2	2.6	3.3	2.3	3.1
Hardness	mg/L	500	OG	301	443	196	158	289	200	249	175	206	260	318	353	361	341	164	288	309	314	318
Aluminum	mg/L	0.1	OG	**0.12**	0.05	**0.25**	**0.29**	0.03	0.03	0.03	0.02	< 0.01	0.03	0.03	0.01	0.01	0.04	0.03	0.02	<0.01	0.01	0.03
Antimony	mg/L	0.006	IMAC	0.0006	< 0.0001	0.0004	0.0005	0.0001	0.0003	< 0.0002	0.0001	0.0008	0.0009	0.0003	0.0006	0.0007	0.0003	0.0001	<0.0001	0.0002	<0.0001	0.0001
Arsenic	mg/L	0.025	IMAC	0.0013	0.0049	0.0046	0.0008	0.0014	0.0015	0.002	0.0002	0.0022	0.001	0.0011	0.0008	0.0025	0.0017	0.0016	0.0015	0.0008	0.0015	0.0019
Barium	mg/L	1	MAC	0.149	0.204	0.047	0.027	0.086	0.034	0.066	0.018	0.054	0.056	0.088	0.081	0.108	0.074	0.035	0.063	0.079	0.075	0.085
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	IMAC	1.75	2.1	0.92	0.663	1.84	0.732	1.52	0.32	1.43	1.21	1.81	1.59	2.12	1.34	1.25	1.28	1.9	1.3	1.75
Cadmium	mg/L	0.005	MAC	0.00003	0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000059	< 0.000015	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	< 0.000029	<0.000015	0.000025	<0.000015	<0.000015	<0.000030
Calcium	mg/L	-		61.6	86.1	34.9	26.8	51.6	34.8	45.6	30.9	36	47.1	57.3	62.2	66.5	60.9	29.9	52.2	52.8	56.2	56.1
Chromium	mg/L	0.05	MAC	0.0008	0.0014	< 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	<0.001
Chromium (VI)	mg/L			-	-	-	-	-	-	-	-	-	-	-	< 0.001	< 0.001	< 0.001	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	mg/L	-		< 0.005	< 0.005	< 0.005	0.007	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0001	0.0002	0.0001	0.0001	0.0002
Copper	mg/L	1	AO	0.0044	0.0053	0.0028	0.0045	0.0008	0.0026	0.003	0.0009	0.001	0.0008	0.0005	0.0004	< 0.0002	0.0002	0.0003	0.0002	0.0004	0.0002	0.0041
Iron	mg/L	0.3	AO	0.042	0.26	0.077	0.089	< 0.005	< 0.005	**0.444**	< 0.005	0.166	0.051	0.007	0.022	**1.59**	**0.975**	0.225	**0.572**	0.209	**0.874**	**0.933**
Lead	mg/L	0.01	MAC	0.00019	< 0.00002	< 0.00002	0.00004	< 0.00002	0.00003	< 0.0002	0.00004	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	0.00009	0.00005	<0.00004	<0.00004	<0.00009
Magnesium	mg/L	-		35.7	55.5	26.5	22.2	39	27.5	32.8	23.9	28.1	34.5	42.5	48	47.4	46	21.7	38.4	43	42.2	43.2
Manganese	mg/L	0.05	AO	0.038	0.037	0.001	0.001	0.024	< 0.001	0.033	< 0.001	0.019	0.023	0.029	0.027	0.025	0.019	0.01	0.014	0.015	0.014	0.017
Mercury	mg/L	0.001	MAC	< 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	<0.00002	<0.00002	0.00002	<0.00002
Molybdenum	mg/L	-		0.0033	0.0016	0.0022	0.0013	0.001	0.0012	0.0014	0.0004	0.0013	0.0011	0.0011	0.0008	0.0005	0.0005	0.0006	0.0004	0.0004	0.0004	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	<0.0002	0.0005	<0.0002	0.0005	0.0007
Potassium	mg/L	-		14.8	18.7	9.4	7.6	15.6	8	12.5	4.7	11.4	10.8	16.2	13.3	16.8	11	9.2	11.2	16.2	10.8	15.7
Phosphorus-Total	mg/L	-		3.24	1.16	0.15	0.24	0.23	0.24	0.64	0.03	0.8	0.15	0.22	0.48	0.21	0.17	0.2	<0.1	<0.1	<0.1	<0.1
Selenium	mg/L	0.01	MAC	**0.04**	< 0.001	0.003	0.01	**0.021**	**0.014**	**0.021**	< 0.001	0.009	<0.02	<0.03	<0.02	< 0.02	<0.02	<0.001	<0.001	<0.001	0.01	**0.016**
Silver	mg/L	-		< 0.00002	< 0.00002	< 0.00002	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	<0.0001	0.0002	0.0003
Sodium	mg/L	200	AO	**603**	**592**	**251**	**202**	**674**	**227**	**449**	81.2	**418**	**348**	**542**	**514**	**654**	**348**	**266**	**347**	**564**	**433**	**485**
Strontium	mg/L	-		3.33	5.38	1.75	1.35	3.59	1.73	2.68	0.891	2.27	2.75	3.76	4.19	4.39	3.44	1.59	3.15	3.71	3.27	3.7
Thallium	mg/L	-		0.00006	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00019	0.0003	0.00006	0.00007	< 0.005	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	-		0.0007	0.0007	0.0005	0.0004	0.00023	0.0004	< 0.0007	0.0005	< 0.0004	< 0.0004	< 0.0004	0.0001	< 0.0004	0.0009	<0.0001	<0.0001	<0.0001	<0.0001	<0.0004
Zinc	mg/L	5	AO	< 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	<0.005	<0.005	<0.005
TSS	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (Total)	mg/L	0.2	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BOD(5 day)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	°C	-	AO	12.5	7.4	13.7	-	-	9.8	10.1	6.3	12.5	6	12	4.9	12.5	4.2	10.9	8.2	12.5	4.5	12
Field pH	pH Units	6.5-8.5	OG	7.86	7.73	7.89	7.88	7.99	7.28	7.72	7.89	7.98	7.85	7.92	7.85	7.57	8.03	8.18	8.32	7.59	7.62	7.04
Field Conductivity	µS/cm	-		2870	2350	3420	1150	3350	3380	1815	1517	1610	2390	2340	1720	>3999	2510	2100	2038	1224	1388	2338

Bold text indicates values exceeding the ODWO.

ODWQS Ontario Drinking Water Quality Objectives

MAC Maximum Acceptable Concentration

IMAC Interim Maximum Acceptable Concentration

AO Aesthetic Objective

OG Operatioal Guidelines

Bold / Highlighting for ODWQS exceeded parameters

Bold / Red / Italics for RUP exceeded parameters

Surface Water Quality Data

Parameter	PWQO	Trigger SW1 / SW4	Trigger SW6	SW1 26-Apr-16	SW1 12-Apr-17	SW1 17-Jul-17	SW1 06-Oct-17	SW1 11-Apr-18	SW1 02-Oct-18	SW1 23-Apr-19	SW1 30-Jul-19	SW1 08-Oct-19	SW1 13-Apr-20	SW1 20-Jul-20	SW1 15-Oct-20	SW1 21-Apr-21	SW1 19-Jul-21
Alkalinity (as CaCO3)	-	-	-	162	131	214	440	140	67	152			134		279	197	216
Colour (TCU)	-	-	-	58	59	115	160	34	13	53			46		145	63	23
Conductivity (us/cm)	-	-	-	353	292	428	910	296	298	289			332		576	413	426
pH (Units)	6.5 - 8.5	-	-	8	7.9	8.1	7.7	8	7.66	7.93			7.81		7.98	8.11	8.01
TDS	-	-	-	182	152	224	519	159	166	165			159		317	216	245
TSS	-	-	-	< 3	< 3	< 3	7	15	28	< 3			< 3		< 3	< 3	< 3
Turbidity (NTU)	-	-	-	0.9	0	1	2	0.7	24.3	0.7			0.7		1.2	0.7	1.2
DOC	-	27	12	11	8	20	27	8.4	22.2	10.2			5.8		25	14.7	22.7
BOD	-	-	-	< 3	3	< 3	< 3	< 3	5	< 3			< 3		< 3	< 3	< 3
COD	-	-	-	30	22	50	89	22	72	28			23		70	33	57
Phenolics - Total	0.001	-	-	<0.001	<0.001	**0.008**	**0.005**	< 0.001	**0.003**	< 0.002			< 0.002		< 0.002	< 0.002	< 0.002
Chloride	-	-	-	8	8	5	23	6	14.2	7			9.4		13.2	11.7	9.3
Cyanide	0.005	-	-	-	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005			< 0.005		< 0.005	< 0.005	< 0.005
Flouride	-	-	-	0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1			< 0.1		< 0.1	< 0.1	< 0.1
Unionized Ammonia	0.02	0.02	0.02	<0.01	<0.01	<0.01	0.01	< 0.01	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01	< 0.01
Total Ammonia	-	-	-	0.2	0.03	0.08	1.03	0.03	0.06	0.03			0.17		0.07	0.04	0.05
Sulphate	-	-	-	5	9	<1	7	5	46	4			7		< 1	1	2
Nitrite	-	-	-	<0.1	<0.1	<0.05	<0.05	< 0.05	< 0.05	< 0.05			< 0.05		< 0.05	< 0.05	< 0.05
Nitrate	-	-	-	0.1	<0.1	0.08	0.1	0.21	0.69	< 0.05			0.15		< 0.05	< 0.05	0.13
TKN	-	-	-	0.7	0.6	1	2.4	0.4	1.3	0.6			0.7		1.4	0.6	1.1
Mercury	0.0002	-	-	<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002			< 0.00002		< 0.00002	< 0.00002	< 0.00002
Hardness	-	-	-	169	158	217	446	162	123	148			167		329	205	232
Aluminum	0.075	-	-	0.03	0.03	0.03	**0.11**	0.05	**0.24**	0.03			0.03		**0.08**	0.05	0.07
Antimony	0.02	-	-	<0.0001	<0.0001	0.0002	0	< 0.0001	0.0001	0.0002			0.0003		0.0004	< 0.0001	0.0005
Arsenic	0.005	-	-	0.0002	0.0002	0.001	0.003	< 0.0001	0.0005	0.0002			0.0002		0.0007	0.0002	0.0007
Barium	-	-	-	0.026	0.026	0.042	0.109	0.027	0.042	0.024			0.022		0.05	0.027	0.047
Beryllium	1.1	-	-	<0.002	<0.002	<0.002	<0.002	< 0.002	< 0.002	< 0.002	Dry	Dry	< 0.002	Dry	< 0.002	< 0.002	< 0.002
Boron	0.2	0.04	0.09	<0.005	0.018	0.027	***0.124***	0.013	***0.082***	0.016			0.016		0.026	0.008	0.017
Cadmium	0.0005	-	-	<0.00002	0.000016	< 0.000014	0.000021	< 0.000014	0.000093	< 0.000015			< 0.000015		< 0.000015	< 0.000015	< 0.000015
Calcium	-	-	-	61	49	78	151	55	45.4	55			54		119	74	92.6
Chromium (Total)	0.001	-	-	0.0003	<0.002	<0.001	< 0.001	< 0.001	0.001	< 0.001			< 0.001		< 0.001	< 0.001	< 0.001
Chromium (VI)	0.001			-	-	-	-	-	-	-			-		-	-	-
Cobalt	0.0009	-	-	< 0.005	0.0001	0.0002	0.0008	< 0.0001	0.0003	< 0.0001			< 0.0001		0.0002	< 0.0001	0.0002
Copper	0.005	-	-	0.0003	0.0006	0.0004	0.0011	0.0006	**0.006**	0.0011			0.0009		0.0005	0.0004	0.0005
Iron	0.3	2	0.11	0.07	0.03	**0.31**	**0.93**	0.038	**0.624**	0.058			0.035		**0.307**	0.098	**0.378**
Lead	0.005	-	-	< 0.00002	< 0.00002	0.00004	0.00008	< 0.00002	0.00099	0.00005			0.00003		0.00004	< 0.00002	0.00009
Magnesium	-	-	-	4.15	3.08	5.5	16.7	4.3	6.08	3.28			3.46		7.61	4.79	5.45
Manganese	-	0.87	0.08	0.02	0	0.05	***1.06***	0.006	0.116	0.003			0.007		0.122	0.022	0.082
Molybdenum	0.04	-	-	0.0002	0.0023	0.0005	0.0011	0.0002	0.0005	0.0004			0.0003		0.0003	0.0002	0.0003
Nickel	0.025	-	-	<0.01	<0.01	<0.01	<0.01	< 0.01	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01	< 0.01
Potassium	-	-	-	1.3	0.7	1	10.1	0.8	4	1.3			1.1		2.2	1.1	1.1
Phosphorous - Total	0.03	-	-	0.02	**0.07**	**0.05**	**0.08**	< 0.01	**0.2**	0.02			< 0.01		**0.04**	**0.04**	**0.08**
Selenium	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	0.0001	-	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	0.0001			< 0.0001		< 0.0001	< 0.0001	< 0.0001
Sodium	-	-	-	4.7	3.6	5	24.1	4.3	8.7	3.4			4.3		7.1	5.2	5
Strontium	-	-	-	0.13	0.1	0.19	0.47	0.127	0.177	0.107			0.109		0.239	0.152	0.192
Thalium	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	0.006	-	-	0.0006	0.0008	0.0006	0.0007	0.0008	0.0017	0.0009			0.0008		0.0005	0.0003	0.0008
Zinc	0.02	-	-	< 0.005	**0.03**	0.02	0.01	**0.021**	**0.032**	0.007			< 0.005		0.008	0.005	**0.023**
Conductivity (us/cm)	NV	-	-	340	288	-	933	933	933	300			369		532	420	4.64
Dissolved Oxygen	-	-	-	-	-	-	-	-	-	7.5			7.69		4.05	5.76	396
pH (Units)	6.5 - 8.5	-	-	8.01	-	-	-	-	-	7.85			7.5		7.35	7.95	7.04
Temperature (°C)	NV	-	-	8.1	-	-	-	-	-	8.1			8.3		10.6	7.9	18.8

Notes:

1. All results are expressed in mg/L unless otherwise stated.
2. PWQO = Provincial Water Quality Objective, 1994.
3. Bold highlighed text indicate values exceeding PWQO.
4. Bold & red italics indicates trigger exceedance

Surface Water Quality Data

Parameter	PWQO	Trigger SW1 / SW4	Trigger SW6	SW1 23-Aug-21	SW1 18-Oct-21	SW1 20-Apr-22	SW1 21-Jul-22	SW1 12-Oct-22	SW1 19-Apr-23	SW1 28-Aug-23	SW1 12-Oct-23	SW1 24-Jan-24	SW1 16-Apr-24	SW1 25-Jul-24	SW1 10-Oct-24	SW1 18-Dec-24	SW1 16-Apr-25
Alkalinity (as CaCO3)	-	-	-	368	340	181	326		153	348	356	232	186	304	465	148	156
Colour (TCU)	-	-	-	153	179	49	131		75	145	136	49	55	180	131	72	46
Conductivity (us/cm)	-	-	-	692	635	366	631		348	680	672	466	384	596	885	401	336
pH (Units)	6.5 - 8.5	-	-	7.99	8.06	8.01	7.86		7.74	7.74	8.18	8.06	8.08	7.95	8.02	7.38	8.03
TDS	-	-	-	412	370	204	365		184	365	390	255	208	328	510	239	186
TSS	-	-	-	6	< 3	< 3	10		< 3	5	9	<3	<3	4	14	5	5
Turbidity (NTU)	-	-	-	5.9	0.9	0.4	10.3		1.1	4.8	1.9	3	0.6	1.7	9.3	2.9	0.4
DOC	-	27	12	***45.4***	16.1	12.1	***44.9***		17.5	***37.4***	***48.3***	13.7	12.9	***30.2***	***36.5***	16	10
BOD	-	-	-	47.4	< 3	< 3	< 3		< 3	<3	<3	<3	<3	<3	<3	<3	<3
COD	-	-	-	< 3	83	18	95		29	85	76	31	22	77	81	44	24
Phenolics - Total	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	0.001
Chloride	-	-	-	16.2	14.9	10.9	13.1		11.6	13.9	14.3	14	10.5	9.9	19.9	12.1	8.6
Cyanide	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	<0.005
Flouride	-	-	-	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
Unionized Ammonia	0.02	0.02	0.02	< 0.01	< 0.01	***0.03***	< 0.01		< 0.01	<0.01	<0.01	<0.01	<0.01	***1.02***	<0.01	<0.01	<0.01
Total Ammonia	-	-	-	0.31	0.11	1.54	1.09		0.24	0.15	0.34	0.12	0.14	5.57	1.82	0.07	0.13
Sulphate	-	-	-	1	< 1	2	3		6	<1	5	4	5	<1	2	42	6
Nitrite	-	-	-	< 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
Nitrate	-	-	-	0.27	< 0.05	< 0.05	0.14		< 0.05	0.08	0.13	<0.05	<0.05	<0.05	0.05	0.22	0.07
TKN	-	-	-	2.1	1.5	2.2	2.6		0.9	1.8	1.7	0.9	0.8	8.9	3.1	1	0.5
Mercury	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
Hardness	-	-	-	387	371	198	356		164	341	378	237	194	321	488	230	186
Aluminum	0.075	-	-	0.06	0.07	0.02	0.07		0.03	**0.1**	**0.1**	0.03	0.02	0.05	0.07	0.07	0.04
Antimony	0.02	-	-	0.0004	0.0003	0.0002	0.0002		0.0005	0.0001	0.0002	0.0004	0.0004	0.0003	0.0003	<0.0001	<0.0001
Arsenic	0.005	-	-	0.0025	0.001	0.0002	0.0018		0.0003	0.0019	0.0018	0.0002	0.0002	0.0022	0.0015	0.0004	0.0002
Barium	-	-	-	0.098	0.065	0.029	0.087		0.026	0.061	0.071	0.035	0.033	0.073	0.102	0.032	0.029
Beryllium	1.1	-	-	< 0.002	< 0.002	< 0.002	< 0.002	Dry	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron	0.2	0.04	0.09	***0.043***	0.026	0.009	0.039		0.017	0.026	0.031	0.006	0.011	0.025	***0.076***	0.021	0.019
Cadmium	0.0005	-	-	< 0.000015	< 0.000015	< 0.000015	< 0.000015		< 0.000015	<0.000015	0.000016	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Calcium	-	-	-	148	133	71.4	126		59	122	136	85.5	70.6	116	173	82	67
Chromium (Total)	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)	0.001			-	-	< 0.001	< 0.001		< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	0.0009	-	-	**0.0012**	0.0007	< 0.0001	**0.0014**		0.0001	0.0008	0.0009	0.0003	0.0002	**0.0012**	**0.0012**	0.0002	0.0001
Copper	0.005	-	-	0.0003	0.0003	0.0005	0.0004		0.0009	0.0006	0.0007	0.0004	0.0005	0.0001	0.0003	0.0014	0.0006
Iron	0.3	2	0.11	**1.57**	**0.78**	0.092	***2.38***		0.069	**0.977**	**1.07**	0.263	0.095	**1.43**	***2.86***	0.171	0.078
Lead	0.005	-	-	0.00008	0.00003	0.00003	0.00005		0.00008	0.00005	0.00006	0.00007	0.00005	0.00004	0.00009	0.0001	<0.00002
Magnesium	-	-	-	10.3	8.9	4.72	8.83		3.95	8.55	9.52	5.77	4.38	7.65	13.6	5.99	4.46
Manganese	-	0.87	0.08	***1.53***	0.342	0.021	***1.43***		0.014	***0.923***	0.608	0.087	0.014	***1.56***	***1.18***	0.069	0.013
Molybdenum	0.04	-	-	0.0004	0.0002	0.0002	0.0002		0.0003	0.0004	0.0004	0.0001	0.0001	0.0002	0.0001	0.0003	0.0002
Nickel	0.025	-	-	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	0.0015	0.0019	0.0006	0.0008	0.0012	0.0014	0.001	0.0008
Potassium	-	-	-	2.9	1.8	1.4	3.3		1.3	1.6	2.2	1.3	1.2	2.2	6	1.7	1.5
Phosphorous - Total	0.03	-	-	**0.17**	**0.11**	0.02	**0.22**		**0.04**	**0.09**	**0.1**	<0.1	0.03	**0.15**	**0.21**	**0.04**	0.02
Selenium	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	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
Sodium	-	-	-	9.1	6.3	4.5	9.8		4.3	7.2	6.9	5.4	4.2	6.5	13.4	4.2	4.3
Strontium	-	-	-	0.351	0.292	0.149	0.317		0.124	0.285	0.323	0.173	0.14	0.267	0.459	0.155	0.134
Thalium	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	0.006	-	-	0.001	0.0006	0.0005	0.0009		0.0005	0.0007	0.0007	0.0003	0.0004	0.0008	0.0007	0.0005	0.0004
Zinc	0.02	-	-	**0.027**	< 0.005	< 0.005	< 0.005		< 0.005	0.014	<0.005	<0.005	<0.005	0.01	<0.005	0.009	<0.005
Conductivity (us/cm)	NV	-	-	1.3	689	315	510		315	652	774	-	357	586	654	4125	343
Dissolved Oxygen	-	-	-	706	-	5.52	3.91		16.35	4.51	7.8	-	5.36	2.18	1.84	9.03	7.24
pH (Units)	6.5 - 8.5	-	-	7.02	7.45	8.02	7.25		7.91	7.35	7.78	-	7.36	8.82	7.43	7.48	7.99
Temperature (°C)	NV	-	-	20	11.6	10.1	19		8.8	15.5	11.8	-	14.2	17.9	10.6	14	6.2

Notes:

1. All results are expressed in mg/L unless otherwise stated.
2. PWQO = Provincial Water Quality Objective, 1994.
3. Bold highlighed text indicate values exceeding PWQO.
4. Bold & red italics indicates trigger exceedance

Surface Water Quality Data

Parameter	PWQO	Trigger SW1 / SW4	Trigger SW6	SW1 22-Jul-25	SW1 30-Sep-25	SW2B 26-Apr-16	SW2B 12-Apr-17	SW2B 17-Jul-17	SW2B 11-Apr-18	SW2B 23-Apr-19	SW2B 30-Jul-19	SW2B 08-Oct-19	SW2B 13-Apr-20	SW2B 20-Jul-20	SW2B 15-Oct-20	SW2B 21-Apr-21	SW2B 19-Jul-21
Alkalinity (as CaCO3)	-	-	-			174	141	211	177	133			140		291	209	222
Colour (TCU)	-	-	-			33	34	100	20	41			32		147	40	44
Conductivity (us/cm)	-	-	-			363	306	424	314	297			329		585	426	434
pH (Units)	6.5 - 8.5	-	-			7.98	7.98	7.97	7.99	7.95			7.85		7.87	8.1	7.96
TDS	-	-	-			189	157	216	179	152			166		321	226	251
TSS	-	-	-			< 3	< 3	< 3	< 3	< 3			< 3		6	< 3	< 3
Turbidity (NTU)	-	-	-			0.3	0.5	0.6	0.7	0.4			0.5		2.2	0.5	1.1
DOC	-	27	12			6.1	5.3	18.2	5.5	7.9			3.9		21.8	9.2	18.3
BOD	-	-	-			< 3	< 2	< 3	< 3	< 3			< 3		4	< 3	4
COD	-	-	-			13	14	46	15	24			12		53	16	42
Phenolics - Total	0.001	-	-			<0.001	<0.001	**0.005**	< 0.001	< 0.002			< 0.002		< 0.002	< 0.002	< 0.002
Chloride	-	-	-			7.2	7.7	4.4	6.1	6.7			8.3		9.3	10.7	8.8
Cyanide	0.005	-	-			-	< 0.005	< 0.005	< 0.005	< 0.005			< 0.005		< 0.005	< 0.005	< 0.005
Flouride	-	-	-			0.1	<0.1	<0.1	< 0.1	< 0.1			< 0.1		< 0.1	< 0.1	< 0.1
Unionized Ammonia	0.02	0.02	0.02			<0.01	<0.01	<0.01	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01	< 0.01
Total Ammonia	-	-	-			0.02	0.02	0.04	0.02	0.02			0.02		0.06	0.02	0.07
Sulphate	-	-	-			3	6	<1	4	3			5		< 1	2	2
Nitrite	-	-	-			<0.1	<0.1	<0.05	< 0.05	< 0.05			< 0.05		< 0.05	< 0.05	< 0.05
Nitrate	-	-	-			<0.1	<0.1	<0.05	0.23	< 0.05			0.11		< 0.05	< 0.05	0.1
TKN	-	-	-			0.3	0.4	0.9	0.3	0.5			0.4		1.2	0.4	0.9
Mercury	0.0002	-	-			<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002			< 0.00002		< 0.00002	< 0.00002	< 0.00002
Hardness	-	-	-			180	166	208	176	156			144		337	215	235
Aluminum	0.075	-	-			0.02	0.04	0.03	0.03	0.04			0.03		**0.08**	0.06	0.07
Antimony	0.02	-	-			<0.0001	<0.0001	0.0001	< 0.0001	< 0.0001			0.0002		0.0005	< 0.0001	0.0003
Arsenic	0.005	-	-			0.0002	0.0002	0.0008	< 0.0001	0.0002			0.0001		0.0008	0.0001	0.0005
Barium	-	-	-			0.019	0.023	0.03	0.016	0.02			0.02		0.046	0.022	0.041
Beryllium	1.1	-	-	Dry	Dry	<0.002	<0.002	<0.002	< 0.002	< 0.002	Dry	Dry	< 0.002	Dry	< 0.002	< 0.002	< 0.002
Boron	0.2	0.04	0.09			<0.005	0.01	0.011	0.007	0.014			0.008		0.016	< 0.005	0.013
Cadmium	0.0005	-	-			<0.00002	0.000021	< 0.000014	< 0.000014	< 0.000015			< 0.000015		0.000016	< 0.000015	< 0.000015
Calcium	-	-	-			65.9	51.3	75.9	55.4	54.7			60.9		124	78.7	96.4
Chromium (Total)	0.001	-	-			0.0003	< 0.002	< 0.001	< 0.001	0.001			< 0.001		0.001	< 0.001	< 0.001
Chromium (VI)	0.001					-	-	-	-	-			-		-	-	-
Cobalt	0.0009	-	-			< 0.005	<0.0001	0.0001	< 0.0001	< 0.0001			< 0.0001		0.0005	< 0.0001	0.0002
Copper	0.005	-	-			0.0003	0.0004	0.0003	0.0005	0.0008			0.0008		0.0006	0.0003	0.0005
Iron	0.3	2	0.11			0.019	0.012	0.282	0.009	0.042			0.029		**0.837**	0.055	**0.329**
Lead	0.005	-	-			< 0.00002	< 0.00002	0.00003	< 0.00002	0.00006			< 0.00002		0.00008	< 0.00002	0.00004
Magnesium	-	-	-			3.83	3	4	3.57	3			3.54		6.55	4.55	5.25
Manganese	-	0.87	0.08			0	0.001	0.029	0.001	0.005			0.006		0.449	0.009	0.136
Molybdenum	0.04	-	-			<0.0001	0.0002	0.0004	< 0.0001	0.0002			0.0001		0.0001	< 0.0001	0.0002
Nickel	0.025	-	-			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01	< 0.01
Potassium	-	-	-			0.9	0.8	0.8	0.7	1.2			0.8		1.5	0.8	1
Phosphorous - Total	0.03	-	-			< 0.01	**0.04**	**0.05**	< 0.01	0.01			< 0.01		**0.06**	0.02	**0.08**
Selenium	0.1	-	-			< 0.001	< 0.001	< 0.001	< 0.001	< 0.001			< 0.001		< 0.001	< 0.001	< 0.001
Silver	0.0001	-	-			< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.0001			< 0.0001		< 0.0001	< 0.0001	< 0.0001
Sodium	-	-	-			3.6	3.4	3.5	3.2	2.9			3.7		4.5	4.4	4.6
Strontium	-	-	-			0.123	0.095	0.16	0.099	0.101			0.115		0.223	0.148	0.19
Thalium	0.0003	-	-			< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005			< 0.00005		< 0.00005	< 0.00005	< 0.00005
Vanadium	0.006	-	-			0.0005	0.001	0.0006	0.0011	0.0009			0.0008		0.0007	0.0003	0.0006
Zinc	0.02	-	-			< 0.005	< 0.005	< 0.005	< 0.005	0.007			0.012		0.012	0.006	0.016
Conductivity (us/cm)	NV	-	-			300	297	-	-	300			356		546	450	2.44
Dissolved Oxygen	-	-	-			-	-	-	-	7.65			5.05		1.86	8.13	407
pH (Units)	6.5 - 8.5	-	-			8.16	-	-	-	8.09			7.4		7.28	8.26	7.16
Temperature (°C)	NV	-	-			8.3	-	-	-	8.6			8.4		10.6	8.3	18.8

Notes:

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Surface Water Quality Data

Parameter	PWQO	Trigger SW1 / SW4	Trigger SW6	SW2B 18-Oct-21	SW2B 20-Apr-22	SW2B 21-Jul-22	SW2B 12-Oct-22	SW2B 19-Apr-23	SW2B 28-Aug-23	SW2B 12-Oct-23	SW2B 16-Apr-24	SW2B 25-Jul-24	SW2B 10-Oct-24	SW2B 16-Apr-25	SW2B 22-Jul-25	SW2B 30-Sep-25	SW4 26-Apr-16	SW4 20-Oct-16
Alkalinity (as CaCO3)	-	-	-	348	185			154		277	139	321		154			203	140
Colour (TCU)	-	-	-	254	35			79		73	177	119		31			56	580
Conductivity (us/cm)	-	-	-	651	371			355		552	299	625		329			442	1070
pH (Units)	6.5 - 8.5	-	-	8	7.99			7.35		7.99	7.8	7.87		8.08			8.06	7.29
TDS	-	-	-	371	195			186		318	161	331		174			234	760
TSS	-	-	-	6	< 3			< 3		63	5	13		4			< 3	100
Turbidity (NTU)	-	-	-	3.7	0.3			11.8		6	1.2	4.6		0.3			0.5	42.4
DOC	-	27	12	17.3	8.8			18.3		22.9	29.8	21.4		7.7			13	***42***
BOD	-	-	-	6	< 3			< 3		<3	<3	<3		<3			< 3	44
COD	-	-	-	77	10			62		42	62	72		22			32	196
Phenolics - Total	0.001	-	-	< 0.002	< 0.001			< 0.001		<0.001	<0.001	**0.003**		<0.001			<0.001	**0.12**
Chloride	-	-	-	14.4	10.5			13.8		7.2	11.7	8.7		8.3			12	22
Cyanide	0.005	-	-	< 0.005	< 0.005			< 0.005		<0.005	<0.005	<0.005		<0.005			-	<0.005
Flouride	-	-	-	< 0.1	< 0.1			< 0.1		<0.1	<0.1	<0.1		<0.1			0.2	0.1
Unionized Ammonia	0.02	0.02	0.02	< 0.01	**0.06**			< 0.01		<0.01	<0.01	<0.01		<0.01			<0.01	<0.01
Total Ammonia	-	-	-	0.12	2.37			0.09		0.17	0.13	0.37		<0.05			0.04	0.09
Sulphate	-	-	-	2	2			5		21	<1	<1		5			8	421
Nitrite	-	-	-	< 0.05	< 0.05			< 0.05		<0.05	<0.05	<0.05		<0.05			<0.1	<0.1
Nitrate	-	-	-	< 0.05	< 0.05			0.06		0.23	<0.05	<0.05		<0.05			<0.1	0.1
TKN	-	-	-	1.3	2.8			1.7		1	1.4	1.9		0.4			0.6	2.1
Mercury	0.0002	-	-	< 0.00002	< 0.00002			< 0.00002		<0.00002	<0.00002	<0.00002		<0.00002			<0.00002	<0.00002
Hardness	-	-	-	381	174			161		301	157	313		167			212	571
Aluminum	0.075	-	-	0.07	0.02			0.02		0.07	0.03	0.04		0.04			0.02	**90**
Antimony	0.02	-	-	0.0004	0.0003			0.0004		0.0004	0.0003	0.0004		<0.0001			<0.0001	<0.0001
Arsenic	0.005	-	-	0.0006	0.0001			0.0003		0.0008	0.0006	0.0018		0.0002			0.0003	0.0011
Barium	-	-	-	0.059	0.021			0.032		0.045	0.066	0.057		0.021			0.046	0.113
Beryllium	1.1	-	-	< 0.002	< 0.002	Dry	Dry	< 0.002	Dry	<0.0001	<0.0001	<0.0001	Dry	<0.0001	Dry	Dry	<0.002	<0.002
Boron	0.2	0.04	0.09	0.018	< 0.005			0.009		0.022	0.009	0.01		0.01			0.034	***0.389***
Cadmium	0.0005	-	-	< 0.000015	< 0.000015			< 0.000015		0.000048	<0.000015	<0.000015		<0.000015			<0.00002	<0.00002
Calcium	-	-	-	129	63.1			57		111	55.1	114		60.6			73	207
Chromium (Total)	0.001	-	-	< 0.001	< 0.001			< 0.001		<0.001	<0.001	<0.001		<0.001			0.0002	< 0.0002
Chromium (VI)	0.001			-	< 0.001			< 0.001		<0.001	<0.001	<0.001		<0.001			-	-
Cobalt	0.0009	-	-	0.0006	< 0.0001			0.0001		0.0005	0.0001	0.0008		0.0001			< 0.005	**0.0022**
Copper	0.005	-	-	0.0007	0.0006			0.0008		0.0026	0.0003	0.0002		0.0006			0.0002	0.0013
Iron	0.3	2	0.11	**0.727**	0.039			0.157		**0.879**	0.192	**1.74**		0.059			0.14	***5.65***
Lead	0.005	-	-	0.0001	0.00004			0.0001		0.00021	0.00006	0.00003		<0.00002			0.00006	0.00023
Magnesium	-	-	-	8.23	3.88			4.58		6.01	4.67	7.09		3.76			6.79	13
Manganese	-	0.87	0.08	0.408	0.007			0.036		0.254	0.032	0.699		0.005			0.02	***2.1***
Molybdenum	0.04	-	-	0.0001	< 0.0001			0.0004		0.0003	0.0006	0.0001		0.0001			0.0005	0.0008
Nickel	0.025	-	-	< 0.01	< 0.01			< 0.01		0.0014	0.0009	0.0011		0.0007			< 0.01	< 0.01
Potassium	-	-	-	1.4	1			1.6		1.1	0.7	1.7		1			2.5	8.4
Phosphorous - Total	0.03	-	-	**0.08**	0.02			**0.11**		**0.2**	**0.05**	**0.23**		0.02			0.01	**0.49**
Selenium	0.1	-	-	< 0.001	< 0.001			< 0.001		<0.001	<0.001	<0.001		<0.001			< 0.001	< 0.001
Silver	0.0001	-	-	< 0.0001	< 0.0001			< 0.0001		<0.0001	<0.0001	<0.0001		<0.0001			< 0.00002	< 0.00002
Sodium	-	-	-	5.2	3.4			4.4		3.5	4.1	4.7		3.3			9.8	10.7
Strontium	-	-	-	0.264	0.123			0.118		0.227	0.122	0.238		0.113			0.16	0.39
Thalium	0.0003	-	-	< 0.00005	< 0.00005			< 0.00005		<0.00005	<0.00005	<0.00005		<0.00005			< 0.00005	< 0.00005
Vanadium	0.006	-	-	0.0005	0.0005			0.0008		0.0015	0.0004	0.0007		0.0005			0.0003	0.0028
Zinc	0.02	-	-	< 0.005	< 0.005			0.014		0.014	<0.005	0.019		<0.005			< 0.005	0.02
Conductivity (us/cm)	NV	-	-	685	390			311		497	277	619		335			375	-
Dissolved Oxygen	-	-	-	-	4.48			18.92		6.95	2.49	2.3		6.66			-	-
pH (Units)	6.5 - 8.5	-	-	7.41	8.08			7.76		6.87	7.47	7.8		8.04			8.3	-
Temperature (°C)	NV	-	-	10.5	11.2			8.2		12.6	15.9	19.6		6.6			10	-

Notes:

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Surface Water Quality Data

Parameter	PWQO	Trigger SW1 / SW4	Trigger SW6	SW4 12-Apr-17	SW4 17-Jul-17	SW4 06-Oct-17	SW4 10-Apr-18	SW4 22-Apr-19	SW4 30-Jul-19	SW4 08-Oct-19	SW4 13-Apr-20	SW4 20-Jul-20	SW4 14-Oct-20	SW4 21-Apr-21	SW4 19-Jul-21	SW4 18-Oct-21	SW4 20-Apr-22
Alkalinity (as CaCO3)	-	-	-	146	260	227	142	122			139		253	215	210	272	188
Colour (TCU)	-	-	-	61	125	120	34	52			44		81	57	57	114	42
Conductivity (us/cm)	-	-	-	341	533	684	293	277			335		547	435	421	572	375
pH (Units)	6.5 - 8.5	-	-	7.89	8.02	7.48	8.06	7.97			7.86		7.92	8.08	8.03	8.06	7.97
TDS	-	-	-	183	275	384	164	146			166		297	232	237	325	205
TSS	-	-	-	< 3	6	65	< 3	< 3			< 3		3	3	< 3	< 3	< 3
Turbidity (NTU)	-	-	-	0.6	1.9	86.5	1.6	0.7			0.5		0.8	0.5	0.9	0.8	0.4
DOC	-	27	12	11	26	26	8.8	9.8			6.8		21.4	14.9	22.5	15.9	12
BOD	-	-	-	2	< 3	9	< 3	< 3			< 3		< 3	< 3	< 3	< 3	< 3
COD	-	-	-	28	62	106	24	30			20		49	37	54	65	17
Phenolics - Total	0.001	-	-	<0.001	**0.01**	**0.01**	< 0.001	< 0.002			< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	< 0.001
Chloride	-	-	-	12	9	41	5.9	7.3			9.4		17.3	12	9.5	24.9	9.9
Cyanide	0.005	-	-	<0.005	<0.005	<0.005	< 0.005	< 0.005			< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Flouride	-	-	-	<0.1	<0.1	<0.1	< 0.1	< 0.1			< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Unionized Ammonia	0.02	0.02	0.02	<0.01	<0.01	<0.01	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	0.01
Total Ammonia	-	-	-	0.02	0.06	0.76	0.03	< 0.01			0.02		0.04	0.02	0.04	0.06	2.23
Sulphate	-	-	-	16	1	17	5	4			7		2	2	3	9	3
Nitrite	-	-	-	<0.1	<0.05	<0.05	< 0.05	< 0.05			< 0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate	-	-	-	<0.1	<0.05	<0.05	< 0.05	< 0.05			0.13		< 0.05	< 0.05	0.1	0.28	< 0.05
TKN	-	-	-	0.6	1.1	2.7	0.4	0.6			0.5		1.1	0.6	1	1.2	2.9
Mercury	0.0002	-	-	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002			< 0.00002		< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Hardness	-	-	-	177	254	329	166	143			166		294	212	228	302	190
Aluminum	0.075	-	-	0.04	0.04	**0.08**	0.05	0.03			0.03		0.06	0.05	0.06	0.06	0.02
Antimony	0.02	-	-	0.0001	0.0001	0.0001	< 0.0001	< 0.0001			0.0002		0.0006	0.0002	0.0004	0.0003	0.0003
Arsenic	0.005	-	-	0.0003	0.001	0.002	0.0002	0.0002			0.0002		0.0004	0.0002	0.0005	0.0004	0.0002
Barium	-	-	-	0.053	0.078	0.14	0.031	0.031			0.031		0.062	0.037	0.059	0.064	0.032
Beryllium	1.1	-	-	<0.002	<0.002	<0.002	< 0.002	< 0.002	Dry	Dry	< 0.002	Dry	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	0.2	0.04	0.09	***0.091***	***0.076***	***0.218***	0.014	0.027			0.028		***0.043***	0.021	***0.044***	***0.06***	0.019
Cadmium	0.0005	-	-	0.000015	<0.000014	0.000017	< 0.000014	< 0.000015			< 0.000015		< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Calcium	-	-	-	54	89	113	58.5	52.3			56		105	76.1	84.6	104	67.9
Chromium (Total)	0.001	-	-	< 0.002	< 0.001	< 0.001	< 0.001	0.001			< 0.001		< 0.001	< 0.001	0.001	< 0.001	< 0.001
Chromium (VI)	0.001			-	-	-	-	-			-		-	-	-	-	< 0.001
Cobalt	0.0009	-	-	0.0001	0.0004	**0.0014**	< 0.0001	< 0.0001			< 0.0001		0.0002	0.0001	0.0003	0.0004	< 0.0001
Copper	0.005	-	-	0.0003	0.0003	0.0006	0.0004	0.0005			0.0005		0.0002	0.0003	0.0003	0.0005	0.0002
Iron	0.3	2	0.11	0.06	**0.99**	***25.6***	0.104	0.091			0.061		**0.643**	0.151	**0.598**	**0.337**	0.068
Lead	0.005	-	-	< 0.00002	< 0.00002	0.00005	< 0.00002	< 0.00002			< 0.00002		< 0.00002	< 0.00002	0.00003	0.00003	< 0.00002
Magnesium	-	-	-	4.76	7.79	11.2	4.67	3.47			3.84		7.61	5.37	5.7	7.51	4.88
Manganese	-	0.87	0.08	0	0.12	***0.9***	0.013	0.004			0.005		0.097	0.013	0.138	0.037	0.006
Molybdenum	0.04	-	-	0.0012	0.0018	0.0018	0.0002	0.0005			0.0004		0.0003	0.0002	0.0006	0.0004	0.0002
Nickel	0.025	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Potassium	-	-	-	1.7	2.5	11.6	0.8	1.4			1.2		2.2	1.4	1.4	3.7	1.4
Phosphorous - Total	0.03	-	-	0.03	**0.06**	**0.3**	< 0.01	0.02			< 0.01		0.03	**0.04**	**0.06**	0.03	0.02
Selenium	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	0.0001	-	-	< 0.00002	< 0.00002	< 0.00002	< 0.00002	**0.0002**			< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	-	-	-	7.4	8.8	17.1	4.7	3.9			5		10.1	6.8	5.7	12.3	5.2
Strontium	-	-	-	0.11	0.21	0.24	0.132	0.102			0.113		0.205	0.155	0.182	0.219	0.144
Thalium	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	0.006	-	-	0.0004	0.0005	0.0015	0.0004	0.0003			0.0004		0.0003	0.0002	0.0005	0.0003	0.0002
Zinc	0.02	-	-	< 0.005	< 0.005	**0.07**	0.017	0.013			0.005		0.006	0.005	0.014	< 0.005	< 0.005
Conductivity (us/cm)	NV	-	-	343	-	668	668	300			366		520	460	2.95	614	480
Dissolved Oxygen	-	-	-	-	-	-	-	8.19			6.34		3.84	7.36	395	-	6.12
pH (Units)	6.5 - 8.5	-	-	-	-	-	-	8.03			7.51		7.32	7.95	6.98	7.68	7.48
Temperature (°C)	NV	-	-	-	-	-	-	8.3			8		8.2	5.4	19.9	10.2	8.1

Notes:

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3. Bold highlighed text indicate values exceeding PWQO.
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Surface Water Quality Data

Parameter	PWQO	Trigger SW1 / SW4	Trigger SW6	SW4 21-Jul-22	SW4 12-Oct-22	SW4 19-Apr-23	SW4 28-Aug-23	SW4 12-Oct-23	SW4 16-Apr-24	SW4 25-Jul-24	SW4 10-Oct-24	SW4 16-Apr-25	SW4 22-Jul-25	SW4 30-Sep-25	SW5 29-Mar-16	SW5 26-Apr-16	SW5 12-Apr-17
Alkalinity (as CaCO3)	-	-	-			163		205	191	313	245	162			131	169	156
Colour (TCU)	-	-	-			69		76	53	103	66	38			19	23	28
Conductivity (us/cm)	-	-	-			362		573	394	605	525	351			277	344	318
pH (Units)	6.5 - 8.5	-	-			7.76		8.02	8.11	7.93	8.11	8.07			8.05	8.06	7.87
TDS	-	-	-			192		334	209	321	297	186			146	181	169
TSS	-	-	-			< 3		8	4	6	8	4			< 3	< 3	4
Turbidity (NTU)	-	-	-			0.6		1.3	0.4	2.6	3.7	2.9			0.6	0.8	0.5
DOC	-	27	12			10.5		24.2	11.7	19.3	20.1	10.4			5	7	6
BOD	-	-	-			< 3		<3	<3	<3	<3	<3			< 3	< 3	< 2
COD	-	-	-			27		25	25	57	58	33			12	16	15
Phenolics - Total	0.001	-	-			< 0.001		<0.001	<0.001	<0.001	<0.001	<0.001			<0.001	<0.001	<0.001
Chloride	-	-	-			11.3		21.3	10.8	8.6	20.5	8.3			3	2	4
Cyanide	0.005	-	-			< 0.005		<0.005	<0.005	<0.005	<0.005	<0.005			-	-	<0.005
Flouride	-	-	-			< 0.1		<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	0.1	<0.1
Unionized Ammonia	0.02	0.02	0.02			< 0.01		<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	<0.01	<0.01
Total Ammonia	-	-	-			0.53		0.07	<0.05	0.2	0.2	<0.05			0.03	0.03	0.01
Sulphate	-	-	-			6		69	5	<1	4	7			7	6	7
Nitrite	-	-	-			< 0.05		<0.05	<0.05	<0.05	<0.05	<0.05			<0.1	<0.1	<0.1
Nitrate	-	-	-			< 0.05		0.15	<0.05	<0.05	<0.05	<0.05			0.5	<0.1	<0.1
TKN	-	-	-			1.2		0.9	0.6	1.2	1.6	0.8			0.3	0.3	0.4
Mercury	0.0002	-	-			< 0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002			<0.00002	<0.00002	<0.00002
Hardness	-	-	-			170		276	190	300	282	173			135	178	180
Aluminum	0.075	-	-			0.02		**0.08**	0.02	0.04	0.04	**0.1**			0.03	0.03	0.05
Antimony	0.02	-	-			0.0005		0.0004	0.0003	0.0004	0.0002	0.0003			<0.0001	<0.0001	<0.0001
Arsenic	0.005	-	-			0.0002		0.0004	0.0002	0.0007	0.0004	0.0002			0.0001	0.0002	0.0002
Barium	-	-	-			0.034		0.058	0.041	0.083	0.05	0.042			0.009	0.011	0.015
Beryllium	1.1	-	-	Dry	Dry	< 0.002	Dry	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	Dry	Dry	<0.002	<0.002	<0.002
Boron	0.2	0.04	0.09			0.033		***0.141***	0.024	0.036	***0.042***	0.04			<0.005	<0.005	0.01
Cadmium	0.0005	-	-			< 0.000015		<0.000015	0.00002	<0.000015	<0.000015	0.000015			<0.00002	<0.00002	< 0.000014
Calcium	-	-	-			61		97.8	68.5	107	99.9	61.2			50	65	59
Chromium (Total)	0.001	-	-			0.001		<0.001	<0.001	<0.001	<0.001	<0.001			< 0.0002	< 0.0002	< 0.002
Chromium (VI)	0.001					< 0.001		<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
Cobalt	0.0009	-	-			0.0001		0.0003	0.0002	0.0007	0.0004	0.0002			< 0.005	< 0.005	0.0001
Copper	0.005	-	-			0.0006		0.001	0.0005	0.0002	0.0003	0.0008			0.0003	0.0001	0.0001
Iron	0.3	2	0.11			0.124		0.294	0.063	**1.52**	**0.573**	**0.687**			0.02	0.06	0.04
Lead	0.005	-	-			0.00004		0.00007	0.00008	0.00003	0.00005	0.00026			< 0.00002	< 0.00002	< 0.00002
Magnesium	-	-	-			4.38		7.71	4.52	7.9	7.71	4.87			2.69	3.58	2.92
Manganese	-	0.87	0.08			0.011		0.025	0.005	0.489	0.032	0.028			0	0	0
Molybdenum	0.04	-	-			0.0005		0.0023	0.0002	0.0006	0.0008	0.0003			0.0001	0.0001	0.0001
Nickel	0.025	-	-			< 0.01		0.0022	0.0008	0.001	0.0007	0.0009			< 0.01	< 0.01	< 0.01
Potassium	-	-	-			1.6		3.3	1.4	1.6	5.9	1.7			0.6	0.3	0.6
Phosphorous - Total	0.03	-	-			0.03		<0.1	0.03	**0.06**	**0.05**	**0.06**			0.03	0.01	0.03
Selenium	0.1	-	-			< 0.001		<0.001	<0.001	<0.001	<0.001	<0.001			< 0.001	< 0.001	< 0.001
Silver	0.0001	-	-			< 0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			< 0.00002	< 0.00002	< 0.00002
Sodium	-	-	-			5.4		11.9	4.7	6.2	10.8	4.9			1.7	2	1.9
Strontium	-	-	-			0.13		0.219	0.14	0.235	0.204	0.122			0.09	0.13	0.1
Thalium	0.0003	-	-			< 0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005			< 0.00005	< 0.00005	< 0.00005
Vanadium	0.006	-	-			0.0003		0.0005	0.0002	0.0007	0.0004	0.0007			0.0002	0.0002	0.0002
Zinc	0.02	-	-			< 0.005		0.008	<0.005	0.007	<0.005	<0.005			< 0.005	< 0.005	< 0.005
Conductivity (us/cm)	NV	-	-			324		506	356	603	428	393			161	275	317
Dissolved Oxygen	-	-	-			15.4		12.83	3.02	1.88	5.6	5.24			12	-	-
pH (Units)	6.5 - 8.5	-	-			7.98		7.28	7.53	7.87	8.02	8.09			7.74	7.6	-
Temperature (°C)	NV	-	-			7.7		11	13.4	17.9	11.5	5.7			2.5	4.3	-

Notes:

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Surface Water Quality Data

Parameter	PWQO	Trigger SW1 / SW4	Trigger SW6	SW5 17-Jul-17	SW5 10-Apr-18	SW5 22-Apr-19	SW5 30-Jul-19	SW5 08-Oct-19	SW5 13-Apr-20	SW5 20-Jul-20	SW5 14-Oct-20	SW5 21-Apr-21	SW5 19-Jul-21	SW5 18-Oct-21	SW5 20-Apr-22	SW5 21-Jul-22	SW5 12-Oct-22
Alkalinity (as CaCO3)	-	-	-	179	182	154			149		211	216	190	357	192		
Colour (TCU)	-	-	-	42	13	21			17		23	22	42	21	17		
Conductivity (us/cm)	-	-	-	355	350	325			325		433	411	360	867	365		
pH (Units)	6.5 - 8.5	-	-	8.22	7.87	8.01			8.12		8.05	8.15	8.08	8.08	8.08		
TDS	-	-	-	181	195	169			166		232	224	205	478	202		
TSS	-	-	-	3	< 3	< 3			< 3		22	< 3	24	236	4		
Turbidity (NTU)	-	-	-	1.2	1	1.6			0.7		10.3	1.9	30.2	48.5	0.5		
DOC	-	27	12	11	5.6	7.6			5		10.9	8.6	13.3	5.4	7.6		
BOD	-	-	-	< 3	< 3	< 3			< 3		< 3	< 3	6	14	< 3		
COD	-	-	-	25	15	22			7		34	24	38	27	9		
Phenolics - Total	0.001	-	-	**0.01**	< 0.001	< 0.002			< 0.1		< 0.002	< 0.002	< 0.002	< 0.002	< 0.001		
Chloride	-	-	-	2	3.2	3.2			3.5		5.4	2.8	2.8	75.3	4.2		
Cyanide	0.005	-	-	<0.005	< 0.005	< 0.005			< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		
Flouride	-	-	-	<0.1	< 0.1	< 0.1			< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
Unionized Ammonia	0.02	0.02	0.02	<0.01	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01	< 0.01	0.02	**0.06**		
Total Ammonia	-	-	-	0.04	0.08	0.03			0.01		0.03	0.02	0.03	3.8	3.56		
Sulphate	-	-	-	2	5	4			7		2	3	3	5	6		
Nitrite	-	-	-	<0.05	< 0.05	< 0.05			< 0.05		< 0.05	< 0.05	< 0.05	0.18	< 0.05		
Nitrate	-	-	-	<0.05	0.05	0.22			0.13		0.07	< 0.05	0.09	0.74	0.05		
TKN	-	-	-	0.5	0.3	0.5			0.3		0.7	0.4	1	5.9	5.6		
Mercury	0.0002	-	-	<0.00002	< 0.00002	< 0.00002			< 0.00002		< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002		
Hardness	-	-	-	174	210	173			170		241	221	197	431	193		
Aluminum	0.075	-	-	0.04	0.06	0.05			0.04		0.06	0.05	0.04	**0.08**	0.02		
Antimony	0.02	-	-	0.0001	< 0.0001	< 0.0001			0.0002		0.0006	0.0002	0.0004	0.0004	0.0003		
Arsenic	0.005	-	-	0.0002	< 0.0001	0.0002			0.0001		0.0004	0.0002	0.0004	0.0003	0.0001		
Barium	-	-	-	0.012	0.02	0.013			0.012		0.021	0.012	0.018	0.045	0.012		
Beryllium	1.1	-	-	<0.002	< 0.002	< 0.002	Dry	Dry	< 0.002	Dry	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	Dry	Dry
Boron	0.2	0.04	0.09	0.013	< 0.005	0.008			0.005		0.019	0.005	0.016	0.021	< 0.005		
Cadmium	0.0005	-	-	<0.000014	< 0.000014	< 0.000015			< 0.000015		0.000017	< 0.000015	< 0.000015	0.000021	< 0.000015		
Calcium	-	-	-	64	68.7	63.3			60.4		90	81.6	78.1	152	71.1		
Chromium (Total)	0.001	-	-	< 0.001	< 0.001	< 0.001			< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
Chromium (VI)	0.001			-	-	-			-		-	-	-	-	< 0.001		
Cobalt	0.0009	-	-	0.0001	< 0.0001	0.0001			< 0.0001		0.0003	< 0.0001	0.0002	0.0007	< 0.0001		
Copper	0.005	-	-	0.0004	0.0004	0.0004			0.0004		0.0004	0.0003	0.0005	0.0034	0.0007		
Iron	0.3	2	0.11	0.1	0.05	0.086			0.038		**1.03**	0.133	**0.534**	**0.391**	0.049		
Lead	0.005	-	-	0.00002	< 0.00002	< 0.00002			< 0.00002		0.00009	0.00003	0.00006	0.00018	0.00005		
Magnesium	-	-	-	3.33	4.48	2.9			3.29		3.87	4.12	3.23	6.98	3.83		
Manganese	-	0.87	0.08	0.01	0.006	0.016			0.005		0.121	0.007	0.082	0.263	0.004		
Molybdenum	0.04	-	-	0.0001	< 0.0001	< 0.0001			< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001		
Nickel	0.025	-	-	< 0.01	< 0.01	< 0.01			< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		
Potassium	-	-	-	0.5	0.6	0.9			0.5		1.9	0.3	1	3.2	0.7		
Phosphorous - Total	0.03	-	-	0.02	< 0.01	0.02			< 0.01		0.03	**0.06**	**0.11**	**0.13**	0.02		
Selenium	0.1	-	-	< 0.001	< 0.001	< 0.001			< 0.001		< 0.001	< 0.001	< 0.001	0.002	< 0.001		
Silver	0.0001	-	-	< 0.00002	< 0.00002	0.0001			< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001		
Sodium	-	-	-	1.7	2.8	1.9			2.1		2.7	2.3	1.8	15.2	1.9		
Strontium	-	-	-	0.13	0.143	0.107			0.107		0.176	0.149	0.153	0.356	0.131		
Thalium	0.0003	-	-	< 0.00005	< 0.00005	< 0.00005			< 0.00005		< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005		
Vanadium	0.006	-	-	0.0002	0.0003	0.0003			0.0002		0.0002	0.0002	0.0003	0.0003	0.0002		
Zinc	0.02	-	-	< 0.005	0.013	0.009			0.016		**0.021**	0.005	**0.025**	**0.048**	< 0.005		
Conductivity (us/cm)	NV	-	-	-	-	461			362		410	410	5.37	918	375		
Dissolved Oxygen	-	-	-	-	-	9.11			11.19		7.51	8.42	338	-	6.55		
pH (Units)	6.5 - 8.5	-	-	-	-	7.92			7.95		7.72	7.65	7.16	7.45	8.13		
Temperature (°C)	NV	-	-	-	-	6.1			8.4		11.6	5.3	23.9	9.8	4.6		

Notes:

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3. Bold highlighed text indicate values exceeding PWQO.
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Surface Water Quality Data

Parameter	PWQO	Trigger SW1 / SW4	Trigger SW6	SW5 19-Apr-23	SW5 28-Aug-23	SW5 12-Oct-23	SW5 16-Apr-24	SW5 25-Jul-24	SW5 10-Oct-24	SW5 16-Apr-25	SW5 22-Jul-25	SW5 30-Sep-25	SW6 29-Mar-16	SW6 26-Apr-16	SW6 08-Nov-16	SW6 12-Apr-17	SW6 10-Apr-18	SW6 22-Apr-19
Alkalinity (as CaCO3)	-	-	-	174			195	206		167			104	164	149	141	171	140
Colour (TCU)	-	-	-	27			25	54		14			26	30	74	40	22	32
Conductivity (us/cm)	-	-	-	353			382	446		342			226	355	480	328	357	320
pH (Units)	6.5 - 8.5	-	-	7.96			8.11	7.84		8.15			8.03	8.08	7.68	7.86	7.92	7.95
TDS	-	-	-	191			206	221		190			116	181	295	171	188	162
TSS	-	-	-	< 3			<3	12		4			3	< 3	30	< 3	< 3	< 3
Turbidity (NTU)	-	-	-	0.8			1.9	5.9		0.8			1.1	0.5	1.6	0.7	0.5	0.5
DOC	-	27	12	11			8.5	14.8		6.5			6	8	***20***	7	7.1	8.7
BOD	-	-	-	< 3			<3	4		<3			< 3	< 3	< 3	2	< 3	< 3
COD	-	-	-	17			17	69		22			15	15	60	14	16	17
Phenolics - Total	0.001	-	-	< 0.001			<0.001	<0.001		0.001			<0.001	<0.001	**0.03**	<0.001	< 0.001	**0.007**
Chloride	-	-	-	4.3			5.4	13.6		5.6			4	9	9	14	10.6	8.7
Cyanide	0.005	-	-	< 0.005			<0.005	<0.005		<0.005			-	-	<0.005	<0.005	< 0.005	< 0.005
Flouride	-	-	-	< 0.1			<0.1	<0.1		<0.1			<0.1	0.1	0.1	<0.1	< 0.1	< 0.1
Unionized Ammonia	0.02	0.02	0.02	**0.03**			<0.01	<0.01		<0.01			<0.01	<0.01	<0.01	<0.01	< 0.01	< 0.01
Total Ammonia	-	-	-	0.9			0.22	0.25		<0.05			0.03	0.02	0.04	0.02	0.02	0.02
Sulphate	-	-	-	6			5	<1		8			5	4	83	7	4	3
Nitrite	-	-	-	< 0.05			<0.05	<0.05		<0.05			<0.1	<0.1	<0.1	<0.1	< 0.05	< 0.05
Nitrate	-	-	-	< 0.05			<0.05	<0.05		<0.05			0.3	<0.1	0.1	<0.1	< 0.05	< 0.05
TKN	-	-	-	1.2			0.5	1.8		0.3			0.4	0.3	0.5	0.5	0.3	0.5
Mercury	0.0002	-	-	< 0.00002			<0.00002	<0.00002		<0.00002			<0.00002	<0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002
Hardness	-	-	-	177			195	205		188			106	167	251	172	199	162
Aluminum	0.075	-	-	0.02			0.03	0.04		0.04			0.04	0.02	0.03	0.03	0.04	0.04
Antimony	0.02	-	-	0.0003			0.0003	0.0003		<0.0001			0.0001	<0.0001	0.0001	<0.0001	< 0.0001	< 0.0001
Arsenic	0.005	-	-	0.0002			0.0002	0.0002		0.0001			0.0001	0.0002	0.001	0.0002	< 0.0001	0.0001
Barium	-	-	-	0.012			0.015	0.067		0.013			0.012	0.017	0.058	0.031	0.023	0.027
Beryllium	1.1	-	-	< 0.002	Dry	Dry	<0.0001	<0.0001	Dry	<0.0001	Dry	Dry	<0.002	<0.002	<0.002	<0.002	< 0.002	< 0.002
Boron	0.2	0.04	0.09	0.006			<0.005	0.012		0.007			0.007	<0.005	0.026	0.022	0.009	0.012
Cadmium	0.0005	-	-	< 0.000015			<0.000015	<0.000015		<0.000015			<0.00002	<0.00002	0.00015	0.000037	< 0.000014	< 0.000015
Calcium	-	-	-	65.5			72.2	71.7		69.1			38	60	97	55	61.4	57.6
Chromium (Total)	0.001	-	-	< 0.001			<0.001	<0.001		<0.001			< 0.0002	< 0.0002	0.0006	< 0.002	< 0.001	0.001
Chromium (VI)	0.001			< 0.001			<0.001	<0.001		<0.001			-	-	-	-	-	-
Cobalt	0.0009	-	-	< 0.0001			0.0002	0.0002		0.0001			< 0.005	< 0.005	0.0001	0.0001	< 0.0001	< 0.0001
Copper	0.005	-	-	0.0004			0.0004	0.0006		0.0004			0.0005	0.0002	0.0019	0.0004	0.0003	0.0004
Iron	0.3	2	0.11	0.065			0.092	**0.899**		0.061			0.03	0.03	***0.56***	0.04	0.04	0.07
Lead	0.005	-	-	0.00003			0.0001	0.0001		<0.00002			0.00004	< 0.00002	0.00022	< 0.00002	**0.024**	< 0.00002
Magnesium	-	-	-	3.29			3.58	6.23		3.72			2.57	3.95	7.78	3.57	4.29	3.56
Manganese	-	0.87	0.08	0.004			0.011	0.033		0.005			0.01	0	***0.43***	0.03	0.01	0.013
Molybdenum	0.04	-	-	< 0.0001			<0.0001	<0.0001		<0.0001			0.0001	0.0001	0.0005	0.0002	< 0.0001	0.0002
Nickel	0.025	-	-	< 0.01			0.0006	0.0003		0.0006			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Potassium	-	-	-	0.6			0.8	0.3		0.6			0.5	0.3	0.5	0.6	0.4	0.8
Phosphorous - Total	0.03	-	-	0.03			0.03	**0.13**		0.02			0.03	0.01	0.03	0.03	< 0.01	0.01
Selenium	0.1	-	-	< 0.001			<0.001	<0.001		<0.001			< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001
Silver	0.0001	-	-	< 0.0001			<0.0001	<0.0001		<0.0001			< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	**0.0002**
Sodium	-	-	-	2.1			2.1	4.1		2.2			2.6	5.3	6	5.7	5.3	4.1
Strontium	-	-	-	0.12			0.124	0.165		0.117			0.08	0.16	0.2	0.14	0.134	0.129
Thalium	0.0003	-	-	< 0.00005			<0.00005	<0.00005		<0.00005			< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	0.006	-	-	0.0002			0.0002	0.0002		0.0002			0.0002	0.0001	0.0002	0.0001	0.0002	0.0001
Zinc	0.02	-	-	< 0.005			<0.005	0.007		<0.005			< 0.005	0.01	0.01	0.01	< 0.005	0.011
Conductivity (us/cm)	NV	-	-	315			347	457		362			131	270	570	328	328	382
Dissolved Oxygen	-	-	-	28.57			5.31	2.94		7.04			8	-	5	-	-	5.4
pH (Units)	6.5 - 8.5	-	-	8.37			7.75	7.9		7.66			7.65	8.35	7.27	-	-	8.26
Temperature (°C)	NV	-	-	4.9			8.3	18.1		3.6			2.7	2.1	7.1	-	-	5.5

Notes:

1. All results are expressed in mg/L unless otherwise stated.
2. PWQO = Provincial Water Quality Objective, 1994.
3. Bold highlighed text indicate values exceeding PWQO.
4. Bold & red italics indicates trigger exceedance

Surface Water Quality Data

Parameter	PWQO	Trigger SW1 / SW4	Trigger SW6	SW6 30-Jul-19	SW6 08-Oct-19	SW6 13-Apr-20	SW6 20-Jul-20	SW6 14-Oct-20	SW6 21-Apr-21	SW6 19-Jul-21	SW6 18-Oct-21	SW6 20-Apr-22	SW6 21-Jul-22	SW6 12-Oct-22	SW6 19-Apr-23	SW6 28-Aug-23	SW6 12-Oct-23	SW6 25-Jan-24
Alkalinity (as CaCO3)	-	-	-			145			214	249		185			210		174	223
Colour (TCU)	-	-	-			44			35	79		25			36		105	23
Conductivity (us/cm)	-	-	-			343			449	503		395			603		468	490
pH (Units)	6.5 - 8.5	-	-			7.89			8.03	7.93		7.99			7.8		7.96	8.07
TDS	-	-	-			172			238	280		207			314		257	261
TSS	-	-	-			< 3			90	5		4			9		70	<3
Turbidity (NTU)	-	-	-			0.6			45.1	3.9		0.5			4.3		5.5	1.2
DOC	-	27	12			6.6			11.8	***22.1***		9.4			9.1		***24.5***	9.1
BOD	-	-	-			< 3			4	< 6		< 3			< 3		4	<3
COD	-	-	-			6			49	62		12			21		54	14
Phenolics - Total	0.001	-	-			**0.002**			< 0.002	< 0.002		< 0.001			< 0.001		<0.001	<0.001
Chloride	-	-	-			12			15.3	13.6		16.5			62.7		25.2	26.3
Cyanide	0.005	-	-			< 0.005			< 0.005	< 0.005		< 0.005			< 0.005		<0.005	<0.005
Flouride	-	-	-			< 0.1			< 0.1	< 0.1		< 0.1			< 0.1		<0.1	<0.1
Unionized Ammonia	0.02	0.02	0.02			< 0.01			< 0.01	< 0.01		0.01			< 0.01		<0.01	<0.01
Total Ammonia	-	-	-			0.02			0.03	0.05		1.28			0.37		0.29	<0.05
Sulphate	-	-	-			5			< 1	1		2			1		32	3
Nitrite	-	-	-			< 0.05			< 0.05	< 0.05		< 0.05			< 0.05		<0.05	<0.05
Nitrate	-	-	-			0.14			< 0.05	0.11		< 0.05			< 0.05		0.13	<0.05
TKN	-	-	-			0.4			0.9	1.3		2.1			1.1		2.4	0.3
Mercury	0.0002	-	-			< 0.00002			< 0.00002	< 0.00002		< 0.00002			< 0.00002		<0.00002	<0.00002
Hardness	-	-	-			169			227	270		185			246		222	229
Aluminum	0.075	-	-			0.03			0.05	0.07		0.02			0.03		0.06	0.02
Antimony	0.02	-	-			0.0002			0.0003	0.0004		0.0003			0.0004		0.0003	0.0002
Arsenic	0.005	-	-			0.0001			0.0001	0.0007		0.0001			0.0002		0.0005	0.0001
Barium	-	-	-			0.023			0.031	0.072		0.022			0.03		0.044	0.027
Beryllium	1.1	-	-	Dry	Dry	< 0.002	Dry	Dry	< 0.002	< 0.002	Dry	< 0.002	Dry	Dry	< 0.002	Dry	<0.0001	<0.0001
Boron	0.2	0.04	0.09			0.013			0.006	0.024		0.006			0.035		0.032	0.011
Cadmium	0.0005	-	-			< 0.000015			< 0.000015	0.000018		< 0.000015			< 0.000015		0.000025	<0.000015
Calcium	-	-	-			59.4			81.3	97.6		66.7			89.9		78.1	82.6
Chromium (Total)	0.001	-	-			< 0.001			< 0.001	< 0.001		< 0.001			< 0.001		<0.001	<0.001
Chromium (VI)	0.001					-			-	-		< 0.001			< 0.001		<0.001	<0.001
Cobalt	0.0009	-	-			0.0001			< 0.0001	**0.0011**		< 0.0001			0.0002		0.0005	0.0002
Copper	0.005	-	-			0.0009			0.0005	0.0004		0.0005			0.0009		0.0019	0.0004
Iron	0.3	2	0.11			0.077			***0.118***	***3.96***		***0.141***			***0.155***		***0.5***	***0.162***
Lead	0.005	-	-			0.00002			0.00004	0.0001		0.00003			0.0002		0.00008	0.00006
Magnesium	-	-	-			3.56			5.88	6.07		4.41			5.19		6.55	5.45
Manganese	-	0.87	0.08			0.016			0.013	***1.18***		0.028			0.011		***0.352***	0.025
Molybdenum	0.04	-	-			0.0002			0.0003	0.0003		0.0002			0.0002		0.0007	0.0001
Nickel	0.025	-	-			< 0.01			< 0.01	< 0.01		< 0.01			< 0.01		0.0011	0.0003
Potassium	-	-	-			0.4			0.4	0.4		0.5			0.9		1.9	0.4
Phosphorous - Total	0.03	-	-			< 0.01			**0.26**	**0.14**		0.03			**0.05**		**0.2**	<0.1
Selenium	0.1	-	-			< 0.001			< 0.001	< 0.001		< 0.001			0.001		<0.001	<0.001
Silver	0.0001	-	-			< 0.0001			< 0.0001	< 0.0001		< 0.0001			< 0.0001		<0.0001	<0.0001
Sodium	-	-	-			4.7			6.4	6.1		5.2			20.8		6.5	9.1
Strontium	-	-	-			0.138			0.173	0.227		0.157			0.349		0.175	0.213
Thalium	0.0003	-	-			< 0.00005			< 0.00005	< 0.00005		< 0.00005			< 0.00005		<0.00005	<0.00005
Vanadium	0.006	-	-			0.0002			< 0.0001	0.0005		0.0001			0.0003		0.0004	0.0001
Zinc	0.02	-	-			< 0.005			0.01	**0.025**		0.005			< 0.005		0.012	<0.005
Conductivity (us/cm)	NV	-	-			345			540	0.86		421			537		418	-
Dissolved Oxygen	-	-	-			6.69			7.34	474		4.1			16.69		11.5	-
pH (Units)	6.5 - 8.5	-	-			7.81			7.63	6.77		7.86			7.87		7.15	-
Temperature (°C)	NV	-	-			7			3.4	20.9		3.5			6.9		10.7	-

Notes:

1. All results are expressed in mg/L unless otherwise stated.
2. PWQO = Provincial Water Quality Objective, 1994.
3. Bold highlighed text indicate values exceeding PWQO.
4. Bold & red italics indicates trigger exceedance

Surface Water Quality Data

Parameter	PWQO	Trigger SW1 / SW4	Trigger SW6	SW6 16-Apr-24	SW6 25-Jul-24	SW6 10-Oct-24	SW6 18-Dec-24	SW6 16-Apr-25	SW6 22-Jul-25	SW6 30-Sep-25	SW6 Dup 22-Jul-25
Alkalinity (as CaCO3)	-	-	-	171	336	212	147	154	319		319
Colour (TCU)	-	-	-	42	50	148	44	24	54		52
Conductivity (us/cm)	-	-	-	372	689	783	373	350	664		668
pH (Units)	6.5 - 8.5	-	-	8	8.08	7.78	7.29	7.97	8.14		8.15
TDS	-	-	-	199	365	495	214	188	370		364
TSS	-	-	-	<3	13	10	<3	8	5		17
Turbidity (NTU)	-	-	-	2.2	8.1	4.3	1.7	2.4	2.7		2.4
DOC	-	27	12	***12.8***	***17***	***20.9***	11	8.4	***19.8***		***23.8***
BOD	-	-	-	<3	<3	<3	<3	<3	<3		<3
COD	-	-	-	25	52	62	33	20	60		61
Phenolics - Total	0.001	-	-	<0.001	<0.001	<0.001	<0.001	**0.002**	<0.001		<0.001
Chloride	-	-	-	13.5	20.7	19	19.1	15.1	22.9		22.6
Cyanide	0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005
Flouride	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	0.1		0.1
Unionized Ammonia	0.02	0.02	0.02	<0.01	***0.13***	<0.01	<0.01	<0.01	<0.01		<0.01
Total Ammonia	-	-	-	0.06	2.64	0.12	<0.05	<0.05	0.17		0.16
Sulphate	-	-	-	3	1	173	18	6	4		4
Nitrite	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Nitrate	-	-	-	<0.05	<0.05	<0.05	0.11	<0.05	<0.05		<0.05
TKN	-	-	-	0.8	3.5	1.4	0.7	0.4	1.5		1.4
Mercury	0.0002	-	-	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002		<0.00002
Hardness	-	-	-	190	340	428	210	176	359		349
Aluminum	0.075	-	-	0.05	0.07	0.06	0.05	0.05	**0.08**		**0.1**
Antimony	0.02	-	-	0.0004	0.0004	0.0004	<0.0001	<0.0001	0.0005		0.0005
Arsenic	0.005	-	-	0.0002	0.0011	0.0006	0.0002	0.0002	0.0005		0.0006
Barium	-	-	-	0.034	0.062	0.087	0.039	0.024	0.083		0.082
Beryllium	1.1	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	Dry	<0.0001
Boron	0.2	0.04	0.09	0.013	0.025	0.063	0.017	0.019	0.02		0.02
Cadmium	0.0005	-	-	0.000016	0.000019	0.000015	0.000015	<0.000015	<0.000015		<0.000015
Calcium	-	-	-	68.7	122	151	73.7	63.8	129		125
Chromium (Total)	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		0.001
Chromium (VI)	0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
Cobalt	0.0009	-	-	0.0002	0.0005	0.0005	0.0002	0.0001	0.0004		0.0004
Copper	0.005	-	-	0.0008	0.0006	0.0008	0.0011	0.0006	0.0003		0.0004
Iron	0.3	2	0.11	***0.34***	***0.538***	***0.639***	***0.204***	***0.149***	***0.232***		***0.243***
Lead	0.005	-	-	0.00017	0.0001	0.00011	0.00016	0.00006	0.00006		0.00006
Magnesium	-	-	-	4.44	8.43	12	6.36	3.95	8.98		8.76
Manganese	-	0.87	0.08	0.076	***0.699***	***0.182***	***0.093***	0.033	***0.145***		***0.141***
Molybdenum	0.04	-	-	0.0002	0.0008	0.0011	0.0002	0.0001	0.0003		0.0003
Nickel	0.025	-	-	0.0007	0.0009	0.0012	0.0009	0.0007	0.0006		0.0021
Potassium	-	-	-	1	2.6	3.5	0.3	0.7	1.7		1.7
Phosphorous - Total	0.03	-	-	**0.05**	**0.1**	**0.08**	0.02	0.03	**0.07**		**0.07**
Selenium	0.1	-	-	<0.001	0.001	<0.001	<0.001	<0.001	<0.001		<0.001
Silver	0.0001	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001
Sodium	-	-	-	4.9	7.7	8.6	7.1	5.7	10.7		10.6
Strontium	-	-	-	0.152	0.337	0.33	0.13	0.153	0.293		0.291
Thalium	0.0003	-	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005		<0.00005
Vanadium	0.006	-	-	0.0004	0.001	0.0003	0.0002	0.0003	0.0008		0.0009
Zinc	0.02	-	-	0.006	0.01	0.008	<0.005	<0.005	<0.005		<0.005
Conductivity (us/cm)	NV	-	-	424	687	637	383	362	664		664
Dissolved Oxygen	-	-	-	1.96	6.06	1.75	6.42	3.2	0.3		0.3
pH (Units)	6.5 - 8.5	-	-	8.04	8.07	8.16	7.46	7.63	7.11		7.11
Temperature (°C)	NV	-	-	9.8	22	7	0.2	5.6	6.69		6.69

Notes:

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VOC Summary Tables

Parameter	ODWQS	PWQO	14-I 06-May-08	14-I 25-May-09	14-I 05-Aug-09	14-I 08-Jun-10	14-I 19-Oct-10	14-I 12-May-11	14-I 08-Nov-11	14-I 19-Apr-12	14-I 29-Oct-12	14-I 03-Jun-13	14-I 29-Oct-13	14-I 01-May-14	14-I 24-Sep-14	14-I 28-Apr-15	14-I 05-Oct-15
Acetone	NV	NV	12	< 10	< 10	13	< 10	<10	<10	100	<25	< 30	< 30	< 30	< 2	< 30	< 30
Benzene	5	NV	< 0.4	< 0.2	< 0.2	0.3	< 0.2	<0.1	0.4	0.13	<0.25	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	-	0.9	-	-	-	< 0.4	< 0.4	<0.5	<0.5	<0.50	<1.3	< 2	< 0.5	< 0.5	< 0.3	< 0.5	< 0.5
Bromodichloro-methane	NV	200	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.1	<0.1	<0.10	<0.25	-	< 2	< 2	< 0.1	< 2	< 2
Chloro-benzene	NV	15	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.1	<0.1	<0.10	<0.25	< 0.5	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5
Chloro-ethane (Ethyl Chloride)	NV	NV	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	-	-	-	-	-	-	-	-	-	-
Chloro-ethene (Vinyl Chloride)	2	600	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.20	1.1	< 0.5	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5
Chloro-methane (Methyl Chloride)	NV	700	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	-	<0.5	-	<1.3	-	-	< 5	< 0.3	-	-
Dibromochloro-methane	NV	40	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.2	<0.20	<0.50	< 2	< 2	< 2	< 0.1	-	-
1,2-Dibromo-ethane (Ethylene Dibromide)	NV	5	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	<0.2	<0.2	<0.20	<0.50	< 0.2	< 0.2	< 0.2	< 0.1	< 0.2	< 0.2
Dibromo-methane (Methylene Bromide)	NV	NV	< 0.4	< 0.4	< 0.4	-	-	-	-	-	-	-	-	< 0.5	< 0.1	< 2	< 2
1,2-Dichloro-benzene	200	2.5	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.2	<0.20	<0.50	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5
1,3-Dichloro-benzene	NV	2.5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.2	<0.20	<0.50	< 0.5	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5
1,4-Dichloro-benzene	5	4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.2	<0.20	<0.50	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5
1,1-Dichloro-ethane	NV	200	< 0.6	< 0.6	< 0.6	< 0.3	< 0.3	<0.1	<0.1	<0.10	<0.25	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5
1,2-Dichloro-ethane	5	100	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.2	<0.20	<0.50	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5
1,1-Dichloro-ethylene	14	40	< 0.3	< 0.3	< 0.3	< 0.5	< 0.5	<0.1	<0.1	<0.10	<0.25	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5
cis-1,2-Dichloro-ethylene	NV	200	< 0.7	< 0.7	< 0.7	< 0.5	< 0.5	<0.1	<0.1	<0.10	<0.25	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5
trans-1,2-Dichloro-ethylene	NV	200	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.1	<0.1	<0.10	<0.25	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloro-methane (Methylene Chloride)	50	100	< 5	< 5	< 5	< 5	< 5	<0.5	-	0.64	-	< 5	< 5	-	-	< 5	< 5
1,2-Dichloro-propane	NV	0.7	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.1	<0.1	<0.10	<0.25	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5
cis-1,3-Dichloro-propylene	NV	NV	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.2	<0.20	<0.50	< 0.5	< 0.5	< 0.2	< 0.2	< 0.5	< 0.5
trans-1,3-Dichloro-propylene	NV	7	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.2	<0.20	<0.50	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5
Ethyl-benzene	2.4	8	0.4	< 0.3	< 0.3	0.3	< 0.2	<0.1	0.2	<0.10	0.25	< 0.5	< 0.5	< 20	2	< 0.5	< 0.5
Methyl-ethyl-ketone (MEK) (2-Butanone)	NV	400	< 10	< 10	< 10	< 10	< 10	<5	<5	<5.0	13	< 20	< 20	< 2	< 1	< 20	< 20
Methyl-isobutyl-ketone (MIK) (2-Hexone)	NV	NV	< 10	< 10	< 10	< 10	< 10	<5	<5	<5.0	<13	< 20	< 20	< 1.0	< 0.4	< 20	< 20
Methyl-tert-butyl-ether (MTBE)	NV	200	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.2	<0.2	<0.20	<0.50	< 2	< 2	< 20	< 1	< 2	< 2
Styrene	NV	4	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.20	<0.50	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5
1,1,1,2-Tetrachloro-ethane	NV	20	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.1	<0.1	<0.20	<0.50	< 0.5	< 0.5	< 0.5	< 0.4	< 0.5	< 0.5
1,1,2,2-Tetrachloro-ethane	NV	70	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.2	<0.20	<0.50	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5
Tetrachloro-ethylene (PCE)	30	50	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.1	<0.1	<0.10	<0.25	< 0.5	< 0.5	< 5	< 0.1	< 0.5	< 0.5
Tetrachloro-methane (Carbon Tetrachloride)	5	NV	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	<0.1	<0.1	<0.10	<0.25	< 0.2	< 0.2	< 1	< 0.3	< 0.2	< 0.2
Toluene	24	0.8	0.3	0.7	< 0.2	0.5	0.4	0.3	1.7	1.9	8.6	< 0.5	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5
Tribromo-methane (Bromoform)	NV	60	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.2	<0.20	<0.50	< 5	< 5	< 0.5	< 0.1	< 5	< 5
1,2,4-Trichloro-benzene	NV	0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	-	-	< 0.5	< 0.5	< 5	< 0.1	< 0.5	< 0.5
1,1,1-Trichloro-ethane	NV	10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	<0.1	<0.10	<0.25	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5
1,1,2-Trichloro-ethane	NV	800	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.2	<0.20	<0.50	< 0.5	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5
Trichloro-ethylene (TCE)	5	20	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.1	<0.1	-	<0.25	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5
Trichlorofluoro-methane (Fluorotrichloro-methane)	NV	NV	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.2	<0.20	<0.50	< 5	< 5	< 0.5	< 0.5	< 5	< 5
Trichloro-methane (Chloroform)	NV	NV	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	<0.1	0.29	<0.25	< 1	< 1	< 0.5	< 0.5	< 1	< 1
m&p-Xylene	NV	2	0.9	< 0.6	< 0.6	0.5	< 0.4	<0.1	0.3	<0.10	0.55	< 1.0	< 1.0	< 0.5	0.1	< 1.0	< 1.0
o-Xylene	NV	40	2	0.2	< 0.2	0.6	< 0.2	0.1	0.5	<0.10	0.37	< 0.5	< 0.5	-	-	< 0.5	< 0.5
Total Xylenes	90	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethyvinyl Ether	NV	NV	< 10	< 10	< 10	< 10	< 10	-	-	-	-	-	-	-	-	-	-
Bis(2-ethylhexyl) Phthalate	NV	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
1. All results in µg/L unless otherwise stated.
2. ODWO = Ontario Drinking Water Objectives.
3. Shading indicates detection
4. Bold text indicates values exceeding the ODWO.
5. NV = no value.
6. "-" Indicates parameter not analyzed.

VOC Summary Tables

Parameter	ODWQS	PWQO	14-I 19-Oct-16	14-I 12-Apr-17	14-I 05-Oct-17	14-I 10-Apr-18	14-I 02-Oct-18	14-I 22-Apr-19	14-I 09-Oct-19	14-I 13-Apr-20	14-I 14-Oct-20	14-I 21-Apr-21	14-I 18-Oct-21	14-I 20-Apr-22	14-I 12-Oct-22	14-I 19-Apr-23	14-I 12-Oct-23
Acetone	NV	NV	50	120	-	70	< 30	< 30	< 30	< 30	< 30	30	< 30	< 30	< 30		
Benzene	5	NV	< 0.5	< 0.5	< 30	< 0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.6	< 0.5		
Bromomethane	-	0.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.1	< 0.5	< 0.5	< 0.5		
Bromodichloro-methane	NV	200	< 2	< 2	< 0.5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		
Chloro-benzene	NV	15	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
Chloro-ethane (Ethyl Chloride)	NV	NV	-	-	< 0.5	-	-	-	< 3	-	-	-	-	-	-		
Chloro-ethene (Vinyl Chloride)	2	600	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		
Chloro-methane (Methyl Chloride)	NV	700	-	-	< 0.5	< 5	< 0.3	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		
Dibromochloro-methane	NV	40	< 2	< 2	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		
1,2-Dibromo-ethane (Ethylene Dibromide)	NV	5	< 0.2	-	< 2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		
Dibromo-methane (Methylene Bromide)	NV	NV	-	< 0.2	< 0.2	-	-	-	-	-	-	-	-	-	-		
1,2-Dichloro-benzene	200	2.5	< 0.5	< 0.5	-	< 0.5	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5		
1,3-Dichloro-benzene	NV	2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
1,4-Dichloro-benzene	5	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	< 0.5		
1,1-Dichloro-ethane	NV	200	< 0.5	< 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-Dichloro-ethane	5	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
1,1-Dichloro-ethylene	14	40	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
cis-1,2-Dichloro-ethylene	NV	200	-	-	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
trans-1,2-Dichloro-ethylene	NV	200	-	-	-	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
Dichloro-methane (Methylene Chloride)	50	100	< 5	< 5	-	< 5	< 0.3	-	-	-	-	< 0.2	< 0.2	-	-		
1,2-Dichloro-propane	NV	0.7	< 0.5	< 0.5	< 5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
cis-1,3-Dichloro-propylene	NV	NV	-	-	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
trans-1,3-Dichloro-propylene	NV	7	-	-	-	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	Broken	Broken
Ethyl-benzene	2.4	8	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
Methyl-ethyl-ketone (MEK) (2-Butanone)	NV	400	< 20	< 20	< 0.5	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20		
Methyl-isobutyl-ketone (MIK) (2-Hexone)	NV	NV	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20		
Methyl-tert-butyl-ether (MTBE)	NV	200	< 2	< 2	< 20	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		
Styrene	NV	4	< 0.5	< 0.5	< 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-Tetrachloro-ethane	NV	20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
1,1,2,2-Tetrachloro-ethane	NV	70	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
Tetrachloro-ethylene (PCE)	30	50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
Tetrachloro-methane (Carbon Tetrachloride)	5	NV	< 0.2	-	< 0.5	-	-	-	-	-	-	-	-	< 0.2	< 0.2		
Toluene	24	0.8	17.4	1.3	2.7	< 0.5	< 0.5	< 0.5	< 0.5	1	< 0.5	0.9	1.9	0.6	< 0.5		
Tribromo-methane (Bromoform)	NV	60	< 5	-	-	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		
1,2,4-Trichloro-benzene	NV	0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
1,1,1-Trichloro-ethane	NV	10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
1,1,2-Trichloro-ethane	NV	800	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
Trichloro-ethylene (TCE)	5	20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
Trichlorofluoro-methane (Fluorotrichloro-methane)	NV	NV	< 5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		
Trichloro-methane (Chloroform)	NV	NV	< 1	-	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		
m&p-Xylene	NV	2	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
o-Xylene	NV	40	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
Total Xylenes	90	NV	-	-	-	-	-	-	-	-	-	< 1.1	< 1.1	< 1.1	< 1.1		
2-Chloroethyvinyl Ether	NV	NV	-	-	< 0.5	-	-	-	-	-	-	-	-	-	-		
Bis(2-ethylhexyl) Phthalate	NV	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-		

Notes:
1. All results in µg/L unless otherwise stated.
2. ODWO = Ontario Drinking Water Objectives.
3. Shading indicates detection
4. Bold text indicates values exceeding the ODWO.
5. NV = no value.
6. "-" Indicates parameter not analyzed.

VOC Summary Tables

Parameter	ODWQS	PWQO	14-I 16-Apr-24	14-I 10-Oct-24	14-I 16-Apr-25	14-I 30-Sep-25	14-II 25-May-09	14-II 05-Aug-09	14-II 08-Jun-10	14-II 15-Oct-10	14-II 12-May-11	14-II 08-Nov-11	14-II 19-Apr-12	14-II 29-Oct-12	14-II 03-Jun-13	14-II 29-Oct-13	14-II 01-May-14
Acetone	NV	NV		<30		<30	18	25	< 10	< 10	<10	<10	<20	<50	< 30	< 30	< 30
Benzene	5	NV		<0.5		<0.5	< 0.2	< 0.2	< 0.2	< 0.2	<0.1	<0.1	<0.20	<0.50	< 0.5	< 0.5	< 0.5
Bromomethane	-	0.9		<0.5		<0.5	-	-	< 0.4	< 0.4	<0.5	<0.5	<1.0	<2.5	< 2	< 0.5	< 0.5
Bromodichloro-methane	NV	200		<2		<2	< 0.3	< 0.3	< 0.3	< 0.3	<0.1	<0.1	<0.20	<0.50	-	< 2	< 2
Chloro-benzene	NV	15		<0.5		<0.5	< 0.3	< 0.3	< 0.3	< 0.3	<0.1	<0.1	<0.20	<0.50	< 0.5	< 0.5	< 0.5
Chloro-ethane (Ethyl Chloride)	NV	NV		-		-	< 0.4	< 0.4	< 0.4	< 0.4	-	-	-	-	-	-	-
Chloro-ethene (Vinyl Chloride)	2	600		<0.2		<0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.40	<1.0	< 0.5	< 0.5	< 0.5
Chloro-methane (Methyl Chloride)	NV	700		<5		<5	< 0.3	< 0.3	< 0.3	< 0.3	-	<0.5	-	<2.5	-	-	< 5
Dibromochloro-methane	NV	40		<2		<2	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.2	<0.40	<1.0	< 2	< 2	< 2
1,2-Dibromo-ethane (Ethylene Dibromide)	NV	5		-		-	< 0.3	< 0.3	< 0.2	< 0.2	<0.2	<0.2	<0.40	<1.0	< 0.2	< 0.2	< 0.2
Dibromo-methane (Methylene Bromide)	NV	NV		-		-	< 0.4	< 0.4	-	-	-	-	-	-	-	-	< 0.5
1,2-Dichloro-benzene	200	2.5		<0.5		<0.5	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.2	<0.40	<1.0	< 0.5	< 0.5	< 0.5
1,3-Dichloro-benzene	NV	2.5		<0.5		<0.5	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.2	<0.40	<1.0	< 0.5	< 0.5	< 0.5
1,4-Dichloro-benzene	5	4		<0.5		<0.5	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.2	<0.40	<1.0	< 0.5	< 0.5	< 0.5
1,1-Dichloro-ethane	NV	200		<0.5		<0.5	< 0.6	< 0.6	< 0.3	< 0.3	<0.1	<0.1	<0.20	<0.50	< 0.5	< 0.5	< 0.5
1,2-Dichloro-ethane	5	100		<0.5		<0.5	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.2	<0.40	<1.0	< 0.5	< 0.5	< 0.5
1,1-Dichloro-ethylene	14	40		<0.5		<0.5	< 0.3	< 0.3	< 0.5	< 0.5	<0.1	<0.1	<0.20	<0.50	< 0.5	< 0.5	< 0.5
cis-1,2-Dichloro-ethylene	NV	200		<0.5		<0.5	< 0.7	< 0.7	< 0.5	< 0.5	<0.1	<0.1	<0.20	<0.50	< 0.5	< 0.5	< 0.5
trans-1,2-Dichloro-ethylene	NV	200		<0.5		<0.5	< 0.2	< 0.2	< 0.2	< 0.2	<0.1	<0.1	<0.20	<0.50	< 0.5	< 0.5	< 0.5
Dichloro-methane (Methylene Chloride)	50	100		<0.2		<0.2	< 5	< 5	< 5	< 5	<0.5	-	<1.0	-	< 5	< 5	-
1,2-Dichloro-propane	NV	0.7		<0.5		<0.5	< 0.4	< 0.4	< 0.4	< 0.4	<0.1	<0.1	<0.20	<0.50	< 0.5	< 0.5	< 0.5
cis-1,3-Dichloro-propylene	NV	NV		<0.5		<0.5	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.2	<0.40	<1.0	< 0.5	< 0.5	< 0.2
trans-1,3-Dichloro-propylene	NV	7	Broken	<0.5	Blocked	<0.5	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.2	<0.40	<1.0	< 0.5	< 0.5	< 0.5
Ethyl-benzene	2.4	8		<0.5		<0.5	< 0.3	< 0.3	< 0.2	< 0.2	0.2	0.2	<0.20	<0.50	< 0.5	< 0.5	< 20
Methyl-ethyl-ketone (MEK) (2-Butanone)	NV	400		<2		<2	141	< 10	< 10	< 10	<5	<5	<10	<25	< 20	< 20	2
Methyl-isobutyl-ketone (MIK) (2-Hexone)	NV	NV		<20		<20	< 10	< 10	< 10	< 10	<5	<5	<10	<25	< 20	< 20	< 1.0
Methyl-tert-butyl-ether (MTBE)	NV	200		<2		<2	< 0.5	< 0.5	< 0.5	< 0.5	1.1	1.1	1.6	1.4	< 2	< 2	< 20
Styrene	NV	4		<0.5		<0.5	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.40	<1.0	< 0.5	< 0.5	< 0.5
1,1,1,2-Tetrachloro-ethane	NV	20		<0.5		<0.5	< 0.3	< 0.3	< 0.3	< 0.3	<0.1	<0.1	<0.40	<1.0	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachloro-ethane	NV	70		<0.5		<0.5	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.2	<0.40	<1.0	< 0.5	< 0.5	< 0.5
Tetrachloro-ethylene (PCE)	30	50		<0.5		<0.5	< 0.3	< 0.3	< 0.3	< 0.3	<0.1	<0.1	<0.20	<0.50	< 0.5	< 0.5	< 5
Tetrachloro-methane (Carbon Tetrachloride)	5	NV		<0.2		<0.2	< 0.3	< 0.3	< 0.2	< 0.2	<0.1	<0.1	<0.20	<0.50	< 0.2	< 0.2	< 1
Toluene	24	0.8		<0.5		<0.5	1.2	0.5	0.7	< 0.2	<0.2	0.5	<0.40	<1.0	< 0.5	< 0.5	< 0.5
Tribromo-methane (Bromoform)	NV	60		<5		<5	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.2	<0.40	<1.0	< 5	< 5	< 0.5
1,2,4-Trichloro-benzene	NV	0.5		<0.5		<0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	-	-	< 0.5	< 0.5	< 5
1,1,1-Trichloro-ethane	NV	10		<0.5		<0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	<0.1	<0.20	<0.50	< 0.5	< 0.5	< 0.5
1,1,2-Trichloro-ethane	NV	800		<0.5		<0.5	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.2	<0.40	<1.0	< 0.5	< 0.5	< 0.5
Trichloro-ethylene (TCE)	5	20		<0.5		<0.5	< 0.4	< 0.4	< 0.4	< 0.4	<0.1	<0.1	-	<0.50	< 0.5	< 0.5	< 0.5
Trichlorofluoro-methane (Fluorotrichloro-methane)	NV	NV		<5		<5	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.2	<0.40	<1.0	< 5	< 5	< 0.5
Trichloro-methane (Chloroform)	NV	NV		<1		<1	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	<0.1	<0.20	<0.50	< 1	< 1	< 0.5
m&p-Xylene	NV	2		<1		<1	< 0.6	< 0.6	0.7	< 0.4	0.4	0.4	<0.20	<0.50	< 1.0	< 1.0	< 0.5
o-Xylene	NV	40		<0.5		<0.5	< 0.2	< 0.2	< 0.2	< 0.2	0.4	0.1	<0.20	<0.50	< 0.5	< 0.5	-
Total Xylenes	90	NV		-		-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethyvinyl Ether	NV	NV		-		-	< 10	< 10	< 10	< 10	-	-	-	-	-	-	-
Bis(2-ethylhexyl) Phthalate	NV	0.2		-		-	-	-	-	-	-	-	-	-	-	-	-

Notes:
1. All results in µg/L unless otherwise stated.
2. ODWO = Ontario Drinking Water Objectives.
3. Shading indicates detection
4. Bold text indicates values exceeding the ODWO.
5. NV = no value.
6. "-" Indicates parameter not analyzed.

VOC Summary Tables

Parameter	ODWQS	PWQO	14-II 24-Sep-14	14-II 28-Apr-15	14-II 05-Oct-15	14-II 19-Oct-16	14-II 12-Apr-17	14-II 05-Oct-17	14-II 10-Apr-18	14-II 02-Oct-18	14-II 22-Apr-19	14-II 09-Oct-19	14-II 13-Apr-20	14-II 14-Oct-20	14-II 21-Apr-21	14-II 18-Oct-21	14-II 20-Apr-22
Acetone	NV	NV	< 2	<30	<30	< 30	< 30	-	30	< 30	< 30	< 30	< 30	< 30	< 30	50	< 30
Benzene	5	NV	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 30	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.6
Bromomethane	-	0.9	< 0.3	< 2	< 2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.8	< 0.5	< 0.5
Bromodichloro-methane	NV	200	< 0.1	-	-	< 2	< 2	< 0.5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Chloro-benzene	NV	15	< 0.2	-	-	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloro-ethane (Ethyl Chloride)	NV	NV	-	< 0.5	< 0.5	-	-	< 0.5	-	-	-	< 3	-	-	-	-	-
Chloro-ethene (Vinyl Chloride)	2	600	< 0.2	-	-	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chloro-methane (Methyl Chloride)	NV	700	< 0.3	-	-	-	-	< 0.5	< 5	< 0.3	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dibromochloro-methane	NV	40	< 0.1	< 0.2	< 0.2	< 2	< 2	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
1,2-Dibromo-ethane (Ethylene Dibromide)	NV	5	< 0.1	< 2	< 2	< 0.2	-	< 2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dibromo-methane (Methylene Bromide)	NV	NV	< 0.1	< 0.5	< 0.5	-	< 0.2	< 0.2	-	-	-	-	-	-	-	-	-
1,2-Dichloro-benzene	200	2.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	-	-	-	-	-	-	< 0.5
1,3-Dichloro-benzene	NV	2.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichloro-benzene	5	4	0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloro-ethane	NV	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	< 0.5	< 0.5	< 0.5
1,2-Dichloro-ethane	5	100	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloro-ethylene	14	40	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,2-Dichloro-ethylene	NV	200	< 0.1	< 0.5	< 0.5	-	-	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,2-Dichloro-ethylene	NV	200	< 0.5	< 5	< 5	-	-	-	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloro-methane (Methylene Chloride)	50	100	-	< 0.5	< 0.5	< 5	< 5	-	< 5	< 0.3	-	-	-	-	< 0.2	< 0.2	-
1,2-Dichloro-propane	NV	0.7	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,3-Dichloro-propylene	NV	NV	< 0.2	< 0.5	< 0.5	-	-	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,3-Dichloro-propylene	NV	7	< 0.1	< 0.5	< 0.5	-	-	-	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethyl-benzene	2.4	8	< 1	< 20	< 20	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl-ethyl-ketone (MEK) (2-Butanone)	NV	400	2	< 20	< 20	< 20	< 20	< 0.5	60	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Methyl-isobutyl-ketone (MIK) (2-Hexone)	NV	NV	< 0.4	< 2	< 2	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Methyl-tert-butyl-ether (MTBE)	NV	200	< 1	< 0.5	< 0.5	< 2	< 2	< 20	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Styrene	NV	4	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1,2-Tetrachloro-ethane	NV	20	< 0.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachloro-ethane	NV	70	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloro-ethylene (PCE)	30	50	< 0.1	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloro-methane (Carbon Tetrachloride)	5	NV	< 0.3	< 0.5	< 0.5	< 0.2	-	< 0.5	-	-	-	-	-	-	-	-	< 0.2
Toluene	24	0.8	< 0.2	-	-	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tribromo-methane (Bromoform)	NV	60	< 0.1	< 0.5	< 0.5	< 5	-	-	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,4-Trichloro-benzene	NV	0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1-Trichloro-ethane	NV	10	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloro-ethane	NV	800	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloro-ethylene (TCE)	5	20	< 0.1	< 5	< 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
Trichlorofluoro-methane (Fluorotrichloro-methane)	NV	NV	< 0.5	< 1	< 1	< 5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloro-methane (Chloroform)	NV	NV	< 0.5	< 1.0	< 1.0	< 1	-	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
m&p-Xylene	NV	2	< 0.1	< 0.5	< 0.5	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	NV	40	-	-	-	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Xylenes	90	NV	-	-	-	-	-	-	-	-	-	-	-	-	< 1.1	< 1.1	< 1.1
2-Chloroethyvinyl Ether	NV	NV	-	-	-	-	-	< 0.5	-	-	-	-	-	-	-	-	-
Bis(2-ethylhexyl) Phthalate	NV	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
1. All results in µg/L unless otherwise stated.
2. ODWO = Ontario Drinking Water Objectives.
3. Shading indicates detection
4. Bold text indicates values exceeding the ODWO.
5. NV = no value.
6. "-" Indicates parameter not analyzed.

VOC Summary Tables

Parameter	ODWQS	PWQO	14-II 12-Oct-22	14-II 19-Apr-23	14-II 12-Oct-23	14-II 16-Apr-24	14-II 10-Oct-24	14-II 16-Apr-25	14-II 30-Sep-25	14-III 06-May-08	14-III 15-Aug-08	14-III 25-May-09	14-III 05-Aug-09	14-III 08-Jun-10	14-III 15-Oct-10	14-III 12-May-11	14-III 08-Nov-11
Acetone	NV	NV	< 30	< 30	<30	<30	<30	<30	<30	< 10	< 10	13	22	11	< 10	<20	<30
Benzene	5	NV	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.4	< 0.4	< 0.2	0.2	0.3	0.3	<0.2	<0.3
Bromomethane	-	0.9	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	< 0.4	< 0.4	<1	<1
Bromodichloro-methane	NV	200	< 2	< 2	<2	<2	<2	<2	<2	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.3
Chloro-benzene	NV	15	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.3
Chloro-ethane (Ethyl Chloride)	NV	NV	-	-	-	-	-	-	-	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	-	-
Chloro-ethene (Vinyl Chloride)	2	600	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.4	<0.5
Chloro-methane (Methyl Chloride)	NV	700	< 5	< 5	<5	<5	<5	<5	<5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	-	2
Dibromochloro-methane	NV	40	< 2	< 2	<2	<2	<2	<2	<2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.4	<0.5
1,2-Dibromo-ethane (Ethylene Dibromide)	NV	5	< 0.2	< 0.2	<0.2	-	-	-	-	< 0.3	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	<0.4	<0.5
Dibromo-methane (Methylene Bromide)	NV	NV	-	-	-	-	-	-	-	< 0.4	< 0.4	< 0.4	< 0.4	-	-	-	-
1,2-Dichloro-benzene	200	2.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.4	<0.5
1,3-Dichloro-benzene	NV	2.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.4	<0.5
1,4-Dichloro-benzene	5	4	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.4	<0.5
1,1-Dichloro-ethane	NV	200	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.6	< 0.6	< 0.6	< 0.6	< 0.3	< 0.3	<0.2	<0.3
1,2-Dichloro-ethane	5	100	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.4	<0.5
1,1-Dichloro-ethylene	14	40	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.5	< 0.5	<0.2	<0.3
cis-1,2-Dichloro-ethylene	NV	200	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.7	< 0.7	< 0.7	< 0.7	< 0.5	< 0.5	<0.2	<0.3
trans-1,2-Dichloro-ethylene	NV	200	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.3
Dichloro-methane (Methylene Chloride)	50	100	-	-	-	<0.2	<0.2	<0.2	<0.2	< 5	< 5	< 5	< 5	< 5	< 5	<1	-
1,2-Dichloro-propane	NV	0.7	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.3
cis-1,3-Dichloro-propylene	NV	NV	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.4	<0.5
trans-1,3-Dichloro-propylene	NV	7	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.4	<0.5
Ethyl-benzene	2.4	8	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	<0.2	<0.3
Methyl-ethyl-ketone (MEK) (2-Butanone)	NV	400	< 20	< 20	<20	<2	<2	<2	<2	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10
Methyl-isobutyl-ketone (MIK) (2-Hexone)	NV	NV	< 20	< 20	<20	<20	<20	<20	<20	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10
Methyl-tert-butyl-ether (MTBE)	NV	200	< 2	< 2	<2	<2	<2	<2	<2	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.4	<0.5
Styrene	NV	4	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.4	<0.5
1,1,1,2-Tetrachloro-ethane	NV	20	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.3
1,1,2,2-Tetrachloro-ethane	NV	70	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.4	<0.5
Tetrachloro-ethylene (PCE)	30	50	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.2	<0.3
Tetrachloro-methane (Carbon Tetrachloride)	5	NV	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.3	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	<0.2	<0.3
Toluene	24	0.8	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.3	6.8	0.6	1.3	0.4	0.4	<0.4	<0.5
Tribromo-methane (Bromoform)	NV	60	< 5	< 5	<5	<5	<5	<5	<5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.4	<0.5
1,2,4-Trichloro-benzene	NV	0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-
1,1,1-Trichloro-ethane	NV	10	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.2	<0.3
1,1,2-Trichloro-ethane	NV	800	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.4	<0.5
Trichloro-ethylene (TCE)	5	20	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	<0.2	<0.3
Trichlorofluoro-methane (Fluorotrichloro-methane)	NV	NV	< 5	< 5	<5	<5	<5	<5	<5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	<0.4	<0.5
Trichloro-methane (Chloroform)	NV	NV	< 1	< 1	<1	<1	<1	<1	<1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.2	<0.3
m&p-Xylene	NV	2	< 1.0	< 1.0	<1	<1	<1	<1	<1	< 0.6	< 0.6	< 0.6	< 0.6	0.5	0.6	<0.2	<0.3
o-Xylene	NV	40	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.2	< 0.2	< 0.2	0.2	0.3	0.3	<0.2	<0.3
Total Xylenes	90	NV	< 1.1	< 1.1	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethyvinyl Ether	NV	NV	-	-	-	-	-	-	-	< 10	< 10	< 10	< 10	< 10	< 10	-	-
Bis(2-ethylhexyl) Phthalate	NV	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
1. All results in µg/L unless otherwise stated.
2. ODWO = Ontario Drinking Water Objectives.
3. Shading indicates detection
4. Bold text indicates values exceeding the ODWO.
5. NV = no value.
6. "-" Indicates parameter not analyzed.

VOC Summary Tables

Parameter	ODWQS	PWQO	14-III 19-Apr-12	14-III 29-Oct-12	14-III 03-Jun-13	14-III 29-Oct-13	14-III 01-May-14	14-III 24-Sep-14	14-III 28-Apr-15	14-III 05-Oct-15	14-III 19-Oct-16	14-III 12-Apr-17	14-III 10-Apr-18	14-III 22-Apr-19	14-III 09-Oct-19	14-III 13-Apr-20	14-III 14-Oct-20
Acetone	NV	NV	<25	<200	< 30	< 30	< 30	< 2	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
Benzene	5	NV	<0.25	<2.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	-	0.9	<1.3	<10	< 2	< 0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloro-methane	NV	200	<0.25	<2.0	-	< 2	< 2	< 0.1	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Chloro-benzene	NV	15	<0.25	<2.0	< 0.5	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloro-ethane (Ethyl Chloride)	NV	NV	-	-	-	-	-	-	-	-	-	-	-	-	< 3	-	-
Chloro-ethene (Vinyl Chloride)	2	600	<0.50	<4.0	< 0.5	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.2	< 0.2	< 0.2	< 0.2
Chloro-methane (Methyl Chloride)	NV	700	-	<10	-	-	< 5	< 0.3	-	-	-	-	< 5	< 5	< 5	< 5	< 5
Dibromochloro-methane	NV	40	<0.50	<4.0	< 2	< 2	< 2	< 0.1	-	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2
1,2-Dibromo-ethane (Ethylene Dibromide)	NV	5	<0.50	<4.0	< 0.2	< 0.2	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dibromo-methane (Methylene Bromide)	NV	NV	-	-	-	-	< 0.5	< 0.1	< 2	< 2	-	< 0.2	-	-	-	-	-
1,2-Dichloro-benzene	200	2.5	<0.50	<4.0	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	-	-
1,3-Dichloro-benzene	NV	2.5	<0.50	<4.0	< 0.5	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichloro-benzene	5	4	<0.50	<4.0	< 0.5	< 0.5	< 0.5	0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloro-ethane	NV	200	<0.25	<2.0	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloro-ethane	5	100	<0.50	<4.0	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloro-ethylene	14	40	<0.25	<2.0	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,2-Dichloro-ethylene	NV	200	<0.25	<2.0	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	-	-	-	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,2-Dichloro-ethylene	NV	200	<0.25	<2.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	-	-	< 0.5	< 0.5	< 0.5	< 0.5
Dichloro-methane (Methylene Chloride)	50	100	<1.3	-	< 5	< 5	-	-	< 5	< 5	< 5	< 5	< 5	-	-	-	-
1,2-Dichloro-propane	NV	0.7	<0.25	<2.0	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,3-Dichloro-propylene	NV	NV	<0.50	<4.0	< 0.5	< 0.5	< 0.2	< 0.2	< 0.5	< 0.5	-	-	-	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,3-Dichloro-propylene	NV	7	<0.50	<4.0	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	-	-	-	< 0.5	< 0.5	< 0.5	< 0.5
Ethyl-benzene	2.4	8	<0.25	<2.0	< 0.5	< 0.5	< 20	1	< 0.5	< 0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl-ethyl-ketone (MEK) (2-Butanone)	NV	400	<13	<100	< 20	< 20	< 2	< 1	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Methyl-isobutyl-ketone (MIK) (2-Hexone)	NV	NV	<13	<100	< 20	< 20	< 1.0	< 0.4	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Methyl-tert-butyl-ether (MTBE)	NV	200	<0.50	<4.0	< 2	< 2	< 20	< 1	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Styrene	NV	4	<0.50	<4.0	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1,2-Tetrachloro-ethane	NV	20	<0.50	<4.0	< 0.5	< 0.5	< 0.5	< 0.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachloro-ethane	NV	70	<0.50	<4.0	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloro-ethylene (PCE)	30	50	<0.25	<2.0	< 0.5	< 0.5	< 5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloro-methane (Carbon Tetrachloride)	5	NV	<0.25	<2.0	< 0.2	< 0.2	< 1	< 0.3	< 0.2	< 0.2	< 0.2	-	-	-	-	-	-
Toluene	24	0.8	<0.50	<4.0	< 0.5	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5	1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tribromo-methane (Bromoform)	NV	60	<0.50	<4.0	< 5	< 5	< 0.5	< 0.1	< 5	< 5	< 5	-	< 5	< 5	< 5	< 5	< 5
1,2,4-Trichloro-benzene	NV	0.5	-	-	< 0.5	< 0.5	< 5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1-Trichloro-ethane	NV	10	<0.25	<2.0	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloro-ethane	NV	800	<0.50	<4.0	< 0.5	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloro-ethylene (TCE)	5	20	-	<2.0	< 0.5	< 0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoro-methane (Fluorotrichloro-methane)	NV	NV	<0.50	<4.0	< 5	< 5	< 0.5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloro-methane (Chloroform)	NV	NV	<0.25	<2.0	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	-	< 1	< 1	< 1	< 1	< 1
m&p-Xylene	NV	2	<0.25	<2.0	< 1.0	< 1.0	< 0.5	< 0.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	NV	40	<0.25	<2.0	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Xylenes	90	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethyvinyl Ether	NV	NV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis(2-ethylhexyl) Phthalate	NV	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
1. All results in µg/L unless otherwise stated.
2. ODWO = Ontario Drinking Water Objectives.
3. Shading indicates detection
4. Bold text indicates values exceeding the ODWO.
5. NV = no value.
6. "-" Indicates parameter not analyzed.

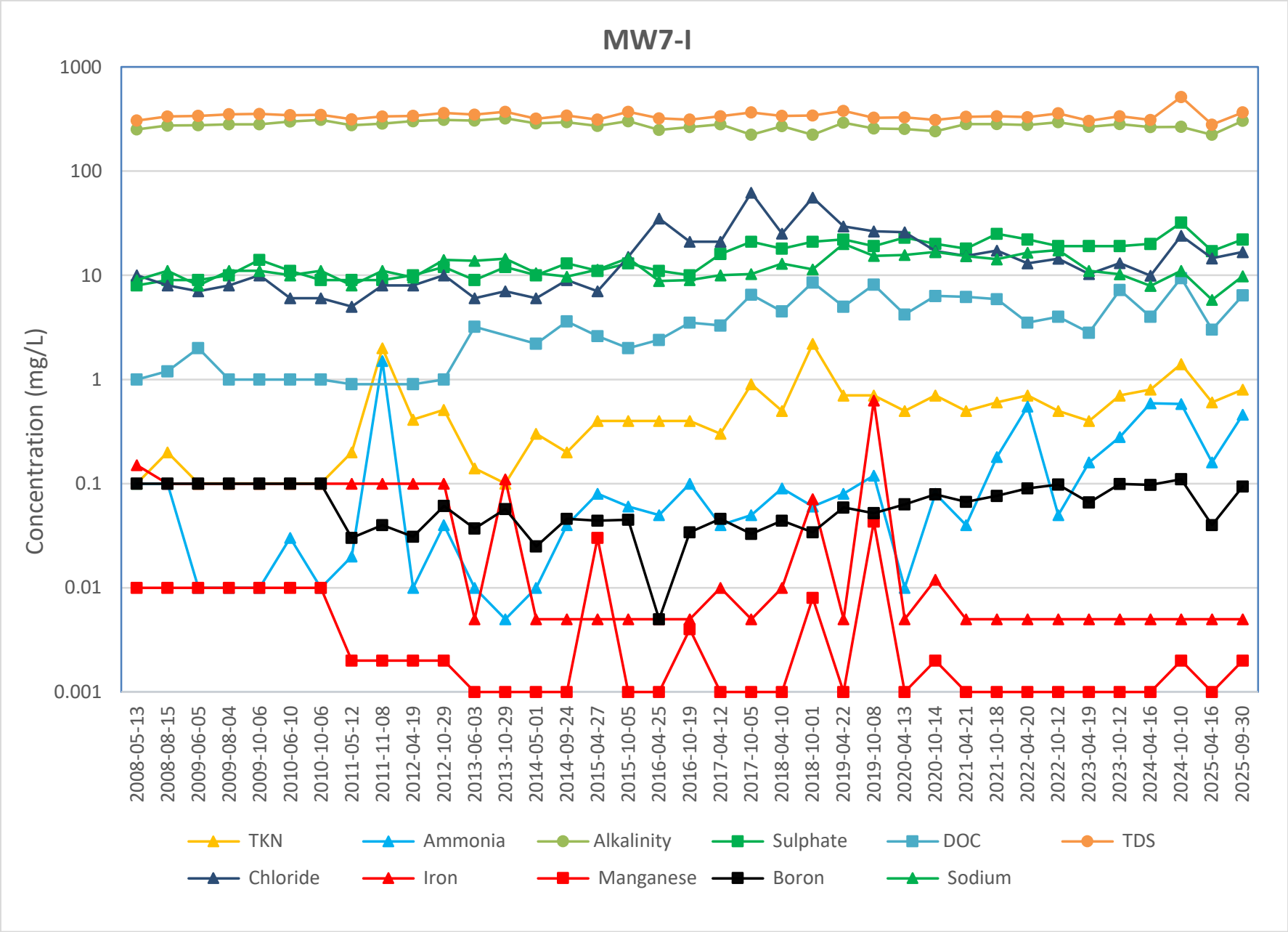
VOC Summary Tables

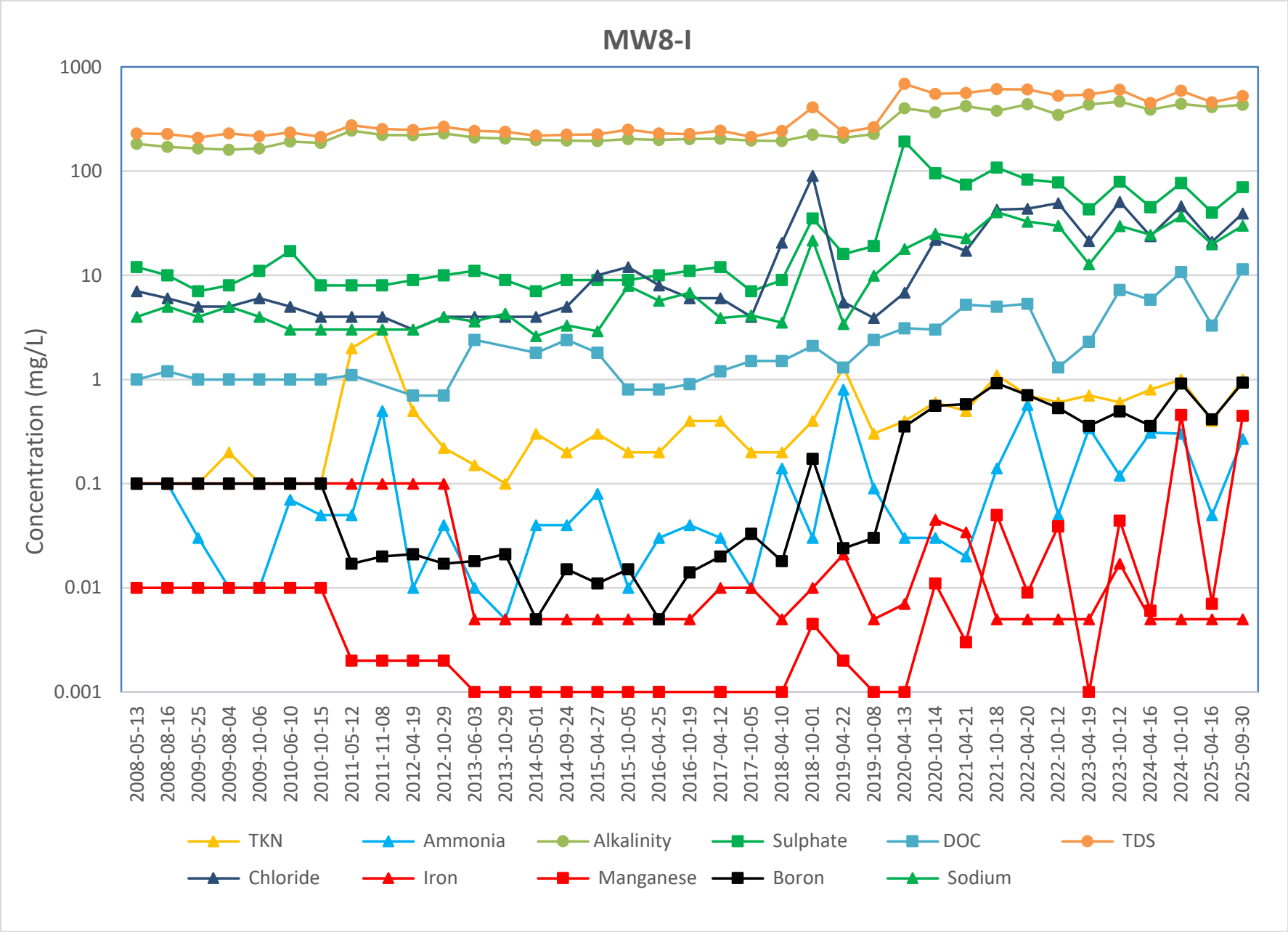
Parameter	ODWQS	PWQO	14-III 21-Apr-21	14-III 18-Oct-21	14-III 20-Apr-22	14-III 19-Apr-23	14-III 12-Oct-23	14-III 16-Apr-24	14-III 10-Oct-24	14-III 16-Apr-25	14-III 30-Sep-25	Leachate 12-May-21
Acetone	NV	NV	60	50	< 30							-
Benzene	5	NV	< 0.5	< 0.5	< 0.5							< 0.5
Bromomethane	-	0.9	1.1	< 0.5	< 0.5							-
Bromodichloro-methane	NV	200	< 2	< 2	< 2							-
Chloro-benzene	NV	15	< 0.5	< 0.5	< 0.5							-
Chloro-ethane (Ethyl Chloride)	NV	NV	-	-	-							-
Chloro-ethene (Vinyl Chloride)	2	600	< 0.2	< 0.2	< 0.2							-
Chloro-methane (Methyl Chloride)	NV	700	< 5	< 5	< 5							-
Dibromochloro-methane	NV	40	< 2	< 2	< 2							-
1,2-Dibromo-ethane (Ethylene Dibromide)	NV	5	< 0.2	< 0.2	< 0.2							-
Dibromo-methane (Methylene Bromide)	NV	NV	-	-	-							-
1,2-Dichloro-benzene	200	2.5	-	-	< 0.5							-
1,3-Dichloro-benzene	NV	2.5	< 0.5	< 0.5	< 0.5							-
1,4-Dichloro-benzene	5	4	< 0.5	< 0.5	< 0.5							-
1,1-Dichloro-ethane	NV	200	< 0.5	< 0.5	< 0.5							-
1,2-Dichloro-ethane	5	100	< 0.5	< 0.5	< 0.5							-
1,1-Dichloro-ethylene	14	40	< 0.5	< 0.5	< 0.5							-
cis-1,2-Dichloro-ethylene	NV	200	< 0.5	< 0.5	< 0.5							-
trans-1,2-Dichloro-ethylene	NV	200	< 0.5	< 0.5	< 0.5							-
Dichloro-methane (Methylene Chloride)	50	100	< 0.2	< 0.2	-							-
1,2-Dichloro-propane	NV	0.7	< 0.5	< 0.5	< 0.5							-
cis-1,3-Dichloro-propylene	NV	NV	< 0.5	< 0.5	< 0.5							-
trans-1,3-Dichloro-propylene	NV	7	< 0.5	< 0.5	< 0.5	Broken	Broken	Broken	Broken	Blocked	Blocked	-
Ethyl-benzene	2.4	8	< 0.5	< 0.5	< 0.5							< 0.5
Methyl-ethyl-ketone (MEK) (2-Butanone)	NV	400	< 20	< 20	< 20							-
Methyl-isobutyl-ketone (MIK) (2-Hexone)	NV	NV	< 20	< 20	< 20							-
Methyl-tert-butyl-ether (MTBE)	NV	200	< 2	< 2	< 2							-
Styrene	NV	4	< 0.5	< 0.5	< 0.5							-
1,1,1,2-Tetrachloro-ethane	NV	20	< 0.5	< 0.5	< 0.5							-
1,1,2,2-Tetrachloro-ethane	NV	70	< 0.5	< 0.5	< 0.5							-
Tetrachloro-ethylene (PCE)	30	50	< 0.5	< 0.5	< 0.5							-
Tetrachloro-methane (Carbon Tetrachloride)	5	NV	-	-	< 0.2							-
Toluene	24	0.8	< 0.5	< 0.5	< 0.5							16.5
Tribromo-methane (Bromoform)	NV	60	< 5	< 5	< 5							-
1,2,4-Trichloro-benzene	NV	0.5	< 0.5	< 0.5	< 0.5							-
1,1,1-Trichloro-ethane	NV	10	< 0.5	< 0.5	< 0.5							-
1,1,2-Trichloro-ethane	NV	800	< 0.5	< 0.5	< 0.5							-
Trichloro-ethylene (TCE)	5	20	< 0.5	< 0.5	< 0.5							-
Trichlorofluoro-methane (Fluorotrichloro-methane)	NV	NV	< 5	< 5	< 5							-
Trichloro-methane (Chloroform)	NV	NV	< 1	< 1	< 1							-
m&p-Xylene	NV	2	< 1.0	< 1.0	< 1.0							< 1.0
o-Xylene	NV	40	< 0.5	< 0.5	< 0.5							< 0.5
Total Xylenes	90	NV	< 1.1	< 1.1	< 1.1							< 1.1
2-Chloroethyvinyl Ether	NV	NV	-	-	-							-
Bis(2-ethylhexyl) Phthalate	NV	0.2	-	-	-							<5

Notes:
1. All results in µg/L unless otherwise stated.
2. ODWO = Ontario Drinking Water Objectives.
3. Shading indicates detection
4. Bold text indicates values exceeding the ODWO.
5. NV = no value.
6. "-" Indicates parameter not analyzed.

APPENDIX F

Chemistry Over Time Graphs


MW7-I
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
2008-05-13
2008-08-15
2009-06-05
2009-08-04
2009-10-06
2010-06-10
2010-10-06
2011-05-12
2011-11-08
2012-04-19
2012-10-29
2013-06-03
2013-10-29
2014-05-01
2014-09-24
2015-04-27
2015-10-05
2016-04-25
2016-10-19
2017-04-12
2017-10-05
2018-04-10
2018-10-01
2019-04-22
2019-10-08
2020-04-13
2020-10-14
2021-04-21
2021-10-18
2022-04-20
2022-10-12
2023-04-19
2023-10-12
2024-04-16
2024-10-10
2025-04-16
2025-09-30
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW8-I
Concentration (mg/L)
1000
100
10
1
0.1
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0.001
2008-05-13
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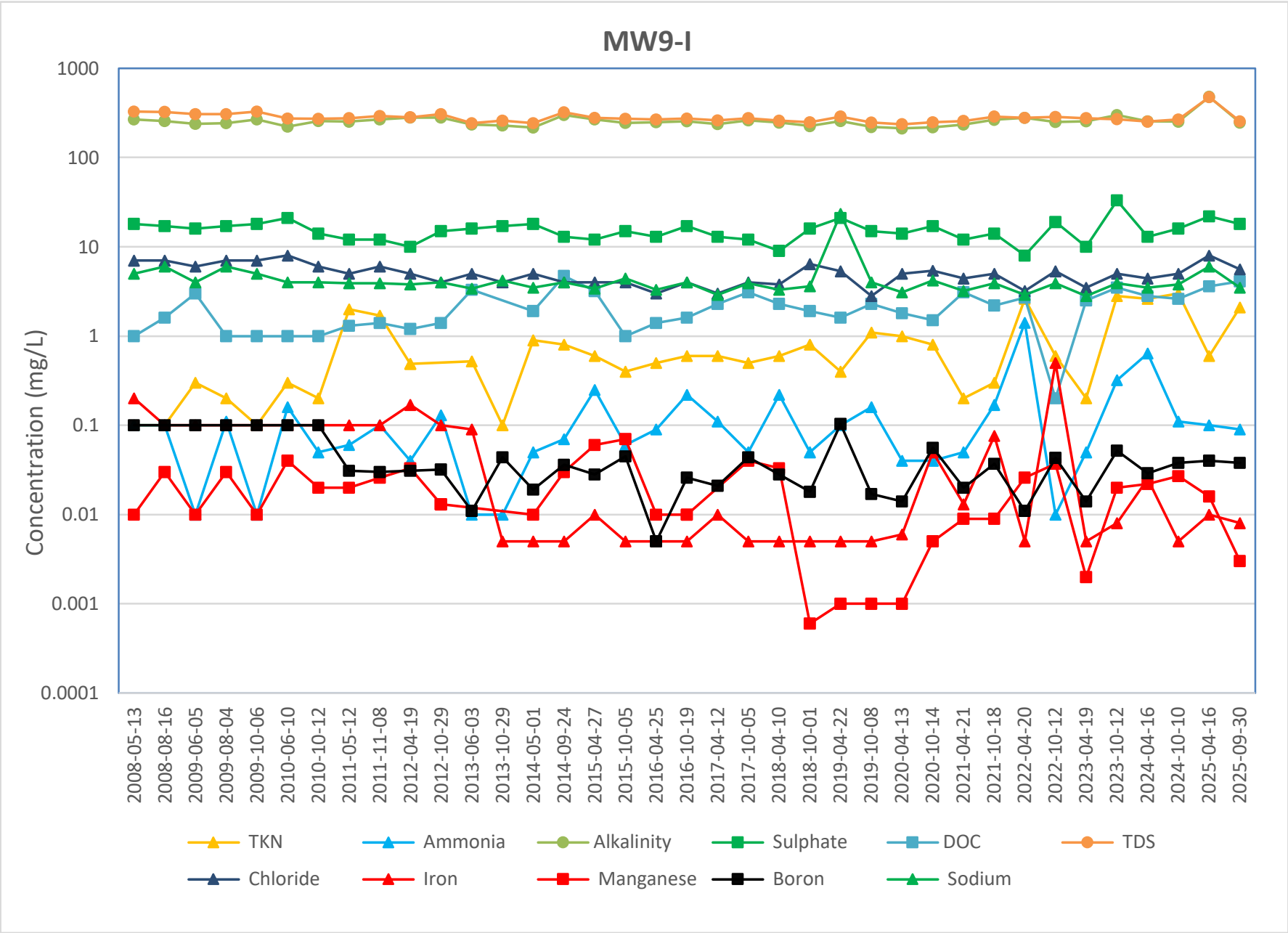
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW9-I
Concentration (mg/L)
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100
10
1
0.1
0.01
0.001
0.0001
2008-05-13
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2009-06-05
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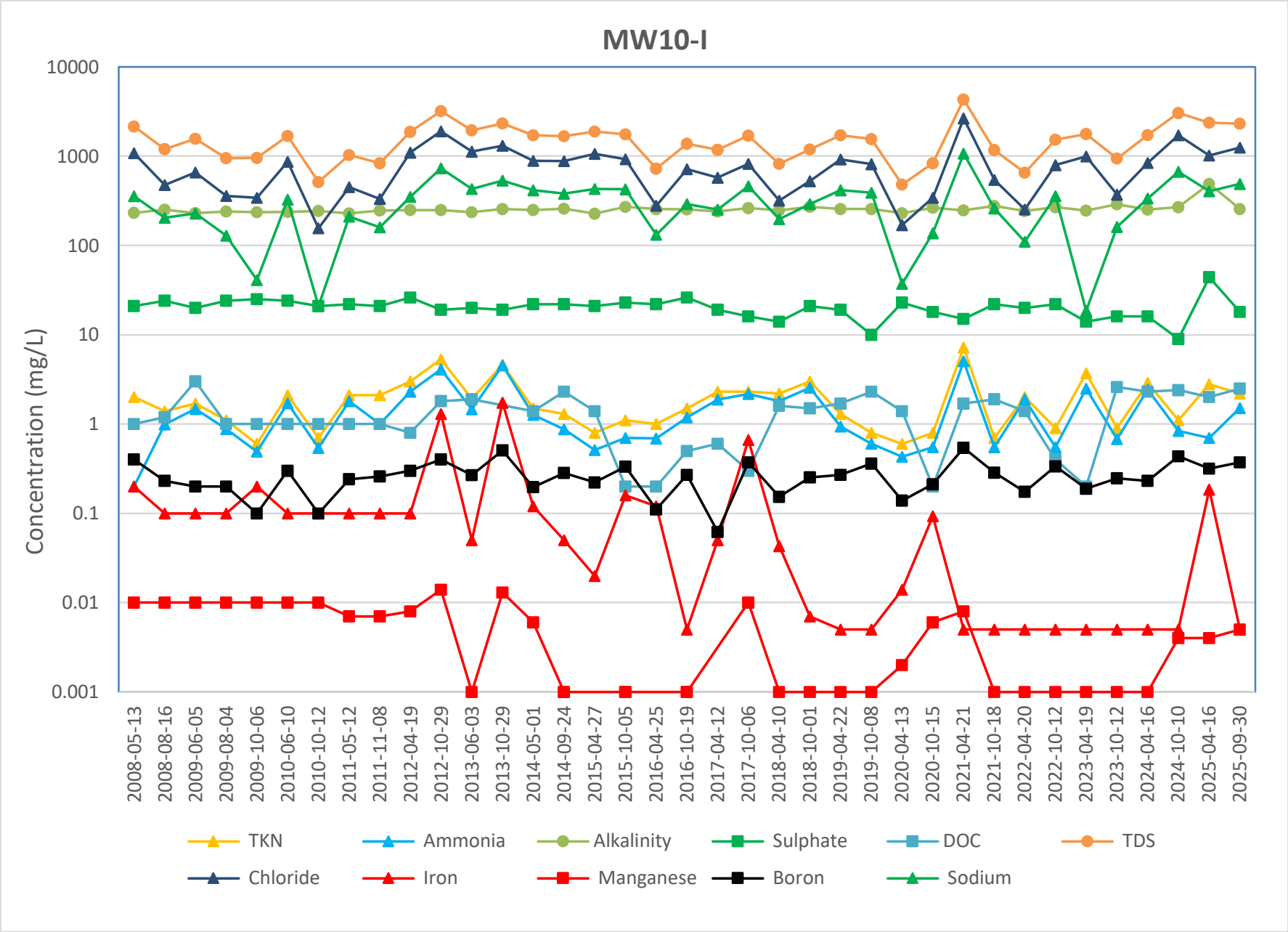
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW10-I
Concentration (mg/L)
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1000
100
10
1
0.1
0.01
0.001
2008-05-13
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2009-08-04
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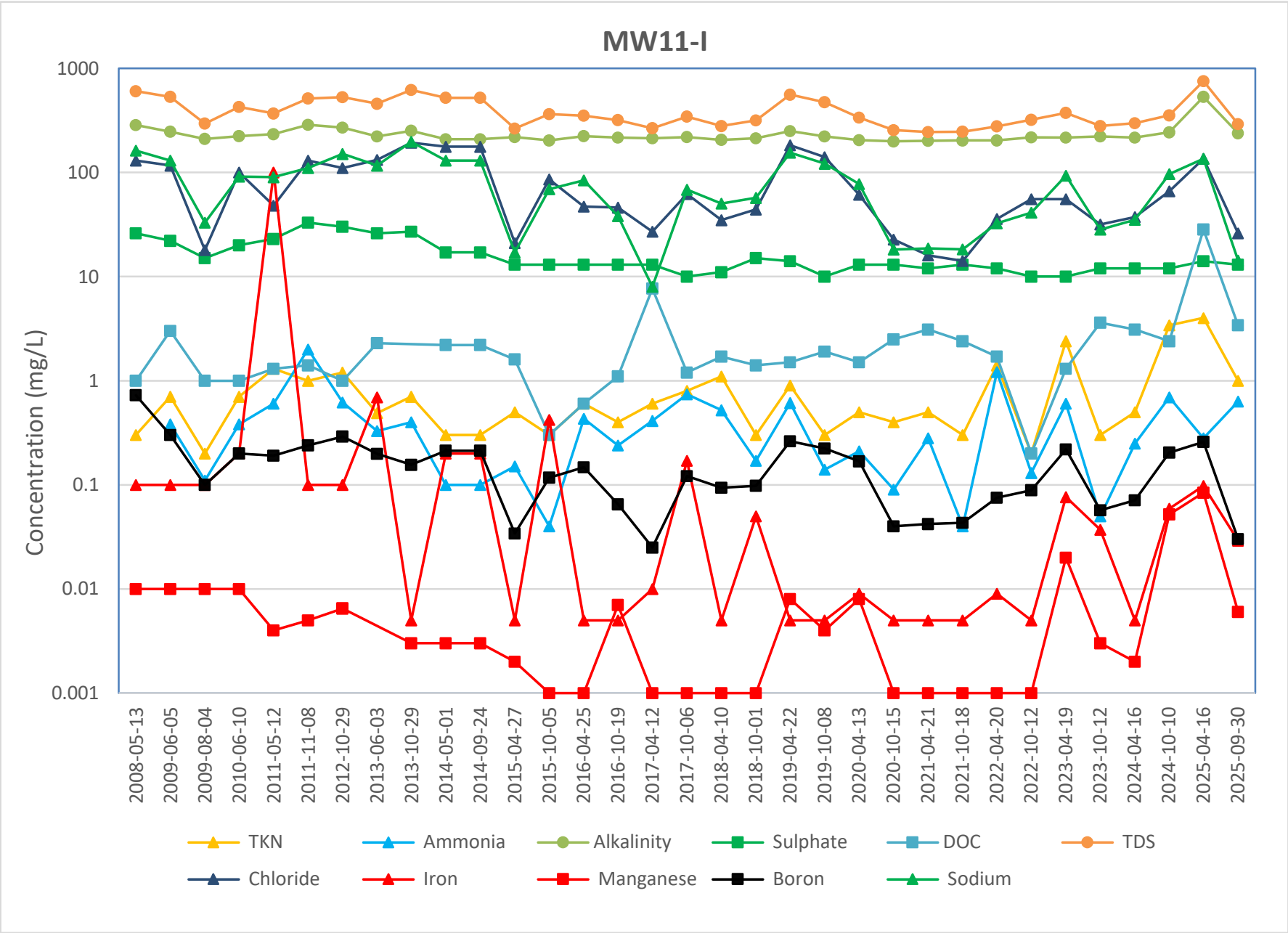
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW11-I
Concentration (mg/L)
1000
100
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1
0.1
0.01
0.001
2008-05-13
2009-06-05
2009-08-04
2010-06-10
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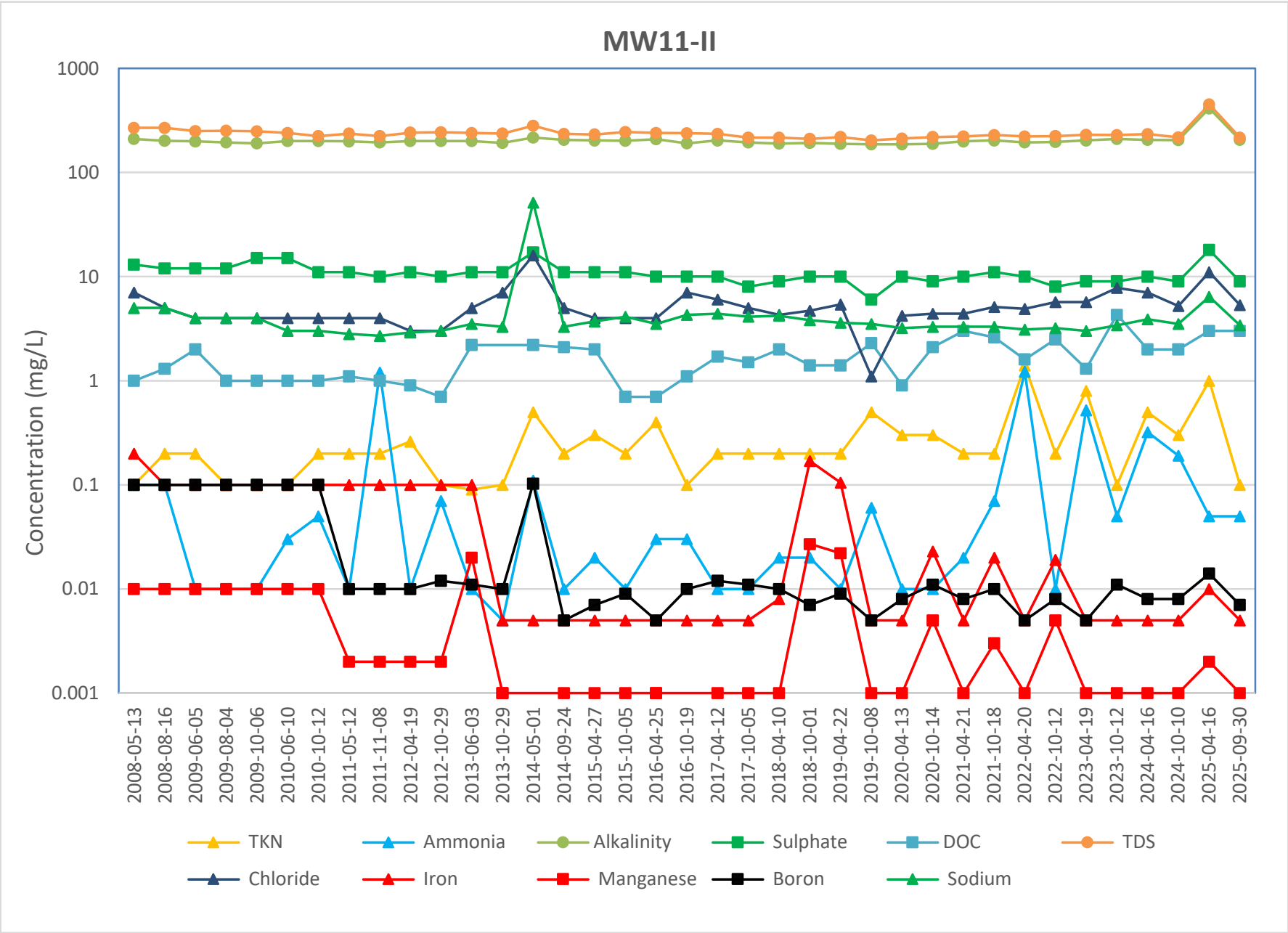
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW11-II
Concentration (mg/L)
1000
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0.1
0.01
0.001
2008-05-13
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2009-08-04
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Alkalinity
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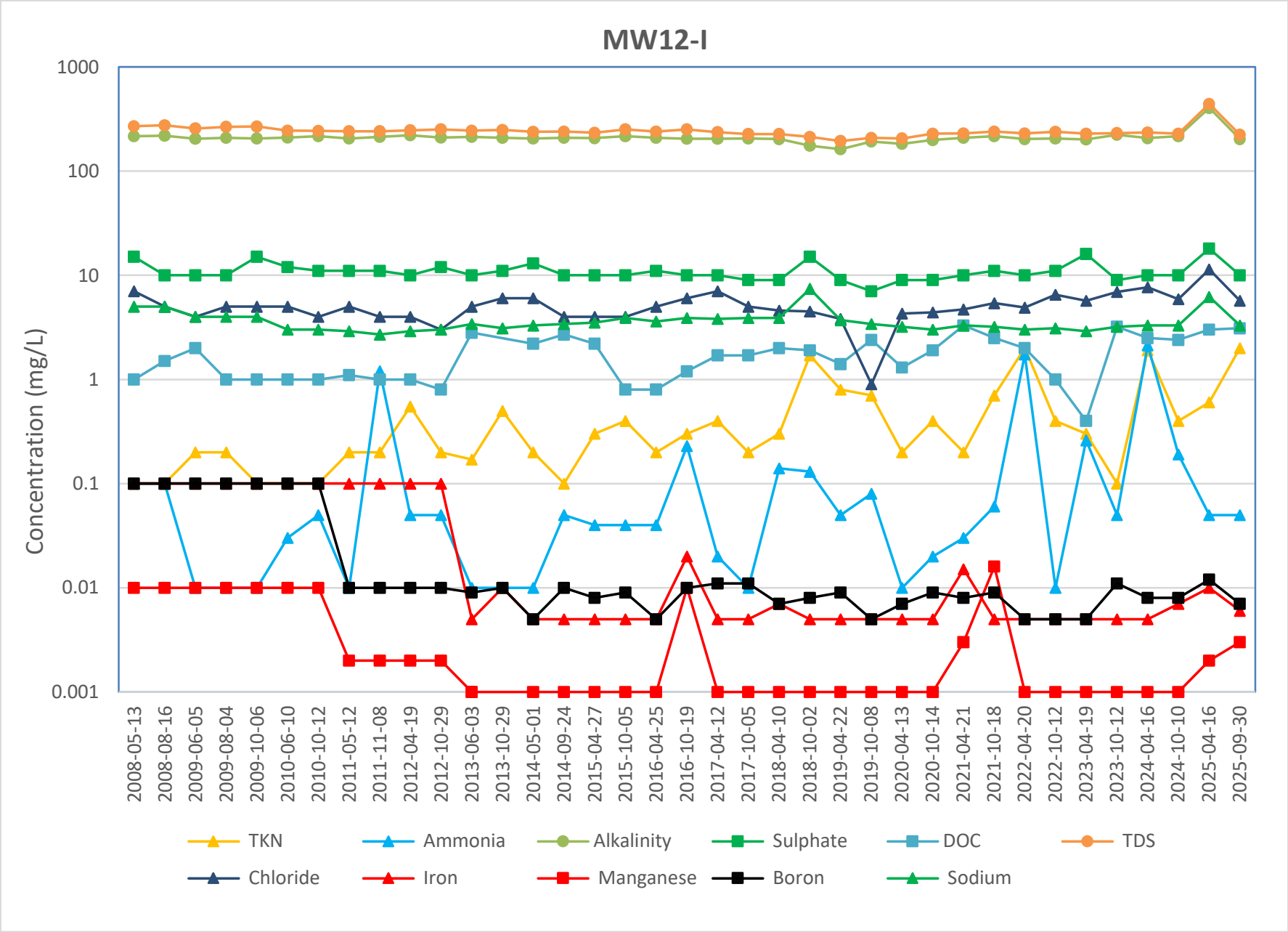
Iron
Manganese
Boron
Sodium


MW12-I
Concentration (mg/L)
1000
100
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1
0.1
0.01
0.001
2008-05-13
2008-08-16
2009-06-05
2009-08-04
2009-10-06
2010-06-10
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2011-05-12
2011-11-08
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Alkalinity
Sulphate
DOC
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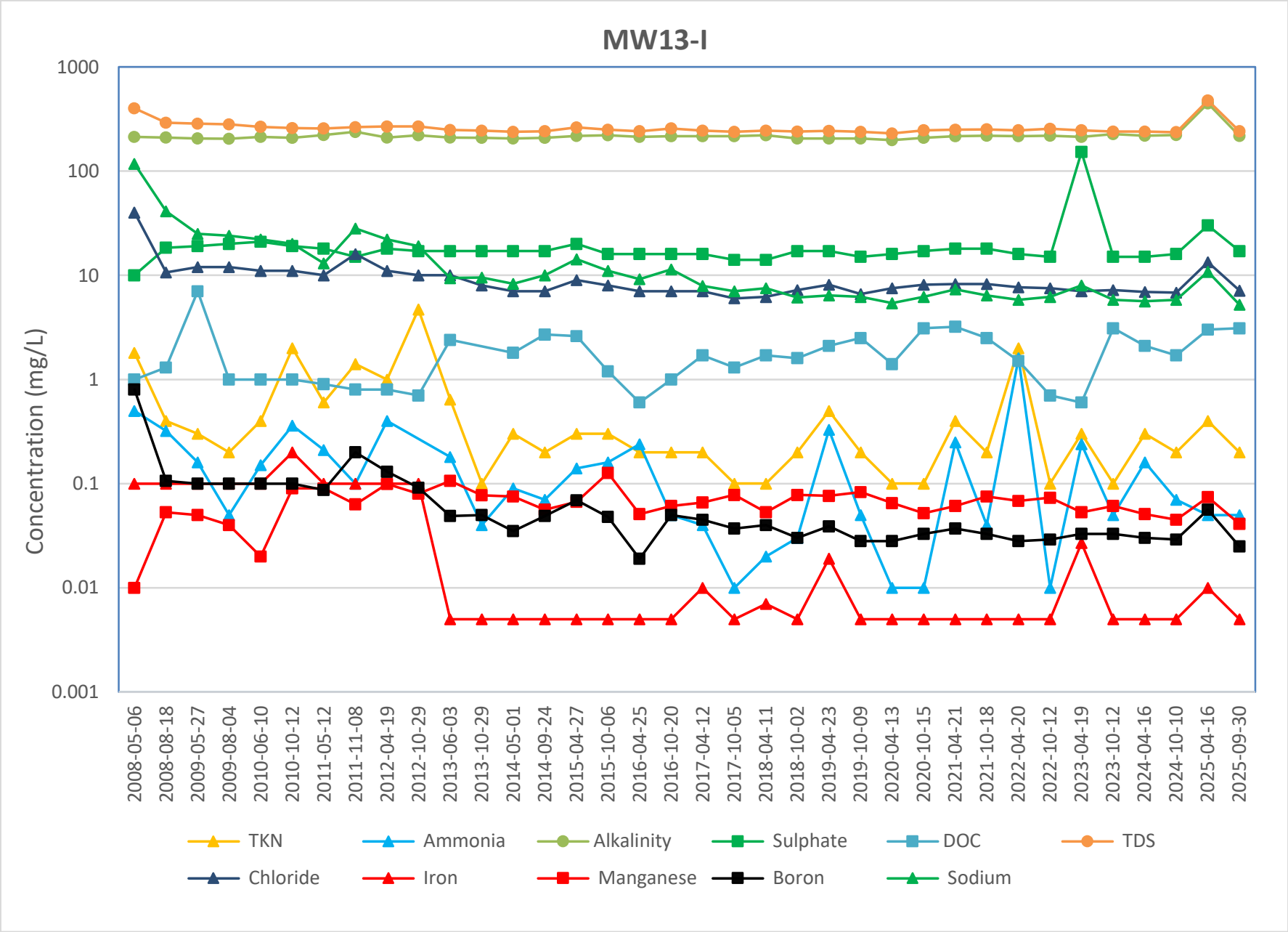
Iron
Manganese
Boron
Sodium


MW13-I
Concentration (mg/L)
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0.01
0.001
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2009-08-04
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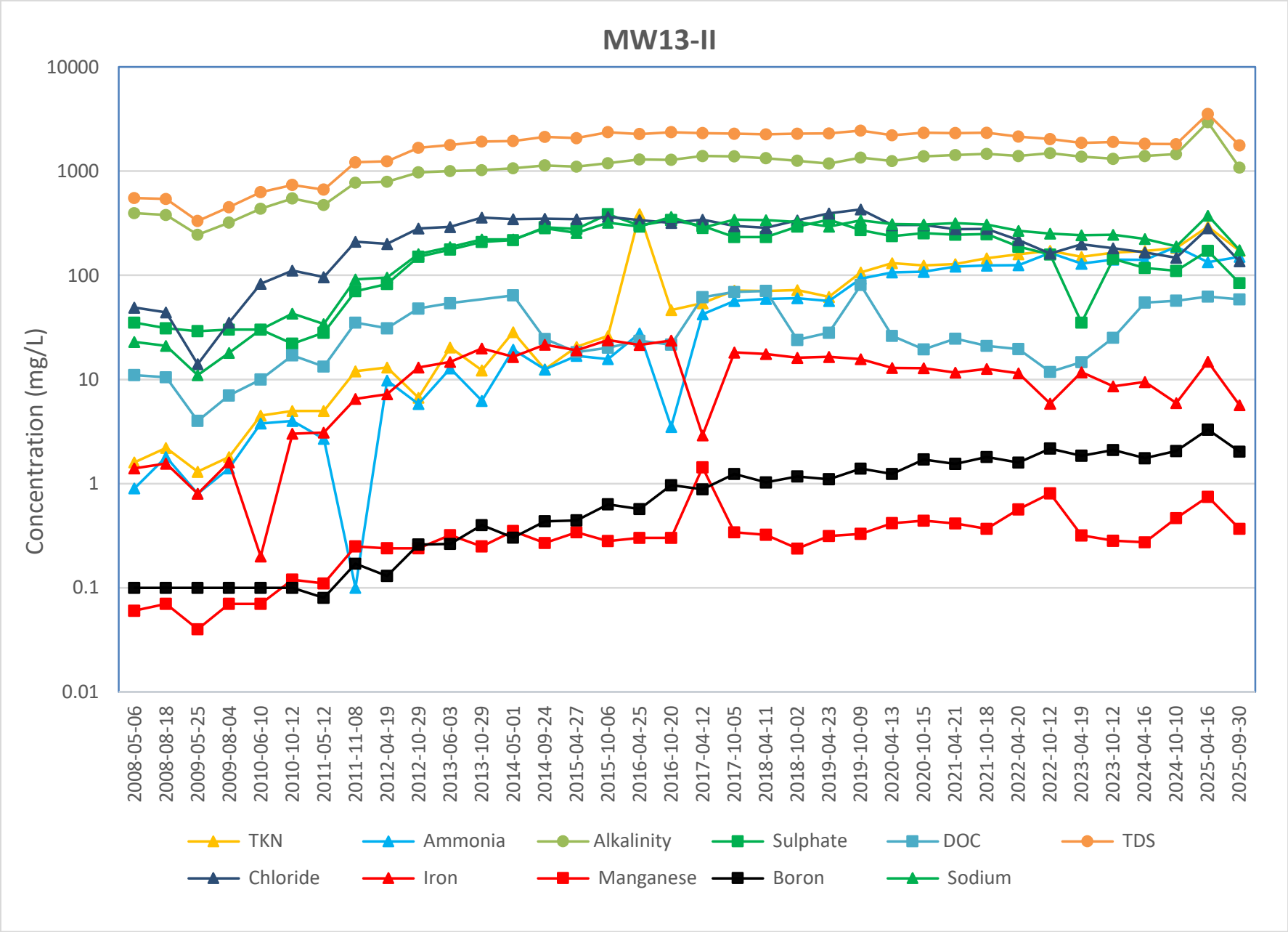
Manganese
Boron
Sodium


MW13-II
Concentration (mg/L)
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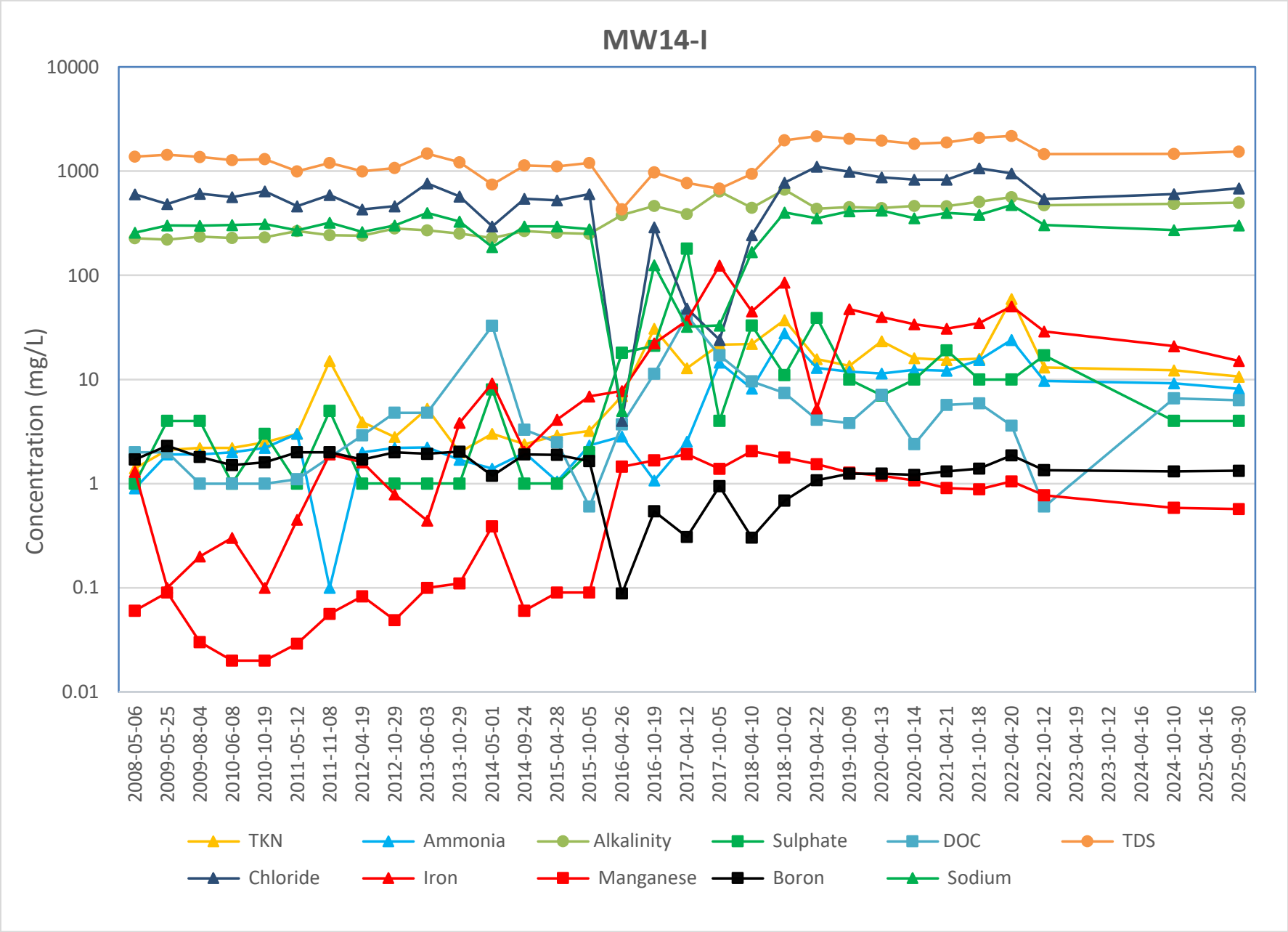
Manganese
Boron
Sodium


MW14-I
Concentration (mg/L)
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0.01
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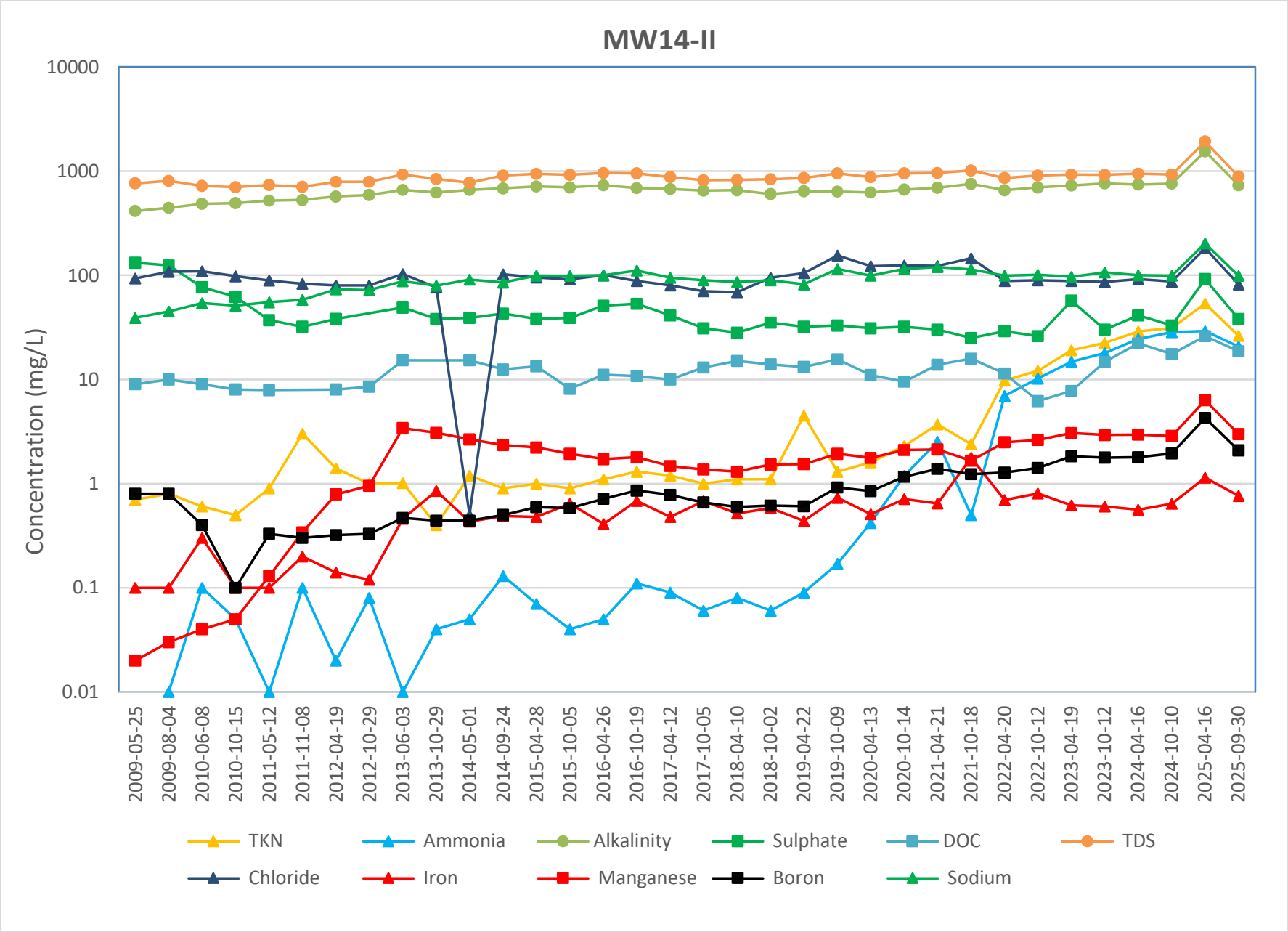
Manganese
Boron
Sodium


MW14-II
Concentration (mg/L)
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Manganese
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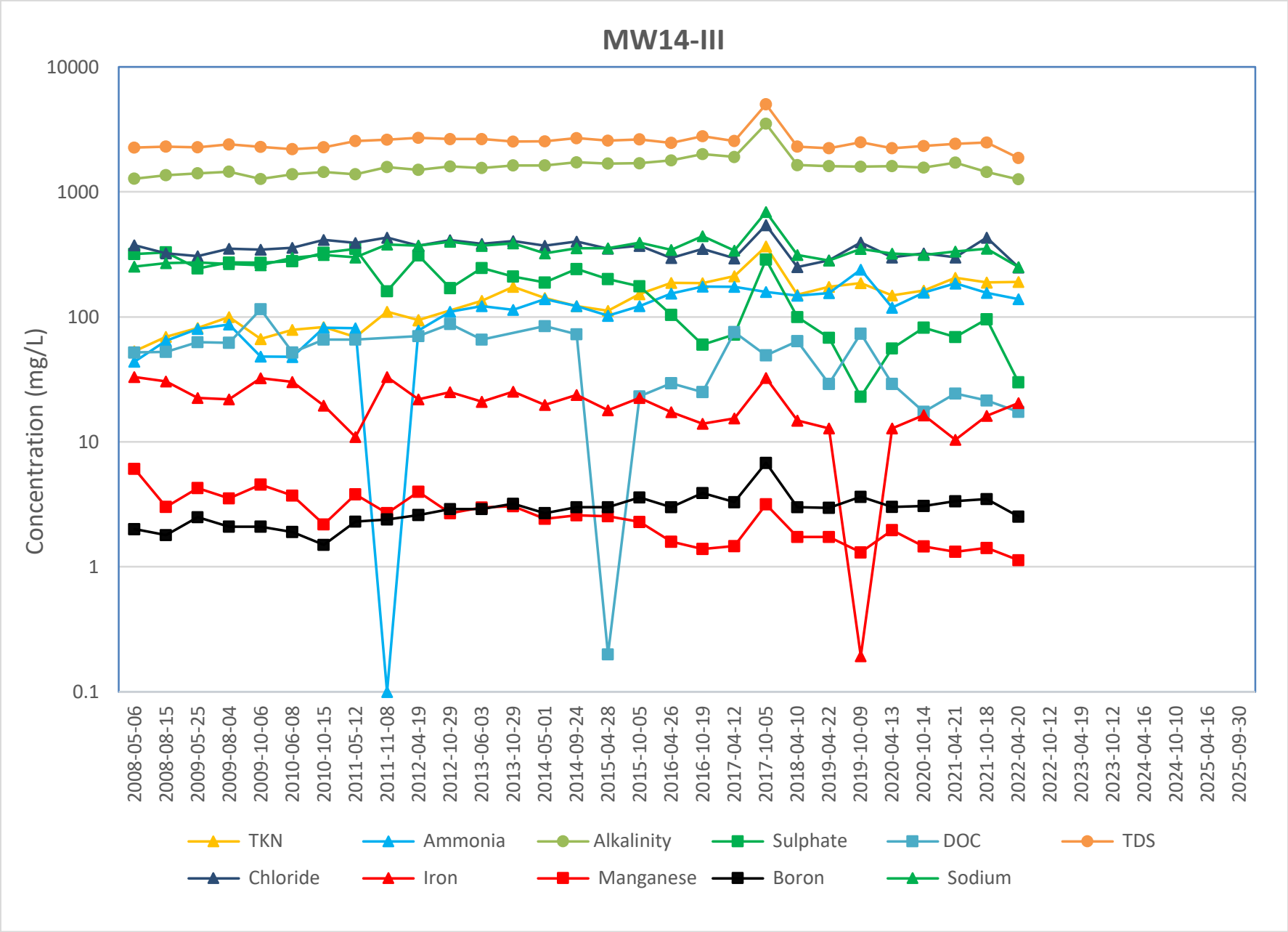
Sodium


MW14-III
Concentration (mg/L)
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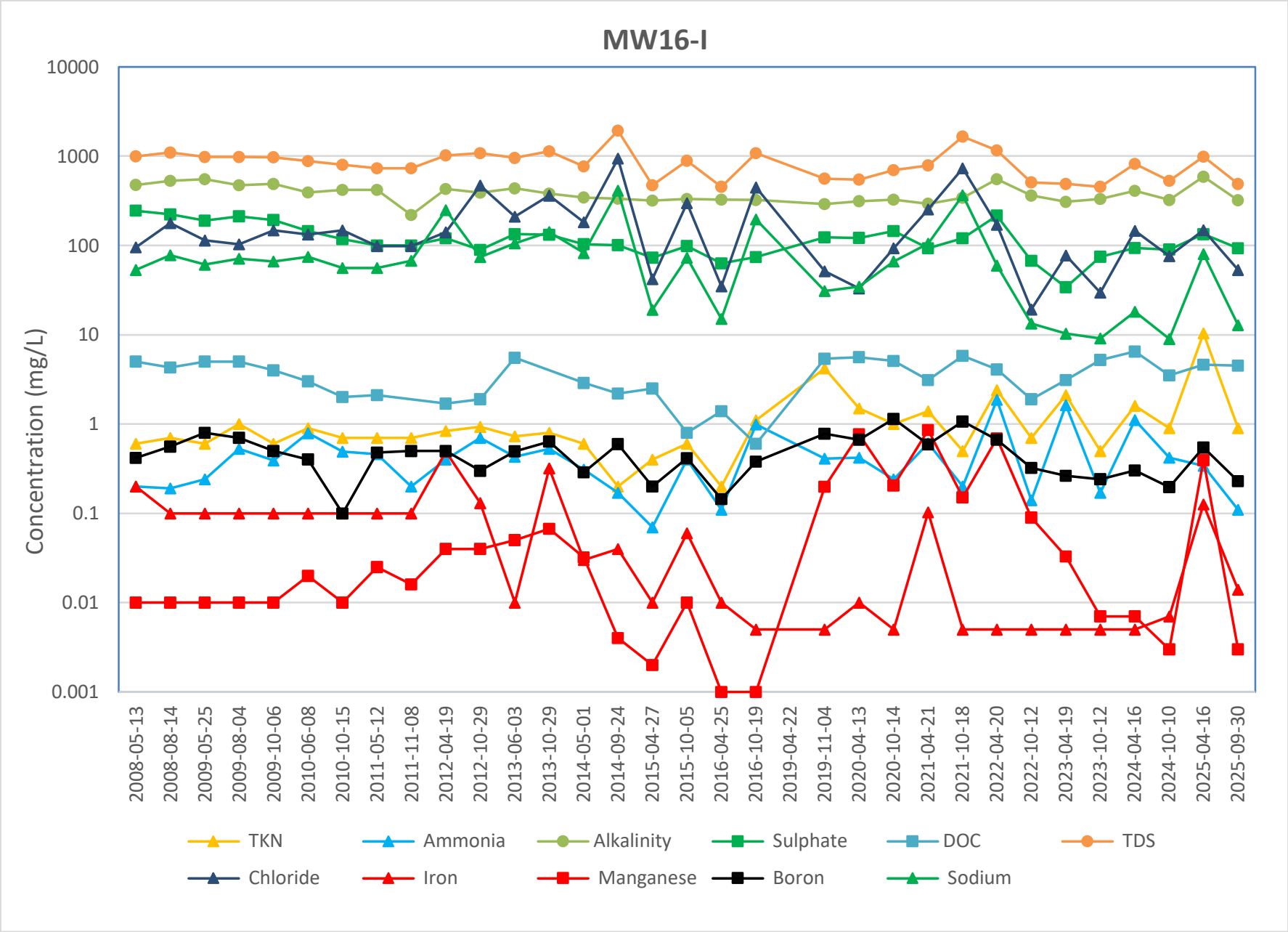
Boron
Sodium


MW16-I
Concentration (mg/L)
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0.01
0.001
2008-05-13
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2009-08-04
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Alkalinity
Sulphate
DOC
TDS
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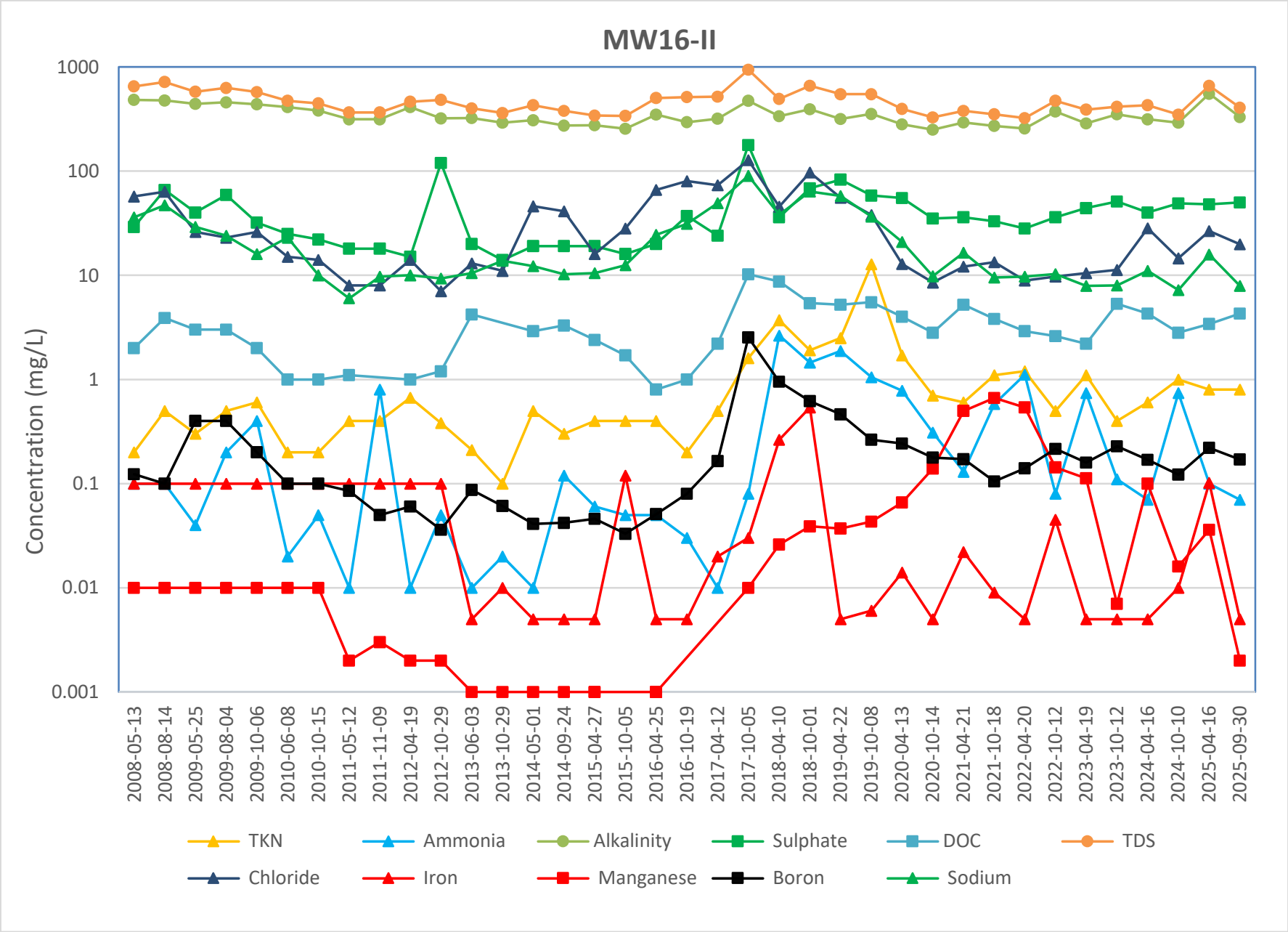
Iron
Manganese
Boron
Sodium


MW16-II
Concentration (mg/L)
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100
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0.01
0.001
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2009-08-04
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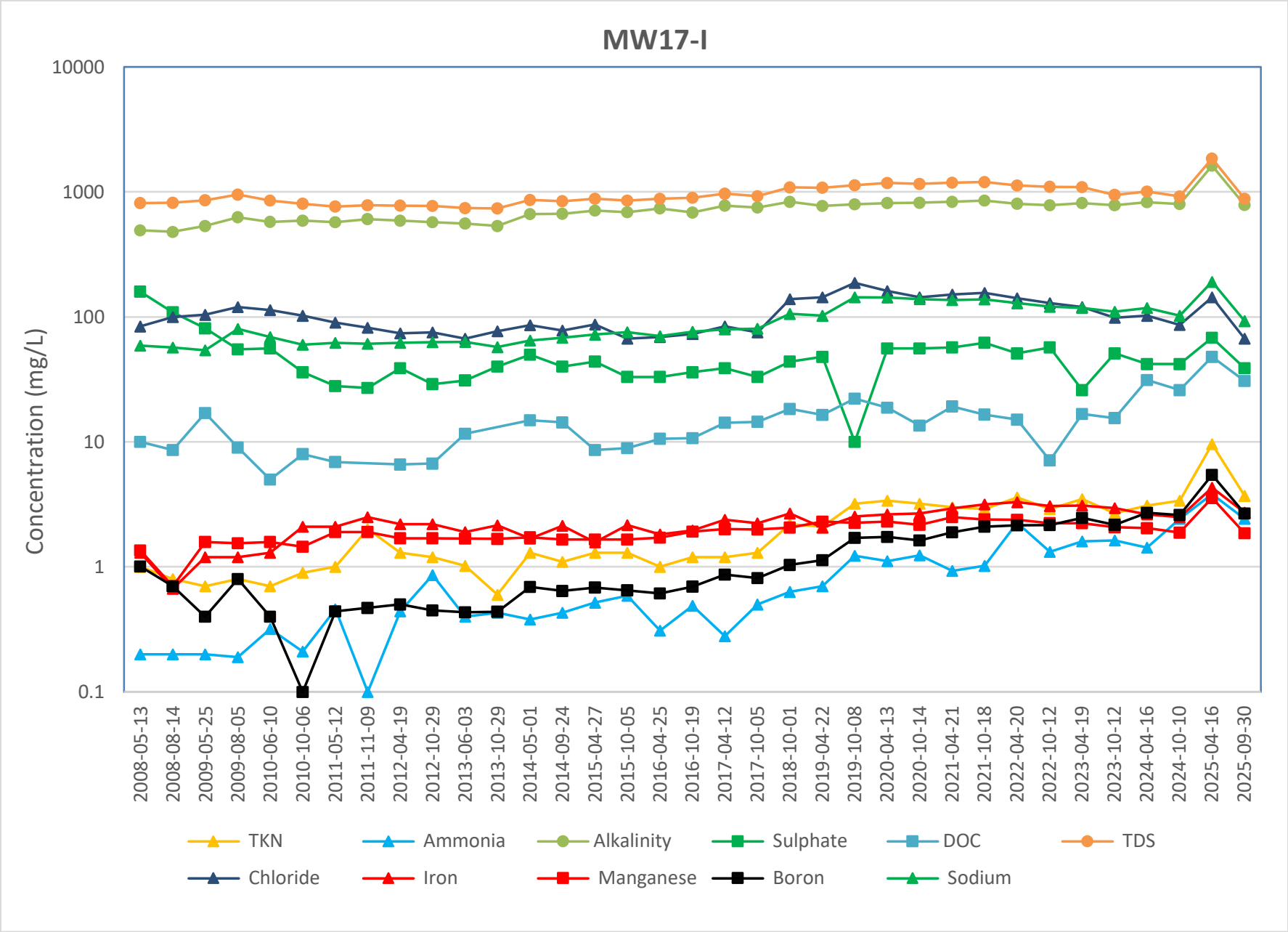
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW17-I
Concentration (mg/L)
10000
1000
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10
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2008-05-13
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Alkalinity
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TDS
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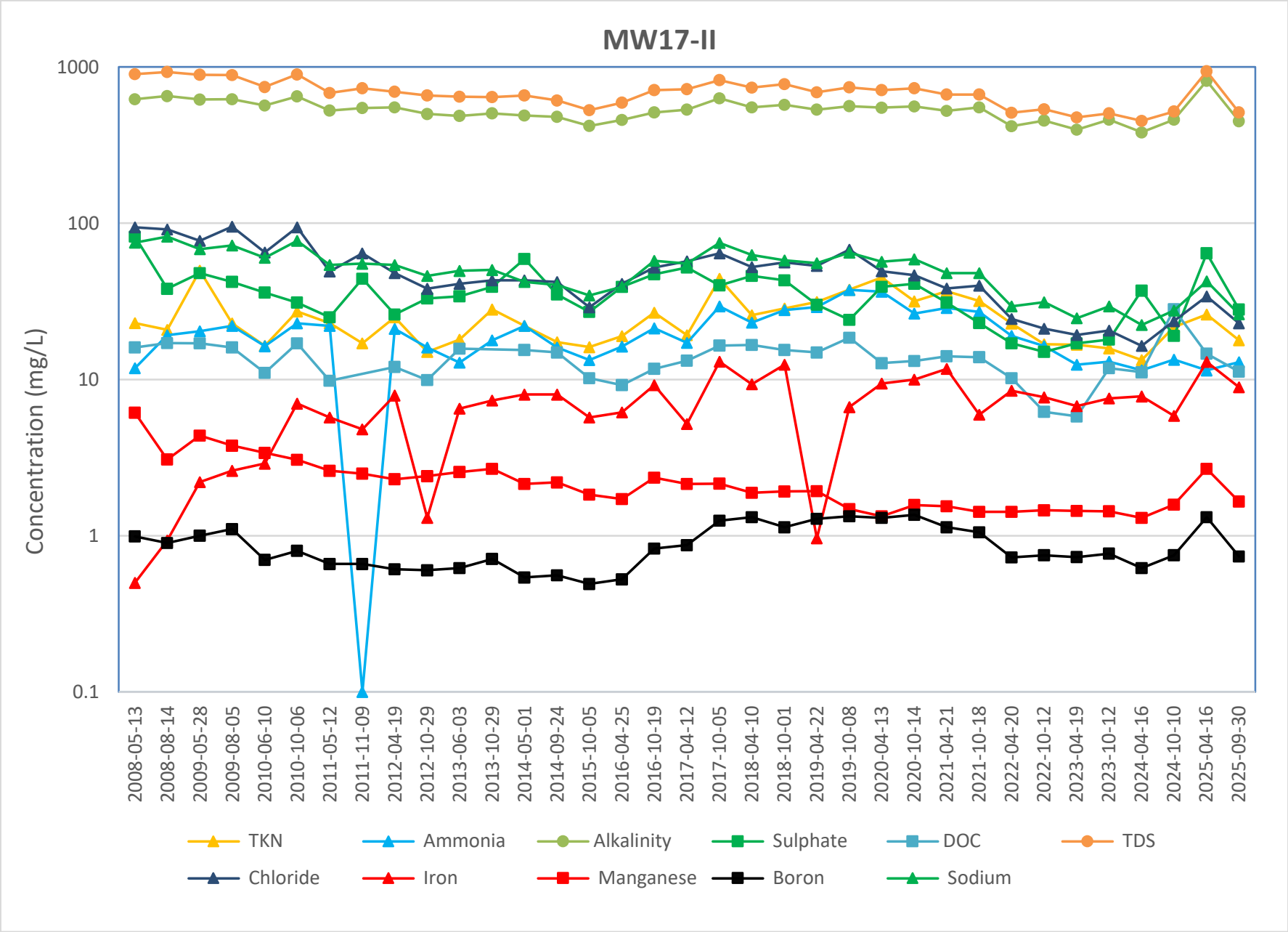
Iron
Manganese
Boron
Sodium


MW17-II
Concentration (mg/L)
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0.1
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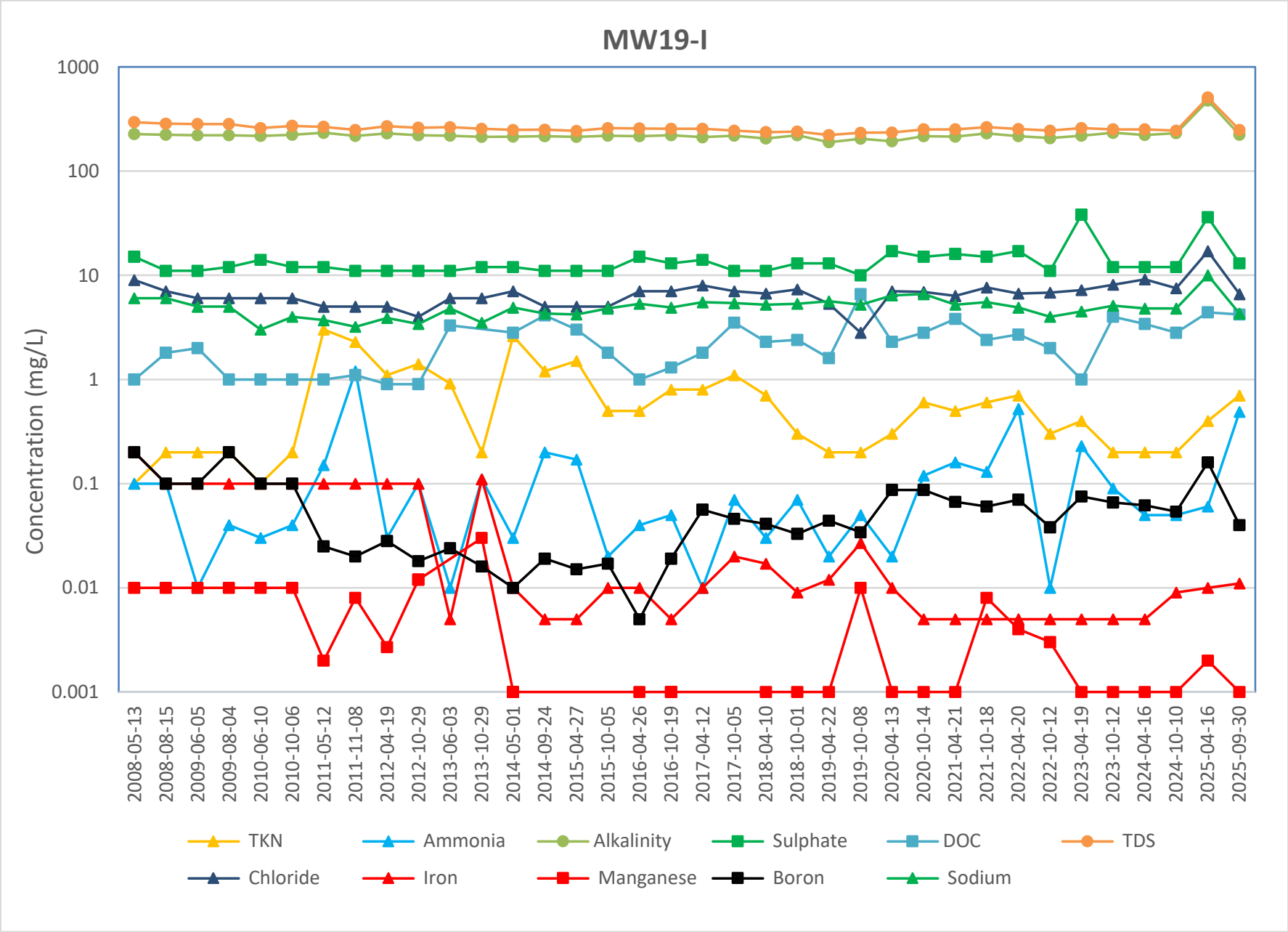
Manganese
Boron
Sodium


MW19-I
Concentration (mg/L)
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1
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0.01
0.001
2008-05-13
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Alkalinity
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TDS
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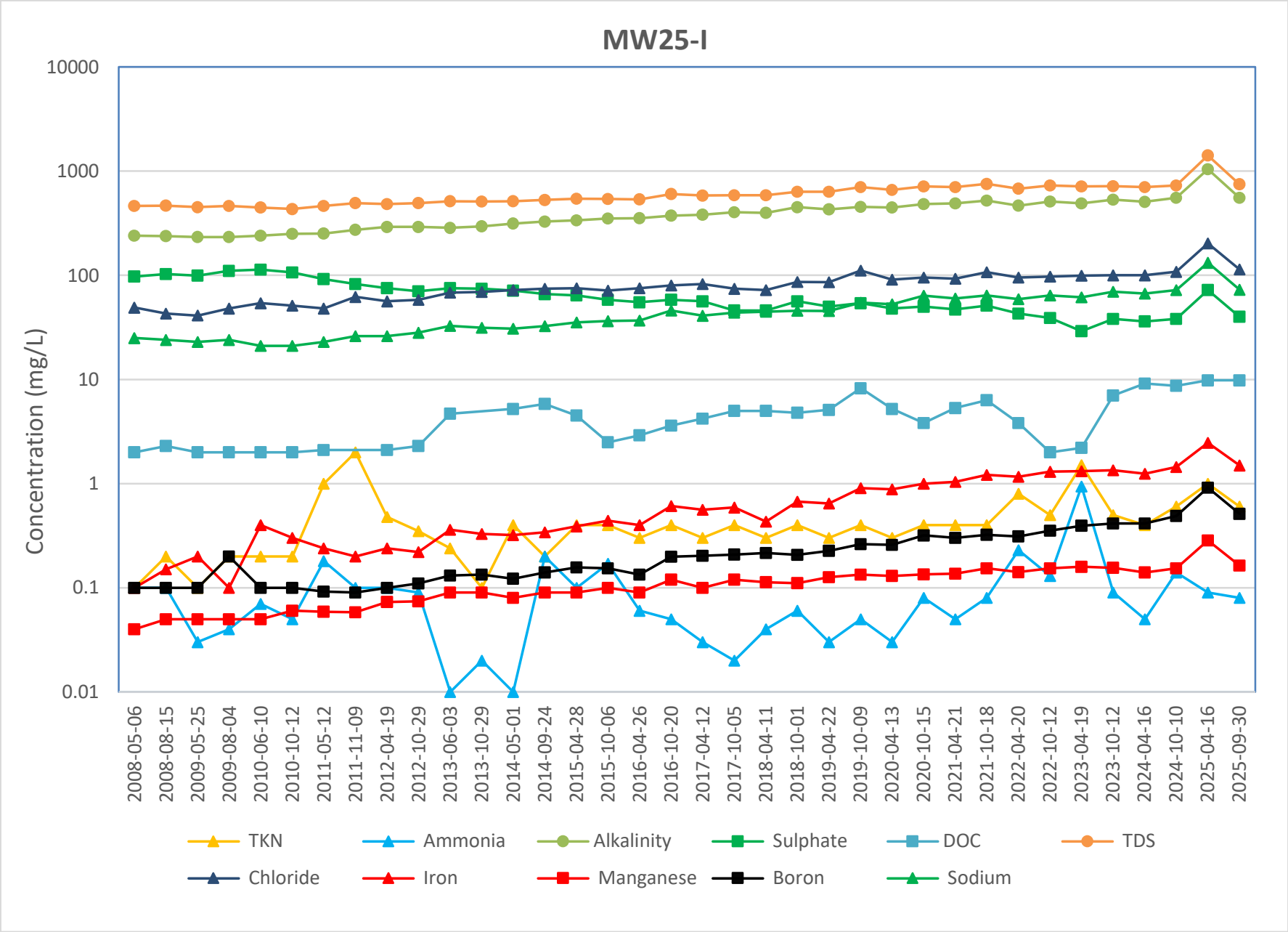
Manganese
Boron
Sodium


MW25-I
Concentration (mg/L)
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1000
100
10
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0.1
0.01
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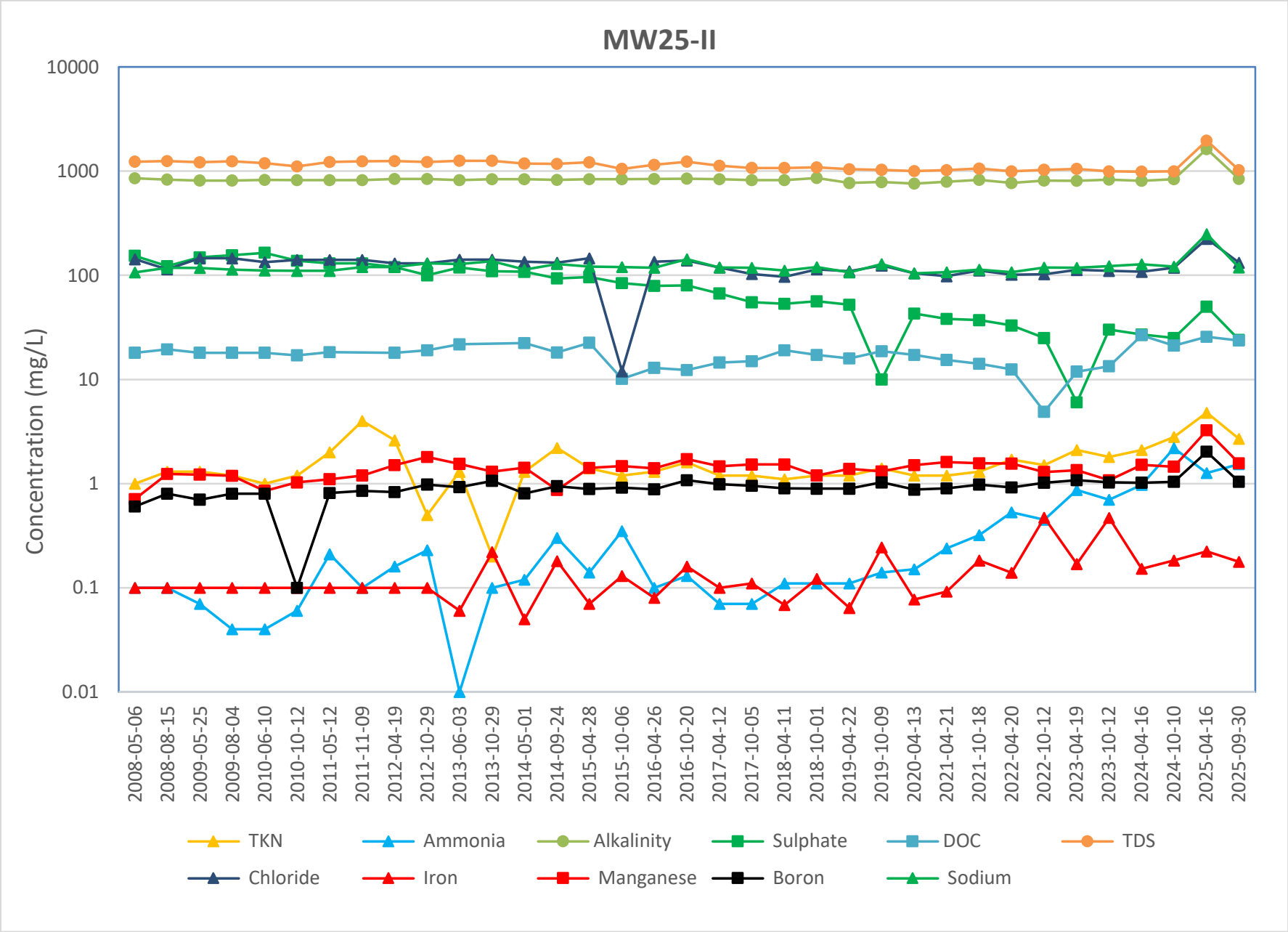
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW25-II
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
2008-05-06
2008-08-15
2009-05-25
2009-08-04
2010-06-10
2010-10-12
2011-05-12
2011-11-09
2012-04-19
2012-10-29
2013-06-03
2013-10-29
2014-05-01
2014-09-24
2015-04-28
2015-10-06
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2016-10-20
2017-04-12
2017-10-05
2018-04-11
2018-10-01
2019-04-22
2019-10-09
2020-04-13
2021-04-21
2021-10-18
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2022-10-12
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2024-10-10
2025-04-16
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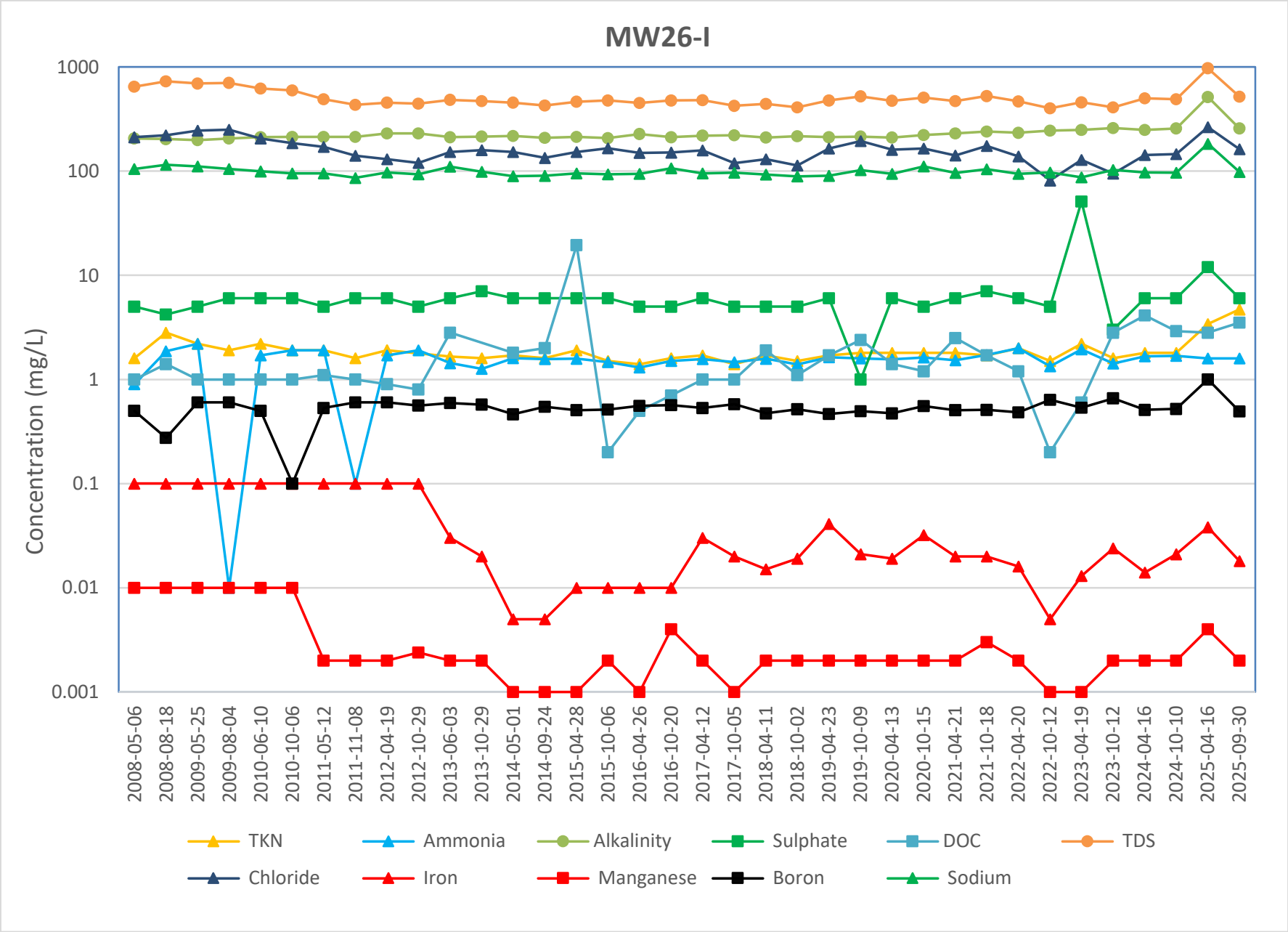
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW26-I
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
2008-05-06
2008-08-18
2009-05-25
2009-08-04
2010-06-10
2010-10-06
2011-05-12
2011-11-08
2012-04-19
2012-10-29
2013-06-03
2013-10-29
2014-05-01
2014-09-24
2015-04-28
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2016-04-26
2016-10-20
2017-04-12
2017-10-05
2018-04-11
2018-10-02
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2021-04-21
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2025-04-16
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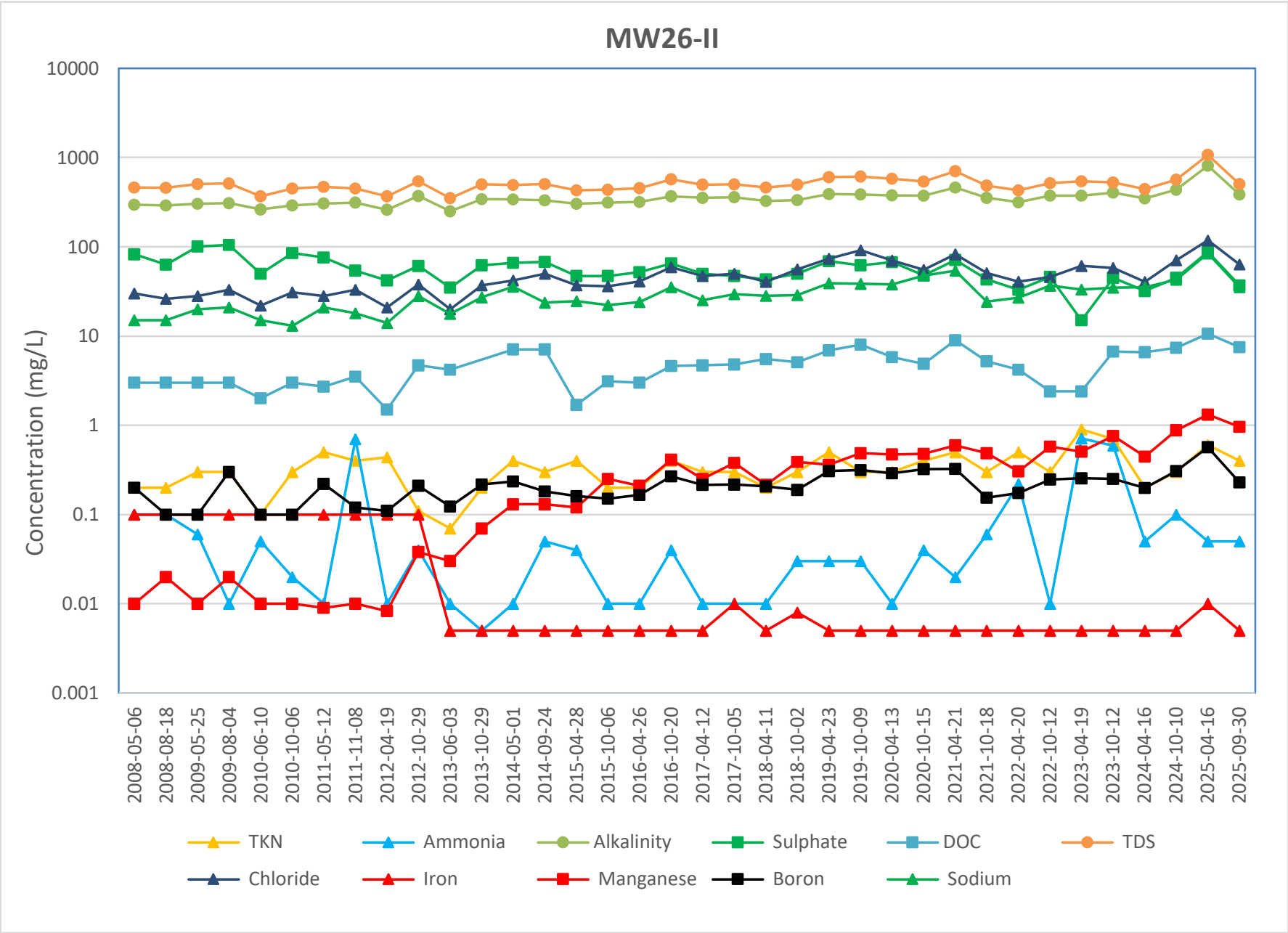
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW26-II
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
0.001
2008-05-06
2008-08-18
2009-05-25
2009-08-04
2010-06-10
2010-10-06
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2011-11-08
2012-04-19
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2014-09-24
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2015-10-06
2016-04-26
2016-10-20
2017-04-12
2017-10-05
2018-04-11
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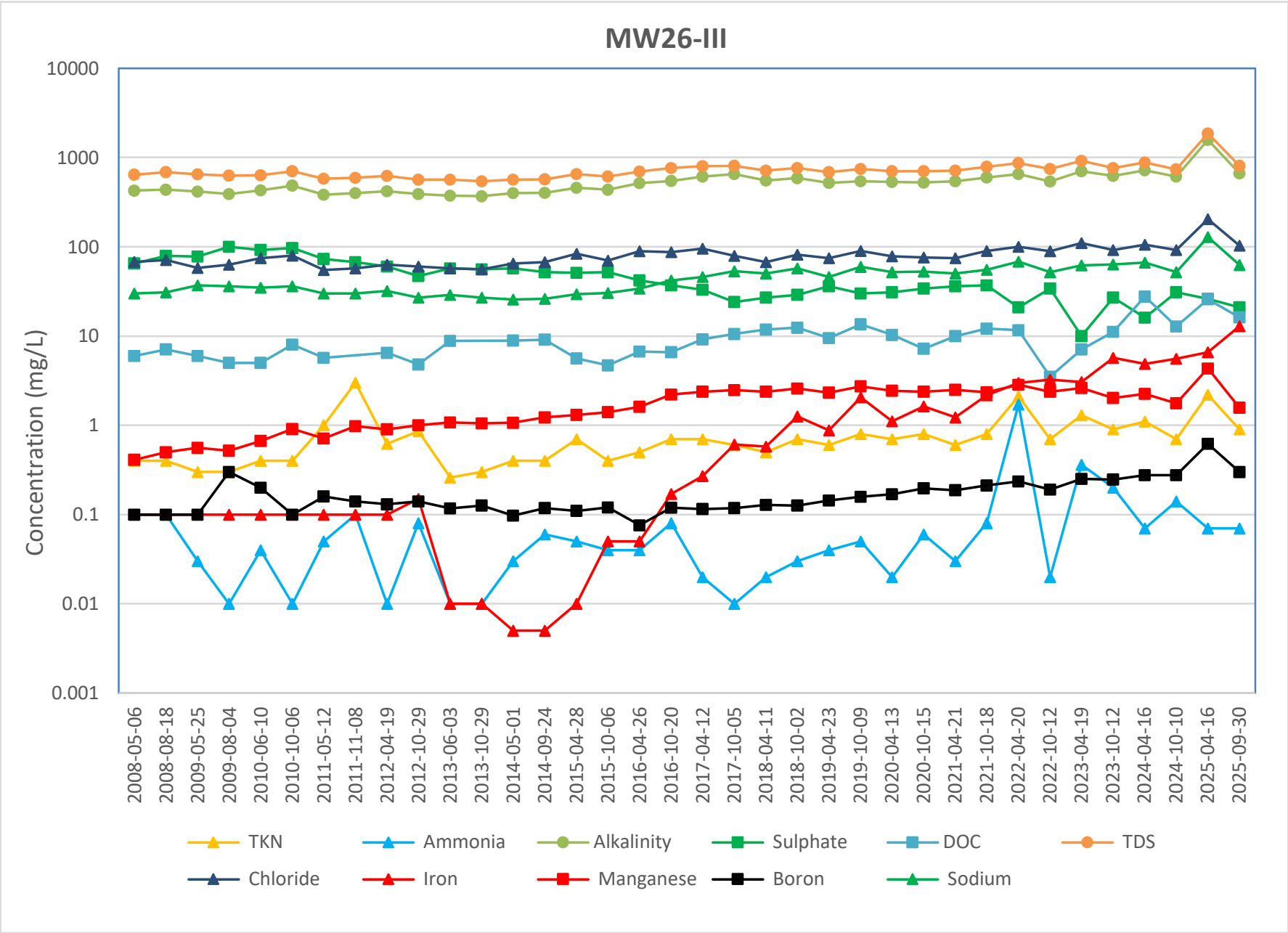
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW26-III
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
0.001
2008-05-06
2008-08-18
2009-05-25
2009-08-04
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2011-11-08
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2024-10-10
2025-04-16
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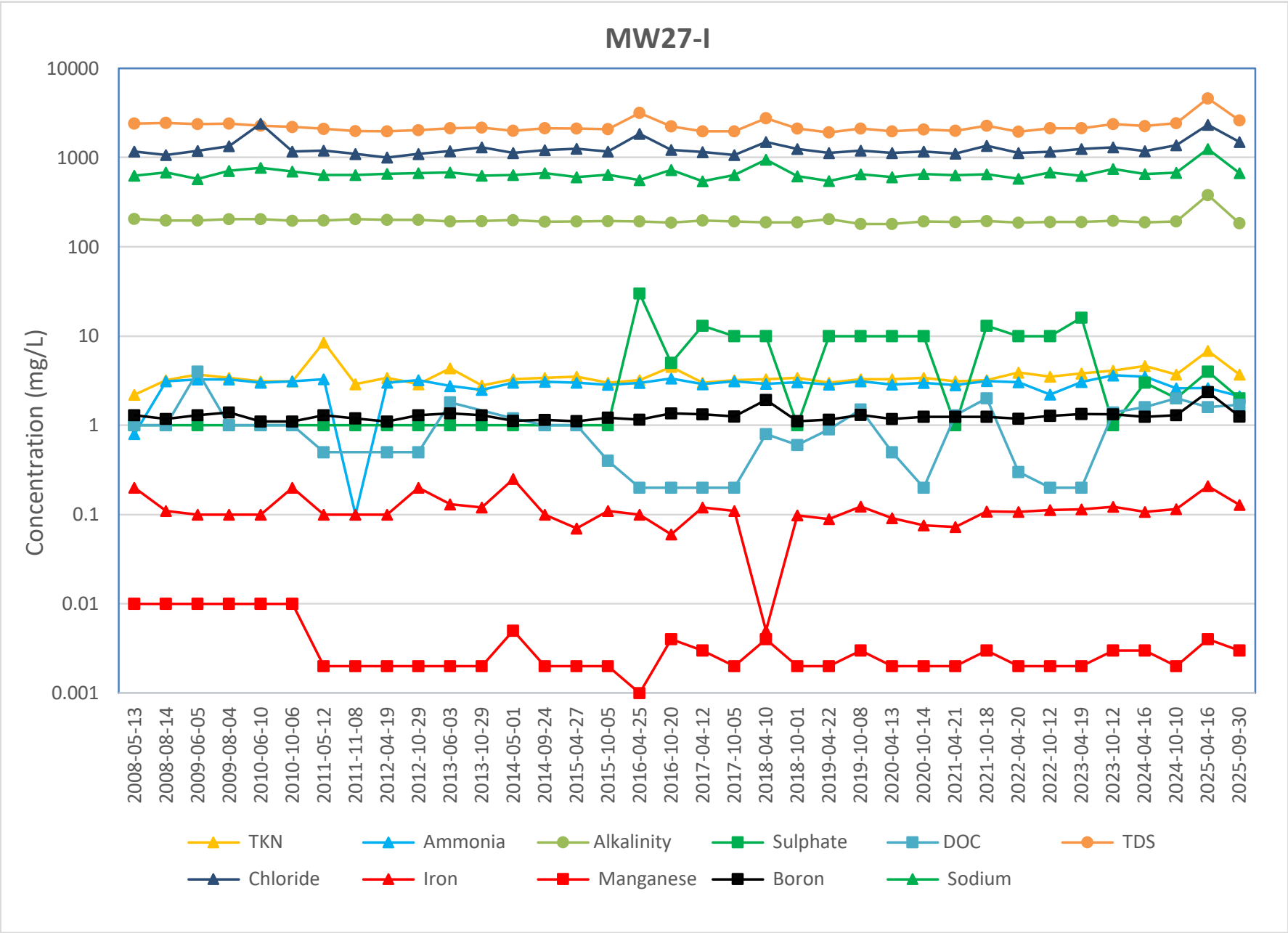
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW27-I
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
0.001
2008-05-13
2008-08-14
2009-06-05
2009-08-04
2010-06-10
2010-10-06
2011-05-12
2011-11-08
2012-04-19
2012-10-29
2013-06-03
2013-10-29
2014-05-01
2014-09-24
2015-04-27
2015-10-05
2016-04-25
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2025-04-16
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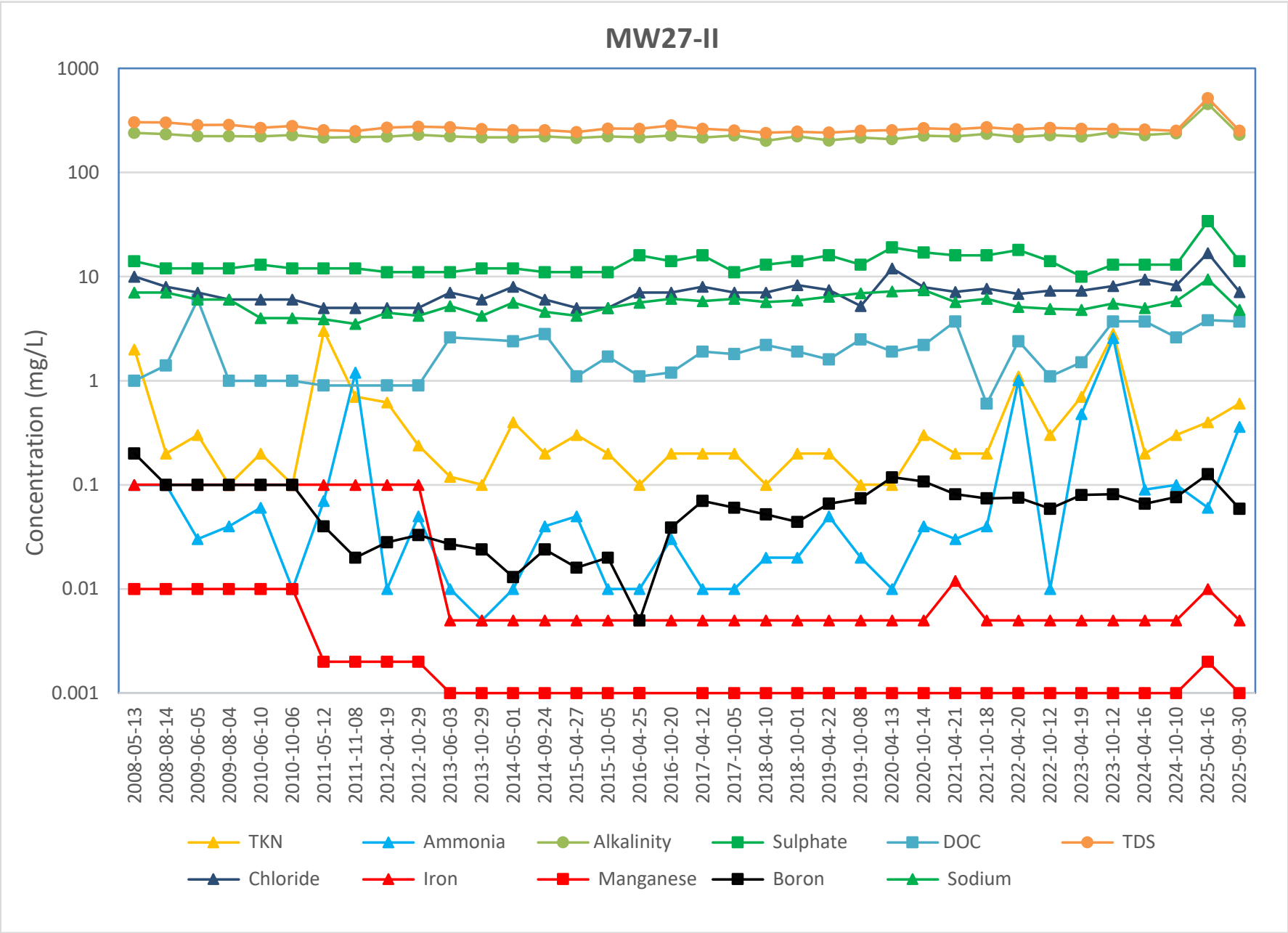
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW27-II
Concentration (mg/L)
1000
100
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0.01
0.001
2008-05-13
2008-08-14
2009-06-05
2009-08-04
2010-06-10
2010-10-06
2011-05-12
2011-11-08
2012-04-19
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2013-06-03
2013-10-29
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TKN
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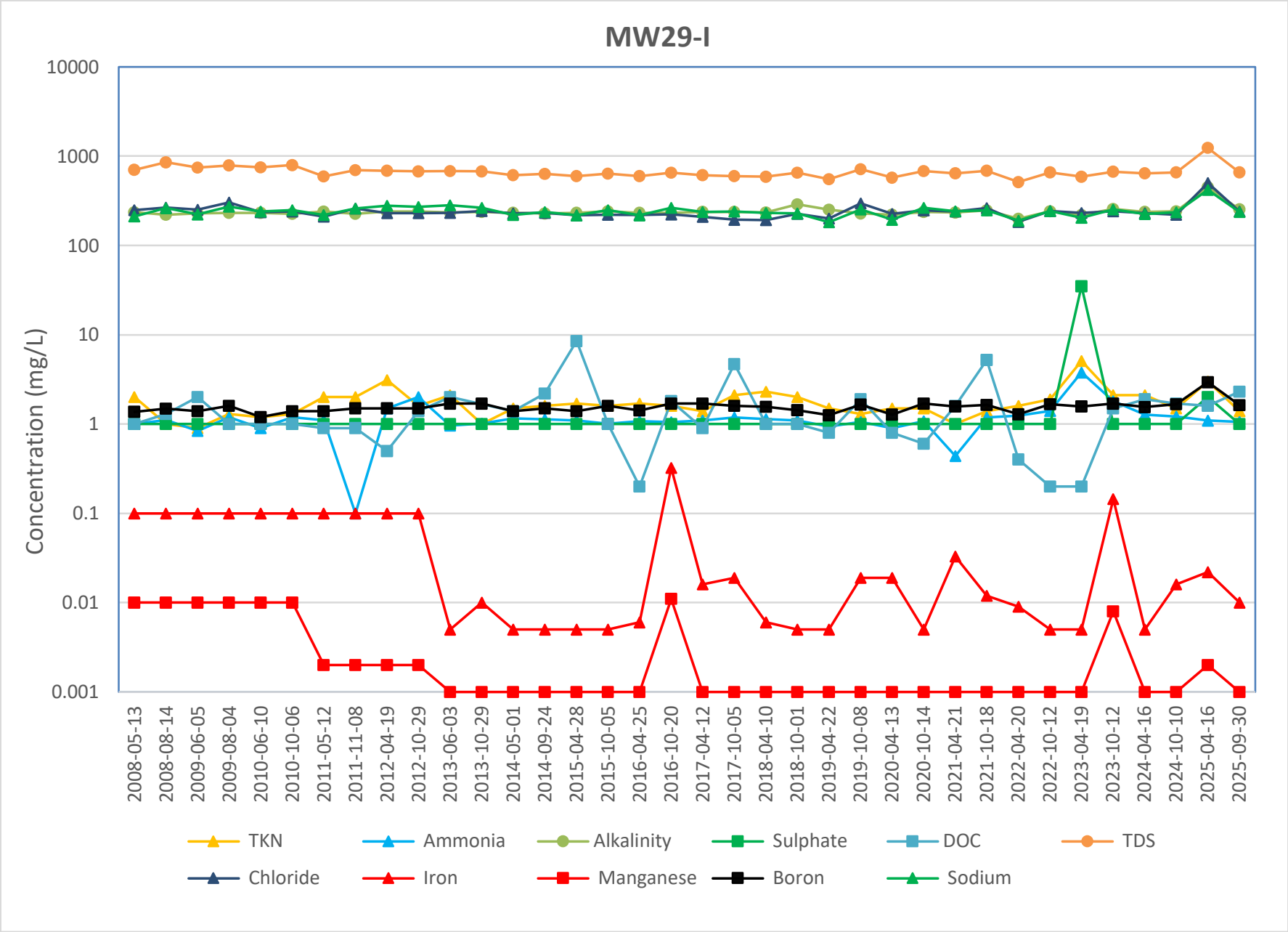
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW29-I
Concentration (mg/L)
10000
1000
100
10
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0.1
0.01
0.001
2008-05-13
2008-08-14
2009-06-05
2009-08-04
2010-06-10
2010-10-06
2011-05-12
2011-11-08
2012-04-19
2012-10-29
2013-06-03
2013-10-29
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2025-04-16
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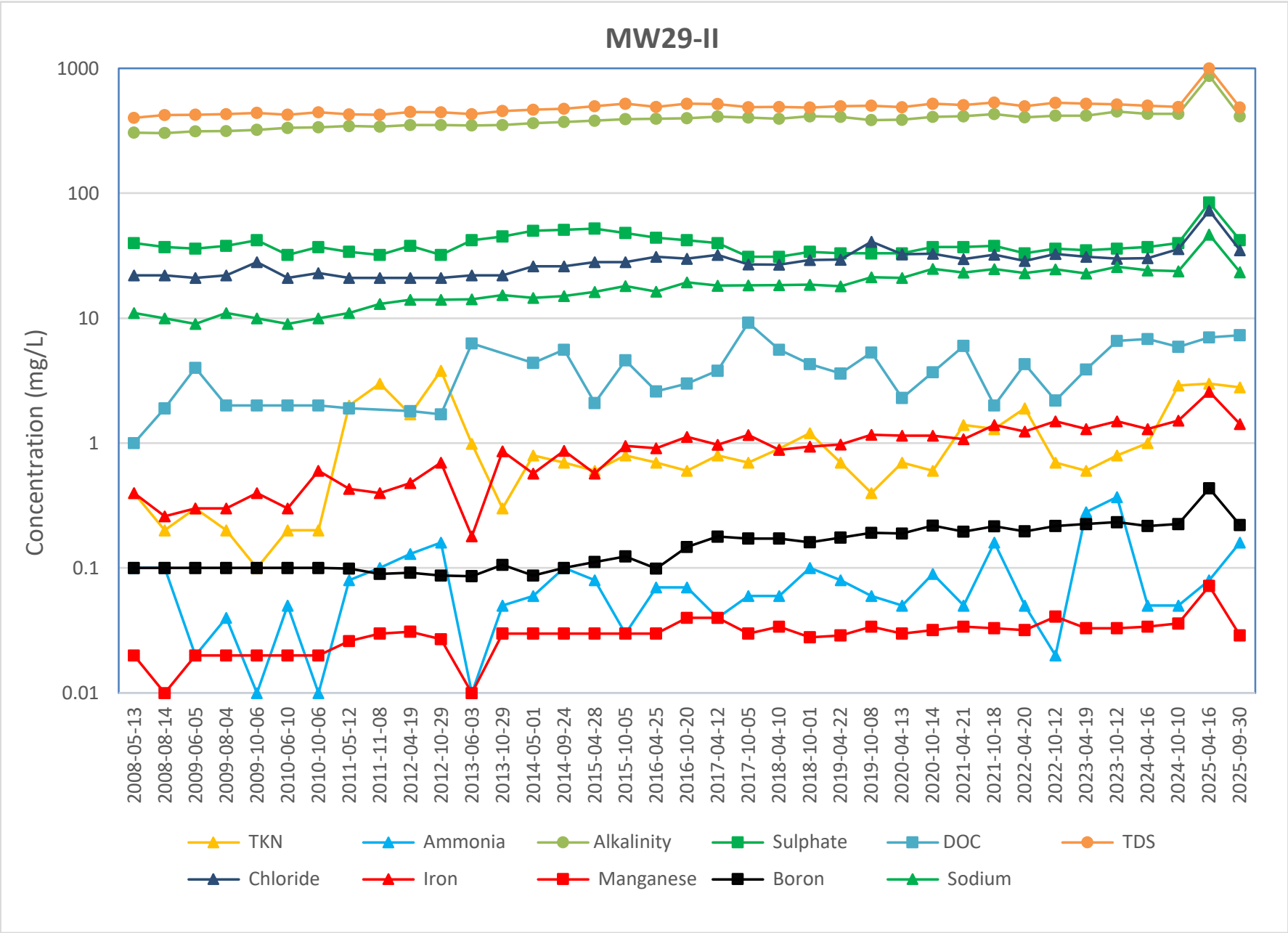
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW29-II
Concentration (mg/L)
1000
100
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1
0.1
0.01
2008-05-13
2008-08-14
2009-06-05
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2025-04-16
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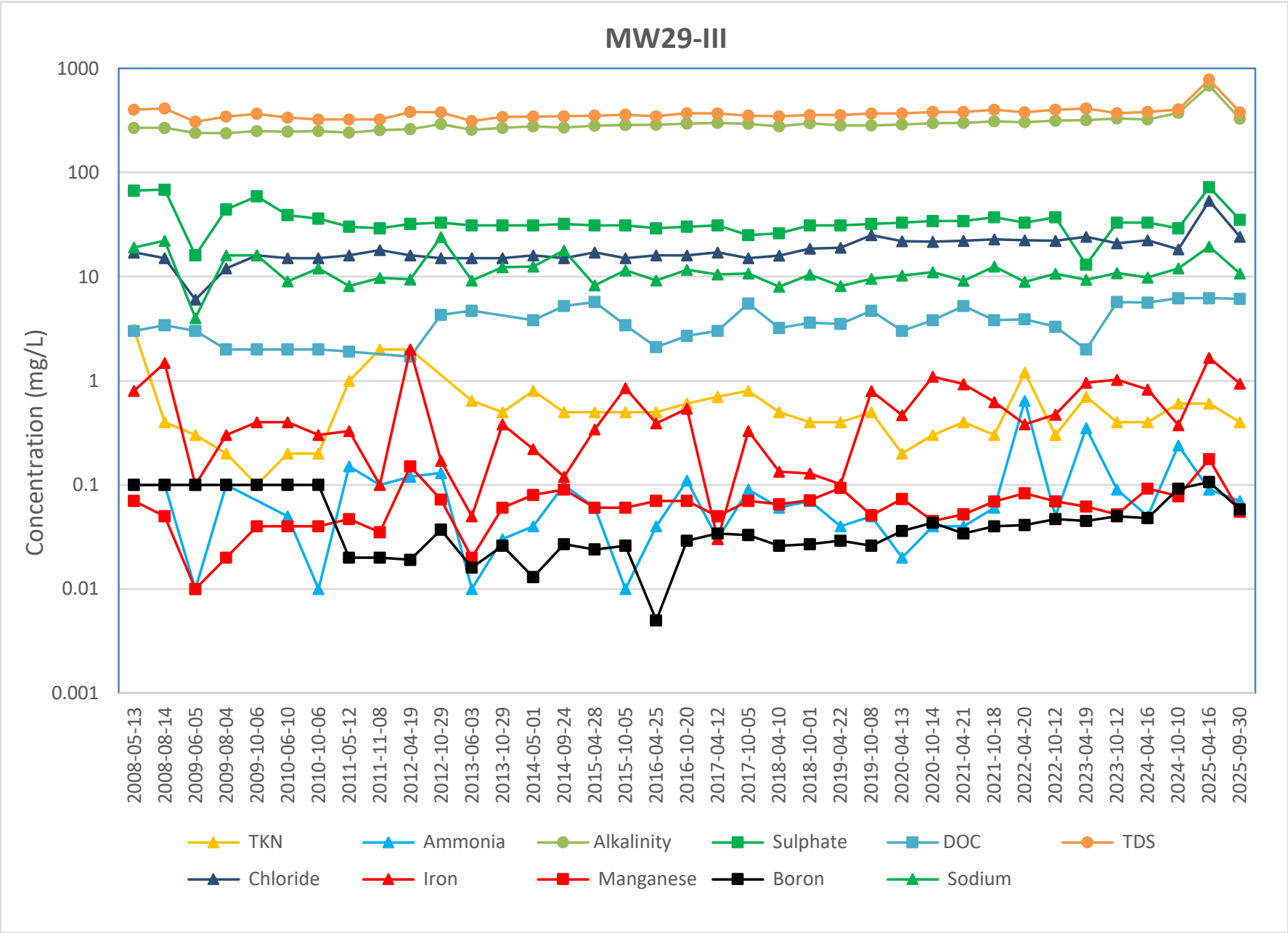
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW29-III
Concentration (mg/L)
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0.01
0.001
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2008-08-14
2009-06-05
2009-08-04
2009-10-06
2010-06-10
2010-10-06
2011-05-12
2011-11-08
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2025-04-16
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TKN
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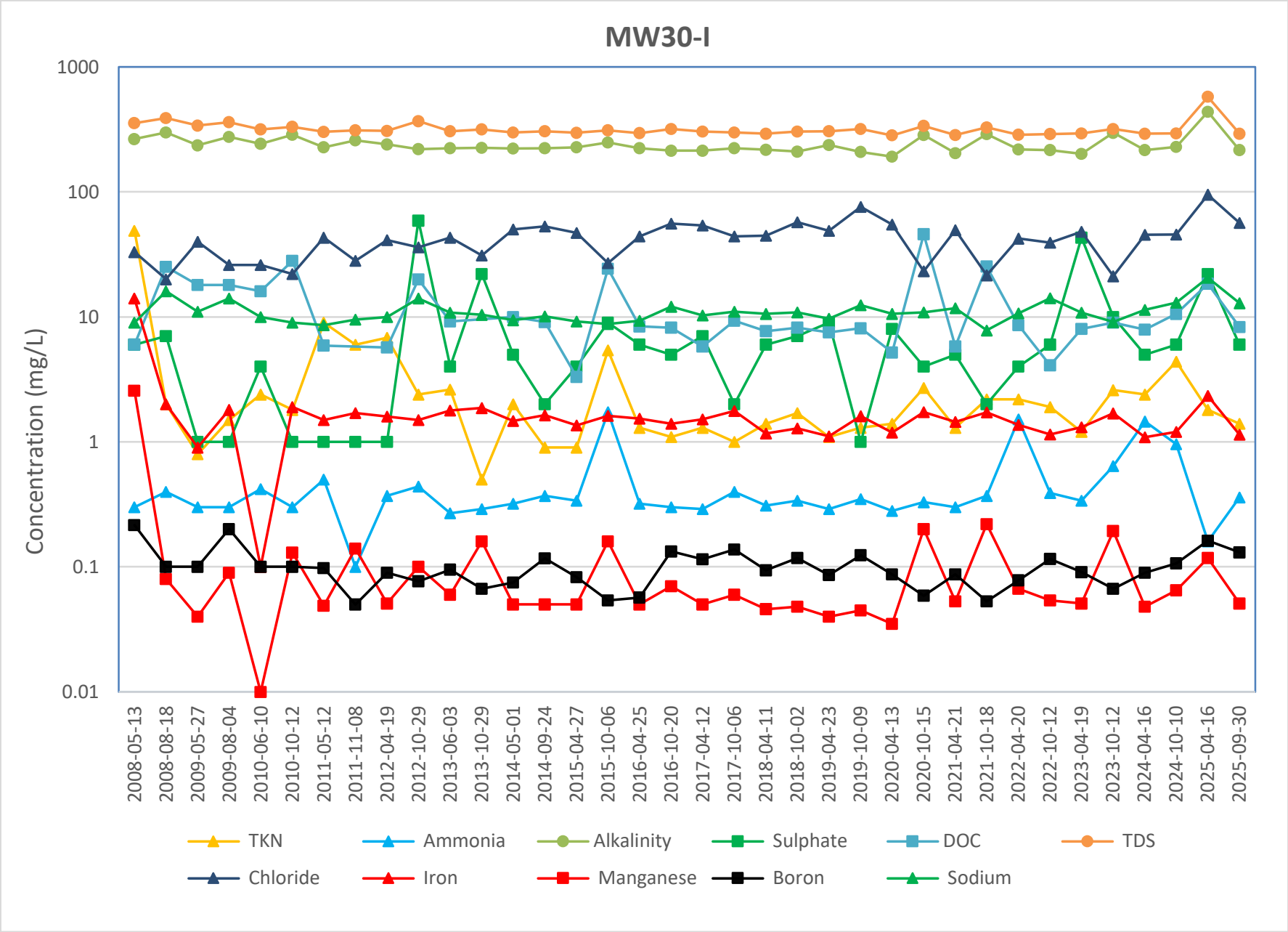
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW30-I
Concentration (mg/L)
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100
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0.01
2008-05-13
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2024-10-10
2025-04-16
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TKN
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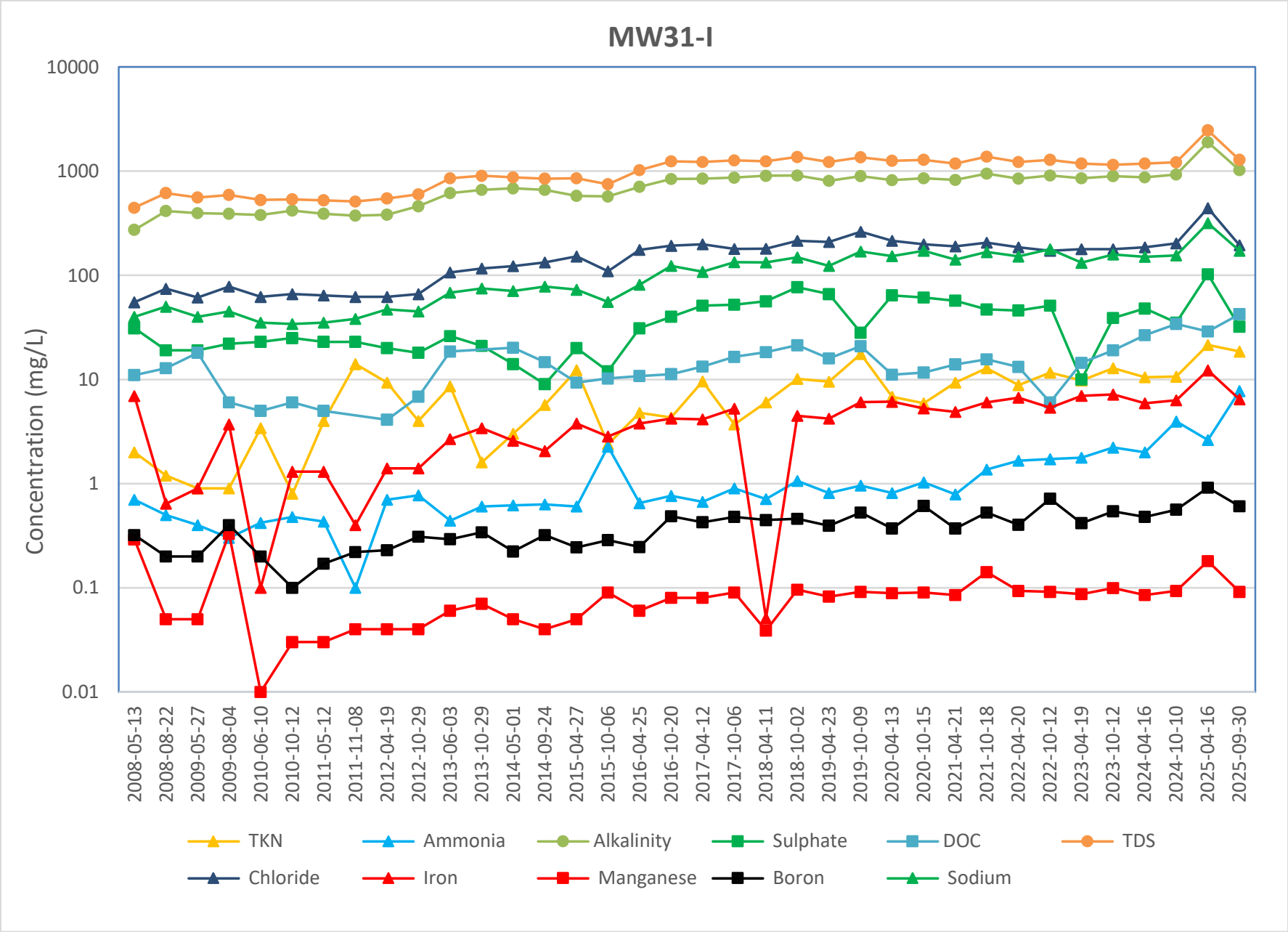
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW31-I
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
2008-05-13
2008-08-22
2009-05-27
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2011-11-08
2012-04-19
2012-10-29
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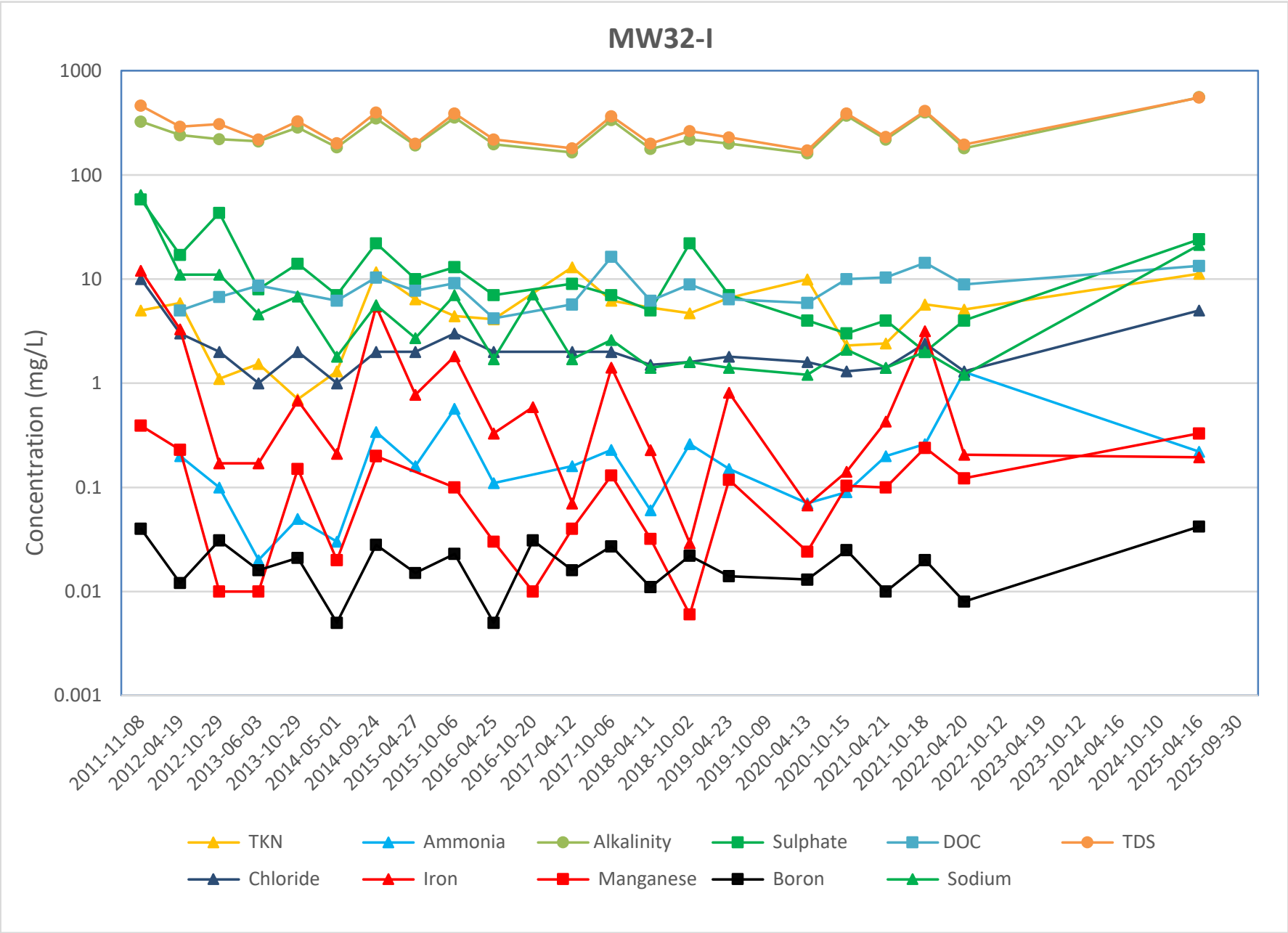
2025-04-16
2025-09-30
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW32-I
Concentration (mg/L)
1000
100
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1
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0.001
2011-11-08
2012-04-19
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2013-06-03
2013-10-29
2014-05-01
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2015-10-06
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2025-04-16
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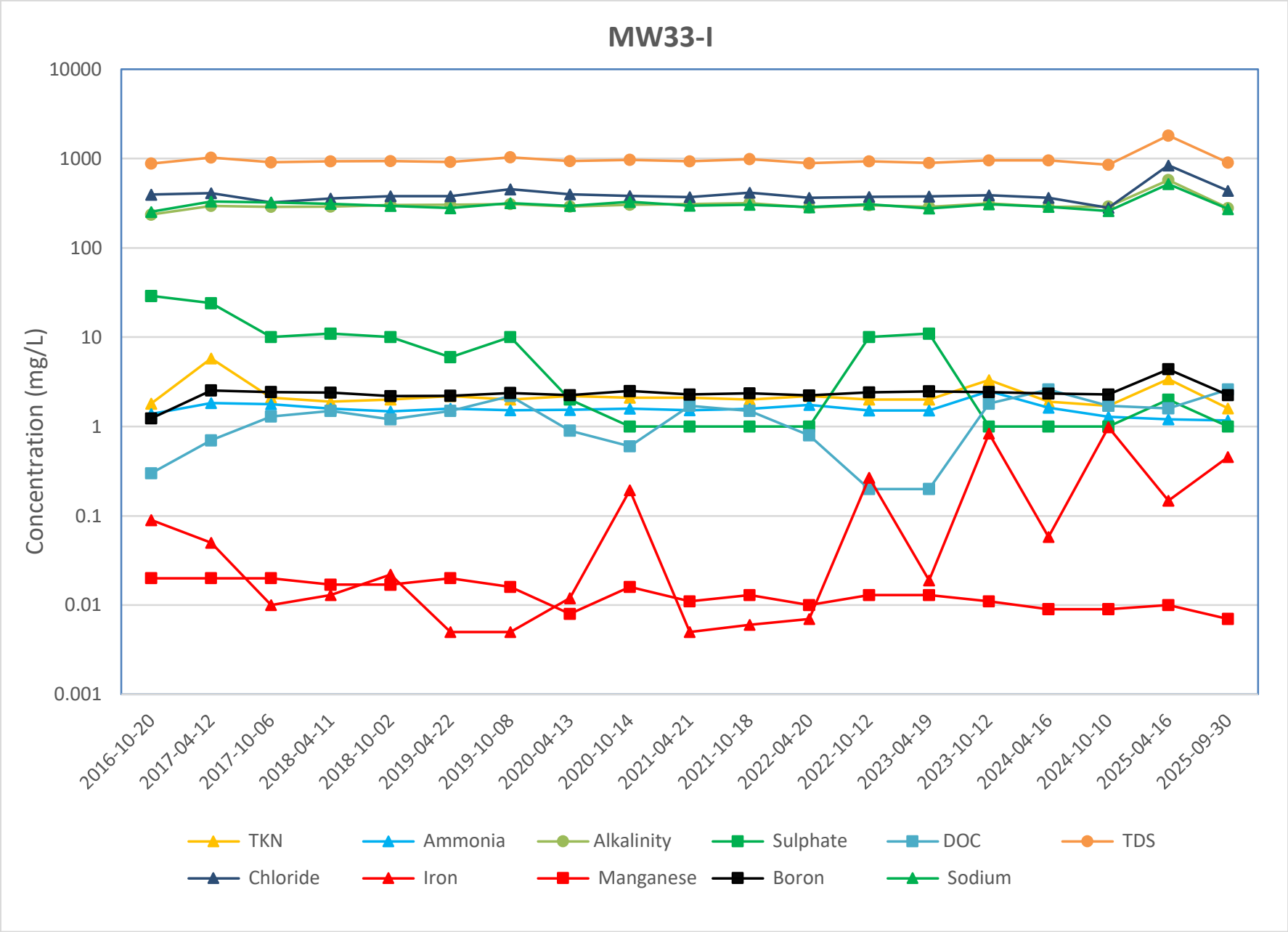
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW33-I
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
0.001
2016-10-20
2017-04-12
2017-10-06
2018-04-11
2018-10-02
2019-04-22
2019-10-08
2020-04-13
2020-10-14
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2025-04-16
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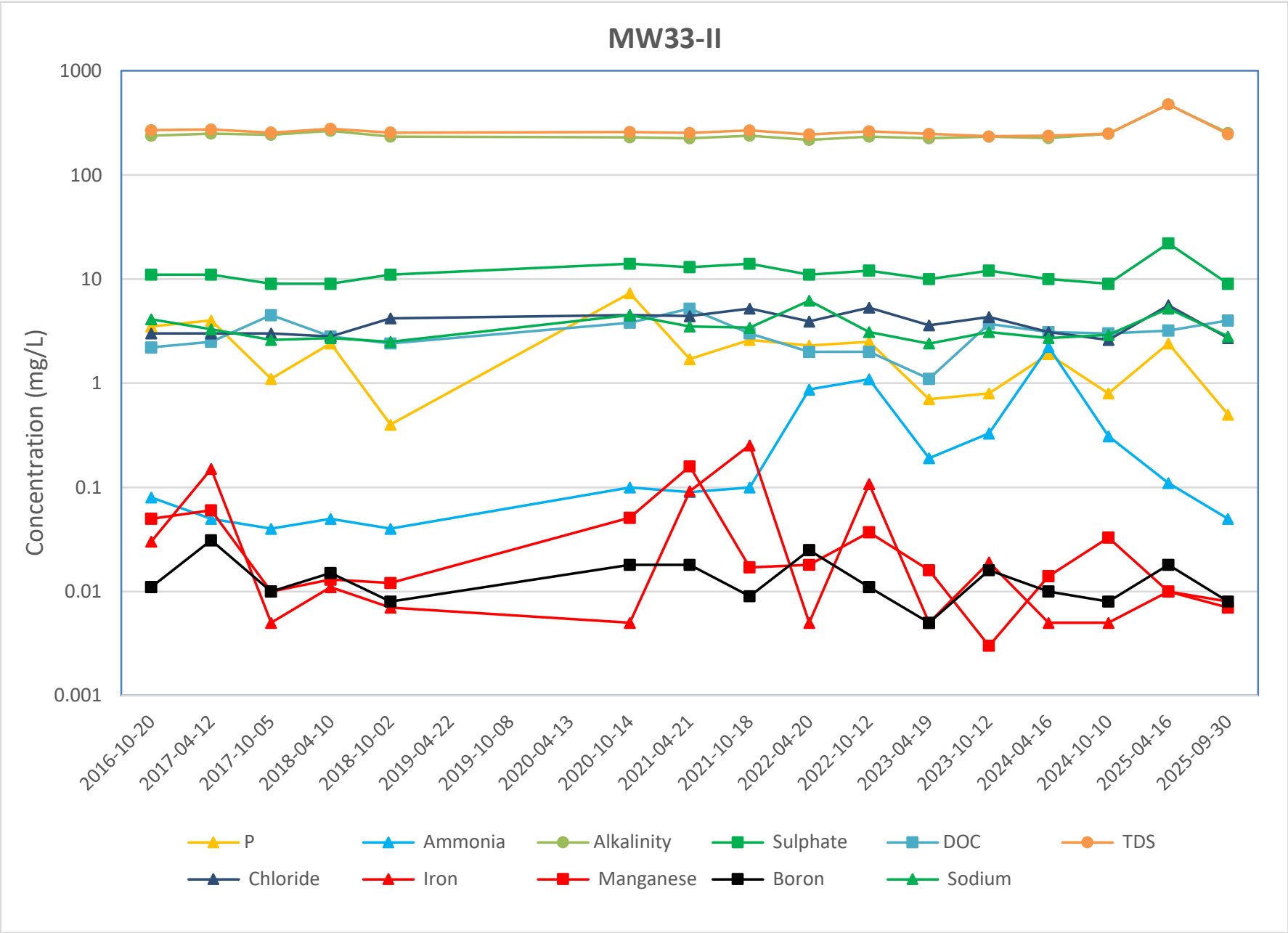
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW33-II
Concentration (mg/L)
1000
100
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1
0.1
0.01
0.001
2016-10-20
2017-04-12
2017-10-05
2018-04-10
2018-10-02
2019-04-22
2019-10-08
2020-04-13
2020-10-14
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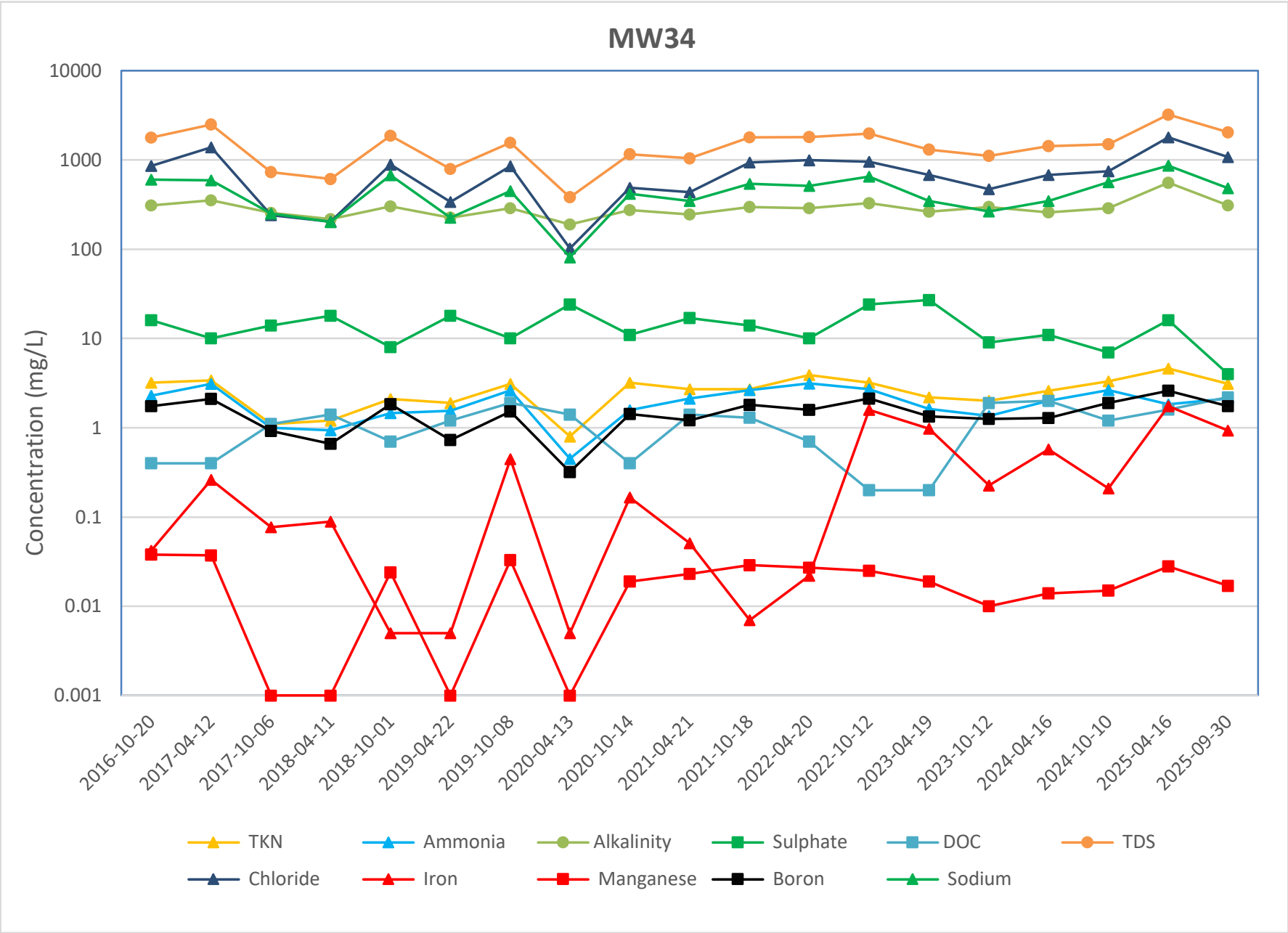
2022-10-12
2023-04-19
2023-10-12
2024-04-16
2024-10-10
2025-04-16
2025-09-30
P
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW34
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
0.001
2016-10-20
2017-04-12
2017-10-06
2018-04-11
2018-10-01
2019-04-22
2019-10-08
2020-04-13
2020-10-14
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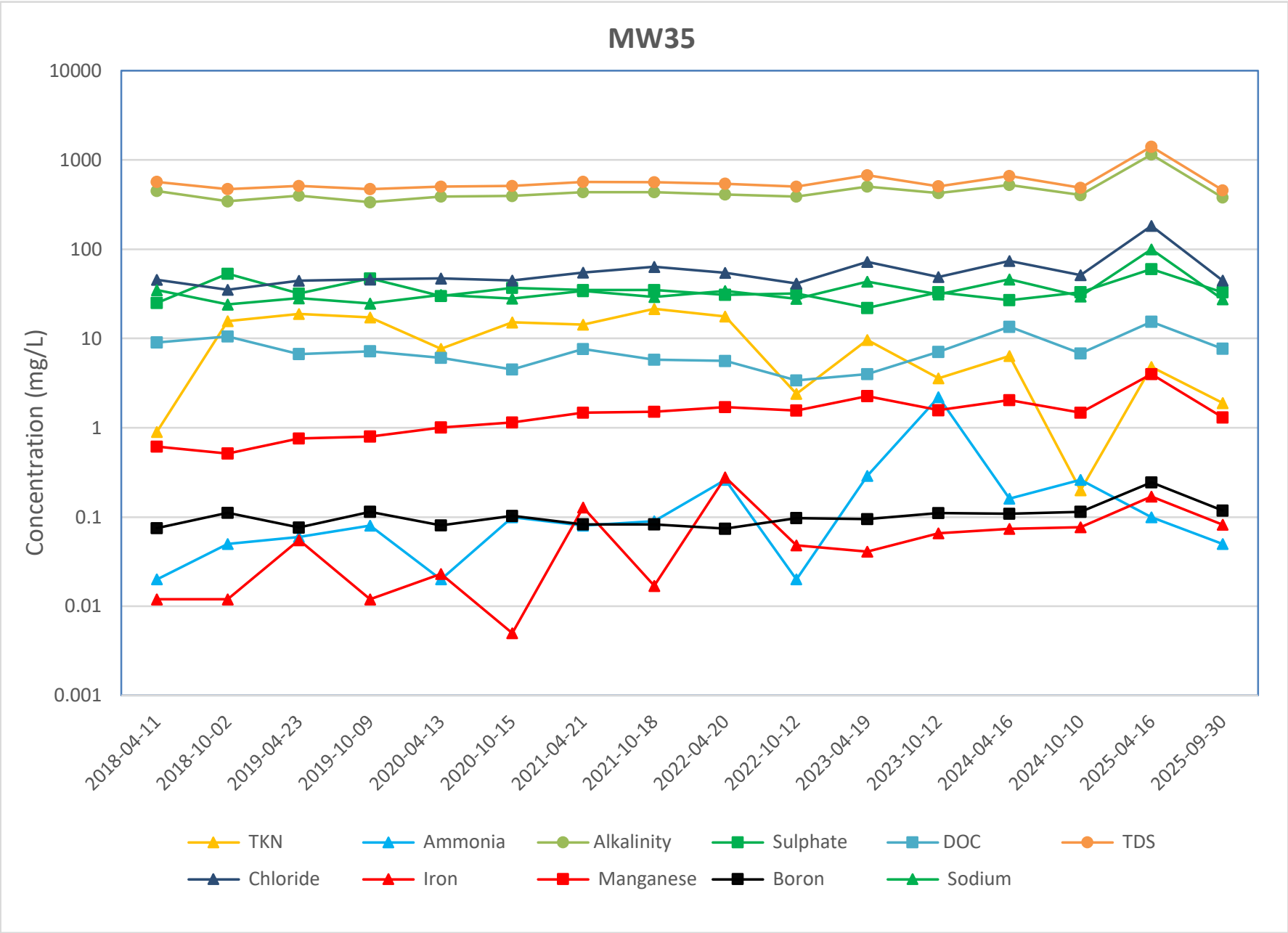
2024-04-16
2024-10-10
2025-04-16
2025-09-30
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW35
Concentration (mg/L)
10000
1000
100
10
1
0.1
0.01
0.001
2018-04-11
2018-10-02
2019-04-23
2019-10-09
2020-04-13
2020-10-15
2021-04-21
2021-10-18
2022-04-20
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2024-10-10
2025-04-16
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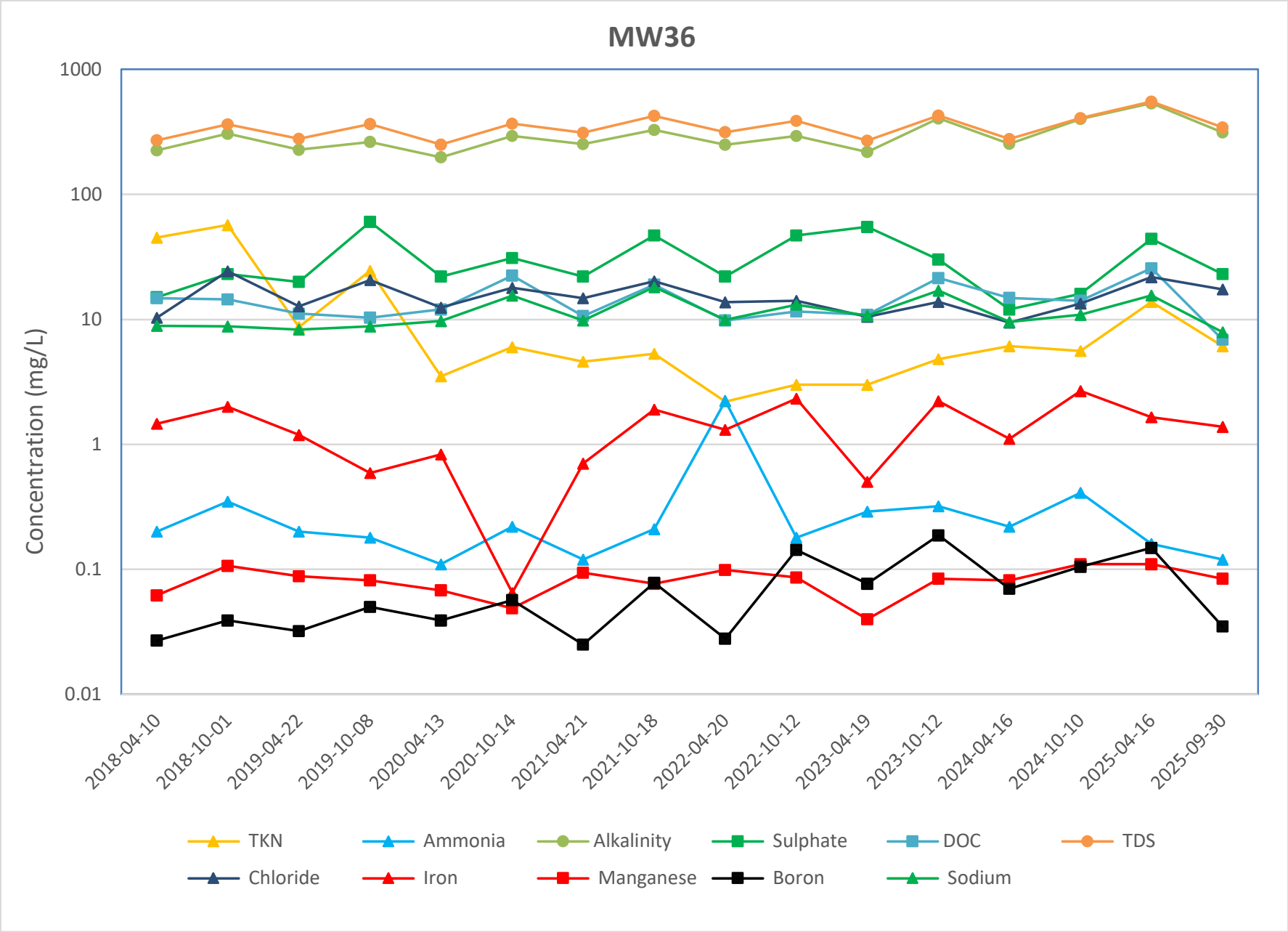
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW36
Concentration (mg/L)
1000
100
10
1
0.1
0.01
2018-04-10
2018-10-01
2019-04-22
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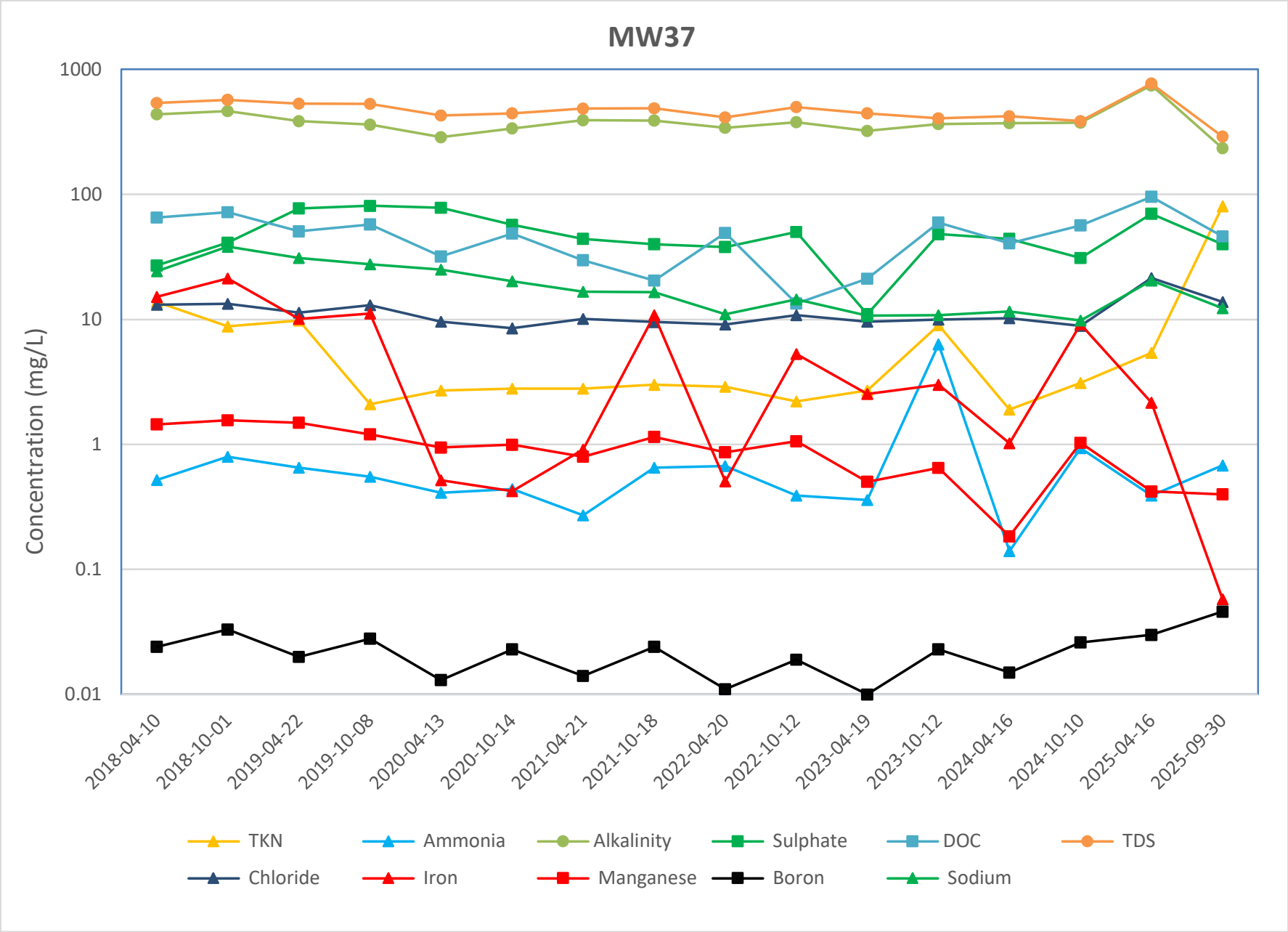
2024-04-16
2024-10-10
2025-04-16
2025-09-30
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW37
Concentration (mg/L)
1000
100
10
1
0.1
0.01
2018-04-10
2018-10-01
2019-04-22
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2025-04-16
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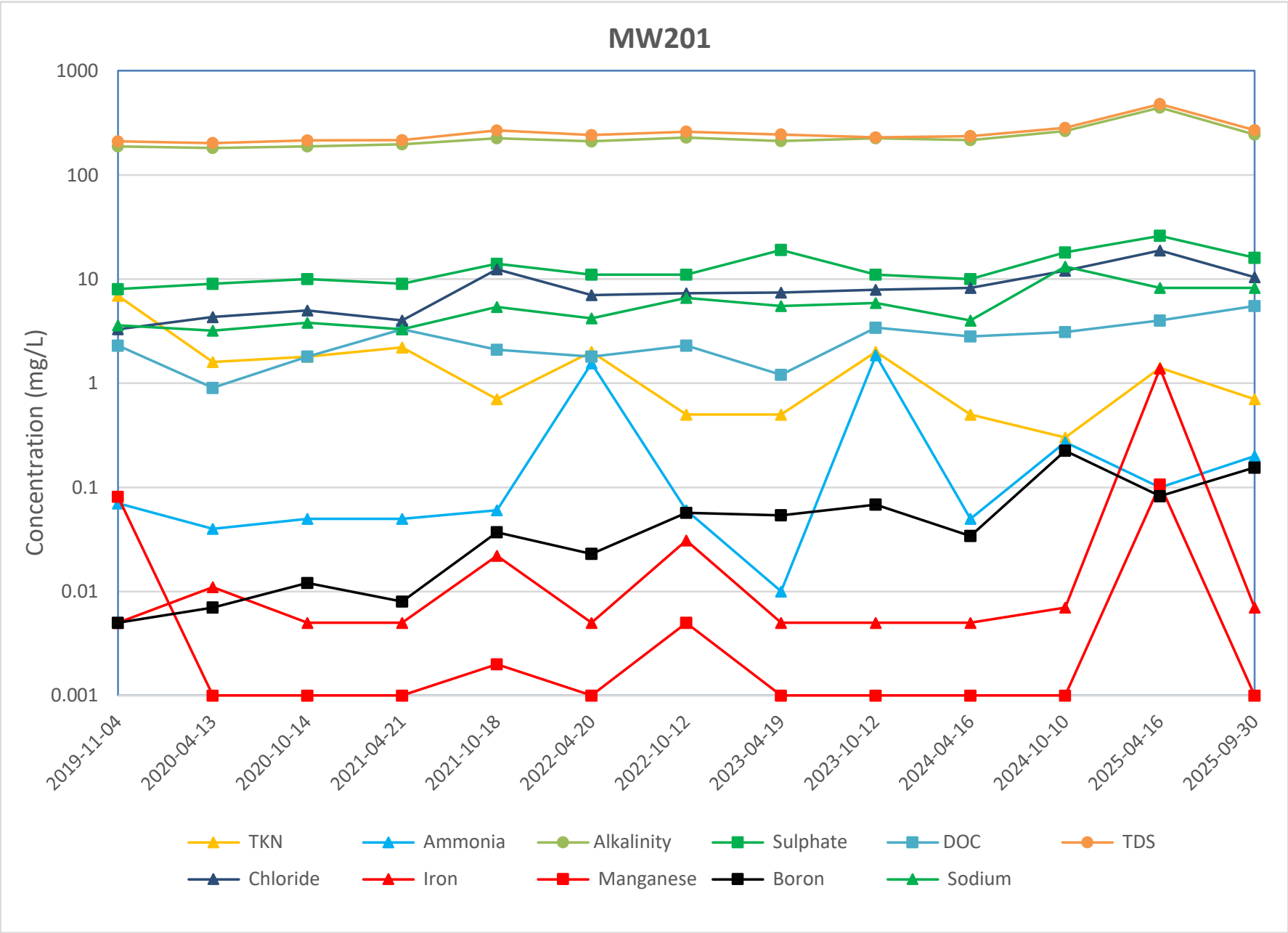
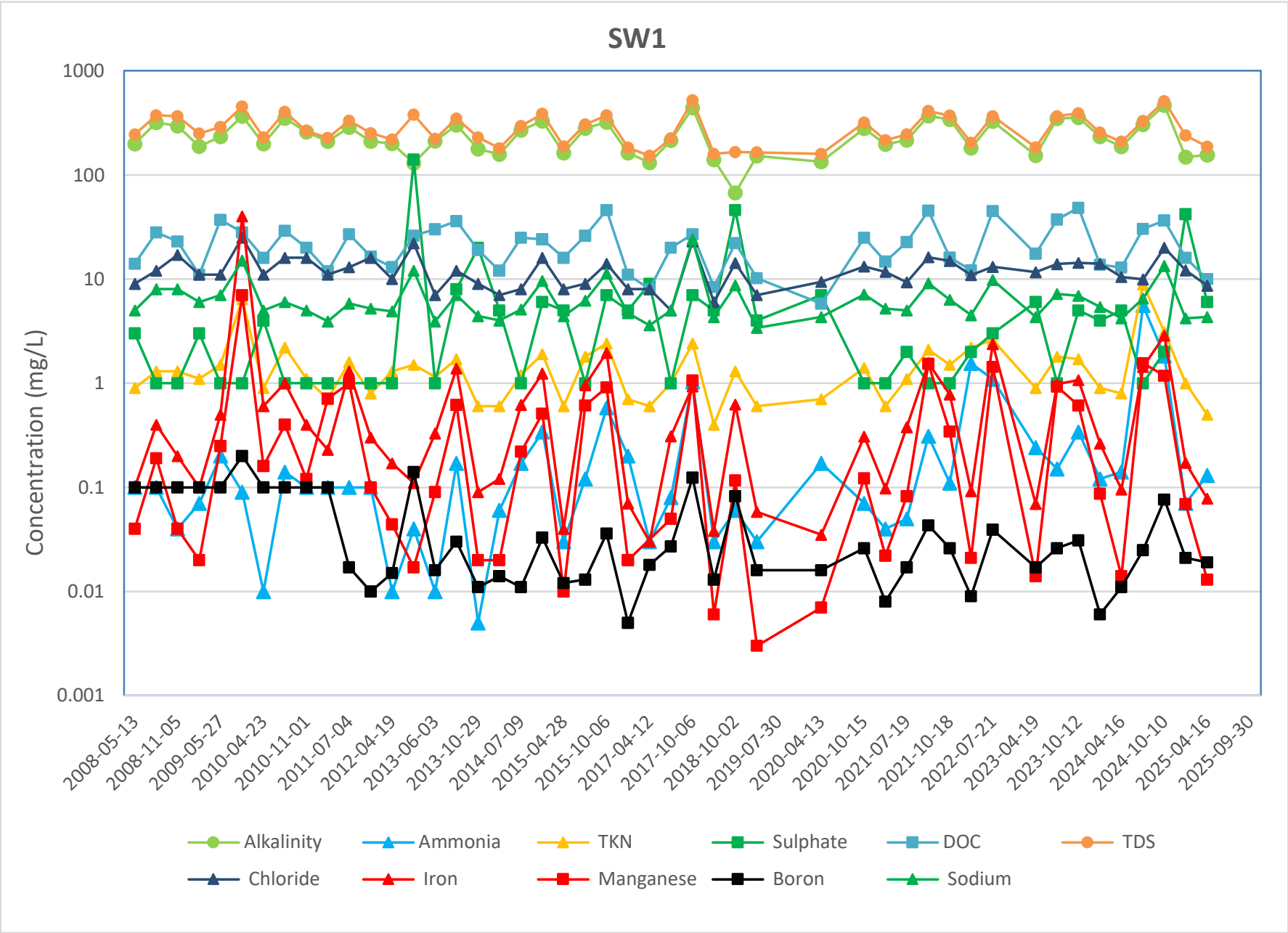
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


MW201
Concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
2019-11-04
2020-04-13
2020-10-14
2021-04-21
2021-10-18
2022-04-20
2022-10-12
2023-04-19
2023-10-12
2024-04-16
2024-10-10
2025-04-16
2025-09-30
TKN
Ammonia
Alkalinity
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium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Concentration (mg/L)
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1
0.1
0.01
0.001
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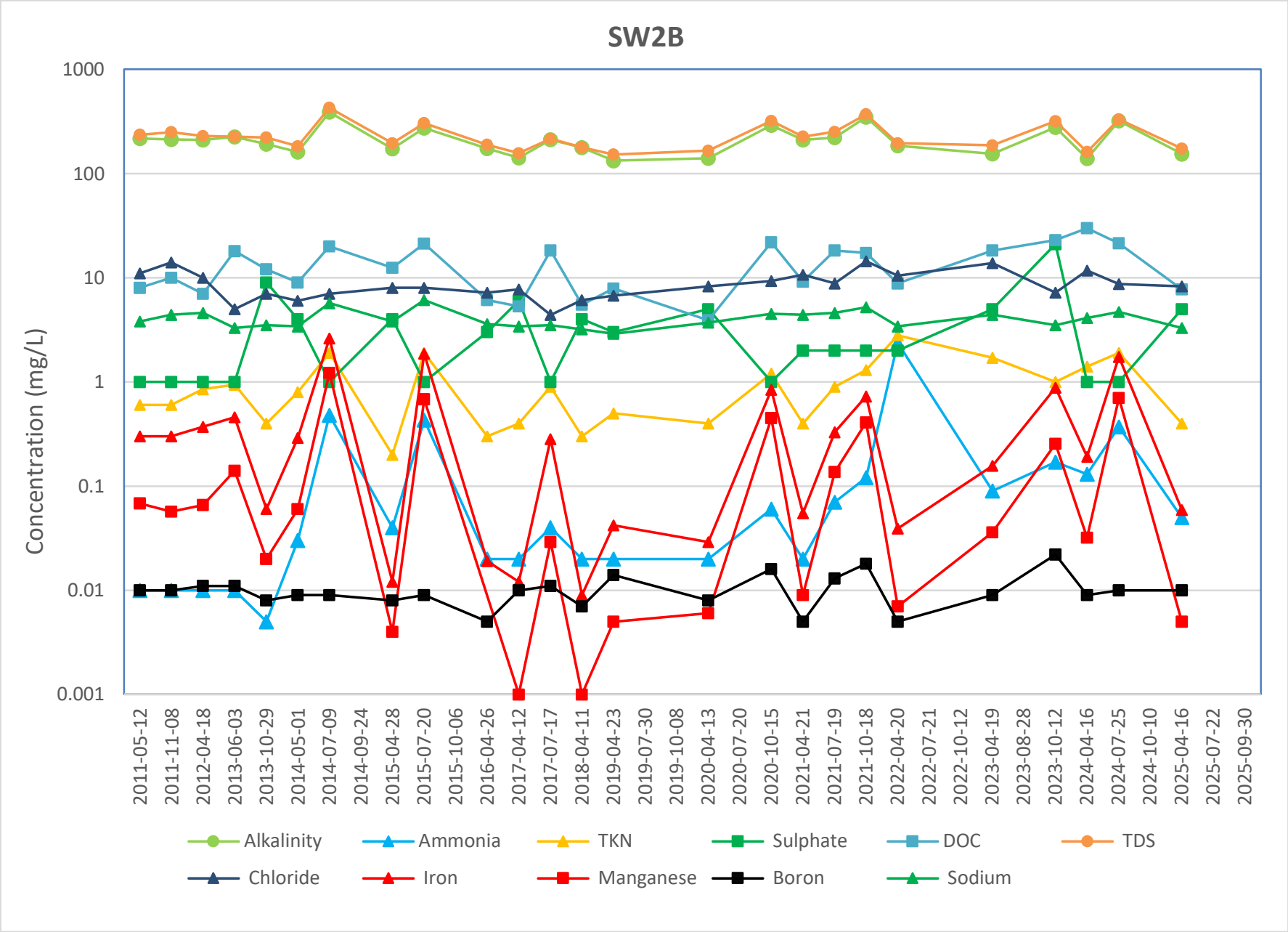
2008-11-05
2009-05-27
2010-04-23
2010-11-01
2011-07-04
2012-04-19
2013-06-03
2013-10-29
2014-07-09
2015-04-28
2015-10-06
2017-04-12
2017-10-06
2018-10-02
2019-07-30
2020-04-13
2020-10-15
2021-07-19
2021-10-18
2022-07-21
2023-04-19
2023-10-12
2024-04-16
2024-10-10
2025-04-16
2025-09-30
Alkalinity
Ammonia
TKN
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


SW2B
Concentration (mg/L)
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0.01
0.001
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2011-11-08
2012-04-18
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2014-07-09
2014-09-24
2015-04-28
2015-07-20
2015-10-06
2016-04-26
2017-04-12
2017-07-17
2018-04-11
2019-04-23
2019-07-30
2019-10-08
2020-04-13
2020-07-20
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2021-04-21
2021-07-19
2021-10-18
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2023-04-19
2023-08-28
2023-10-12
2024-04-16
2024-07-25
2024-10-10
2025-04-16
2025-07-22
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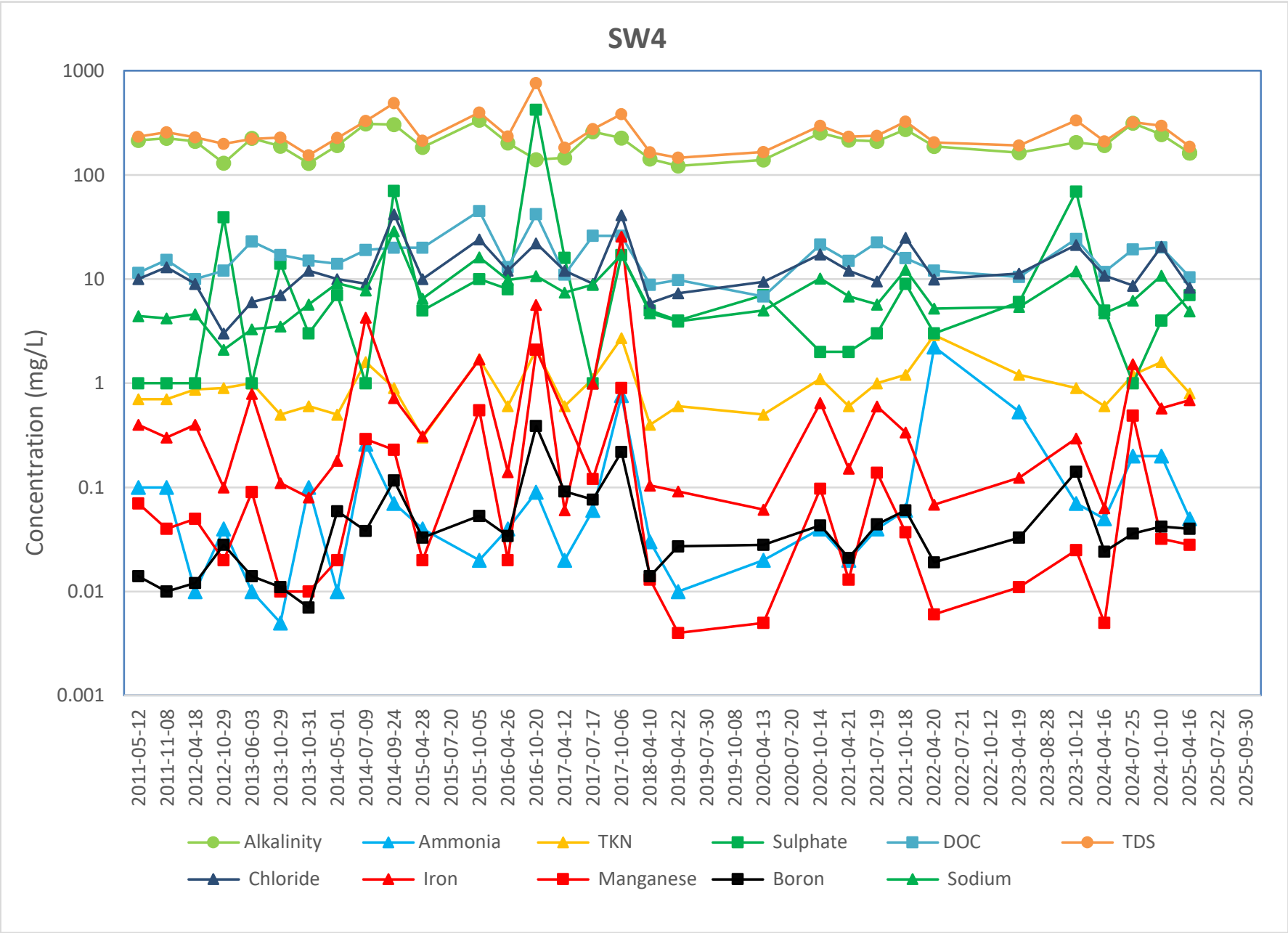
Alkalinity
Ammonia
TKN
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium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Concentration (mg/L)
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0.1
0.01
0.001
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2011-11-08
2012-04-18
2012-10-29
2013-06-03
2013-10-29
2013-10-31
2014-05-01
2014-07-09
2014-09-24
2015-04-28
2015-07-20
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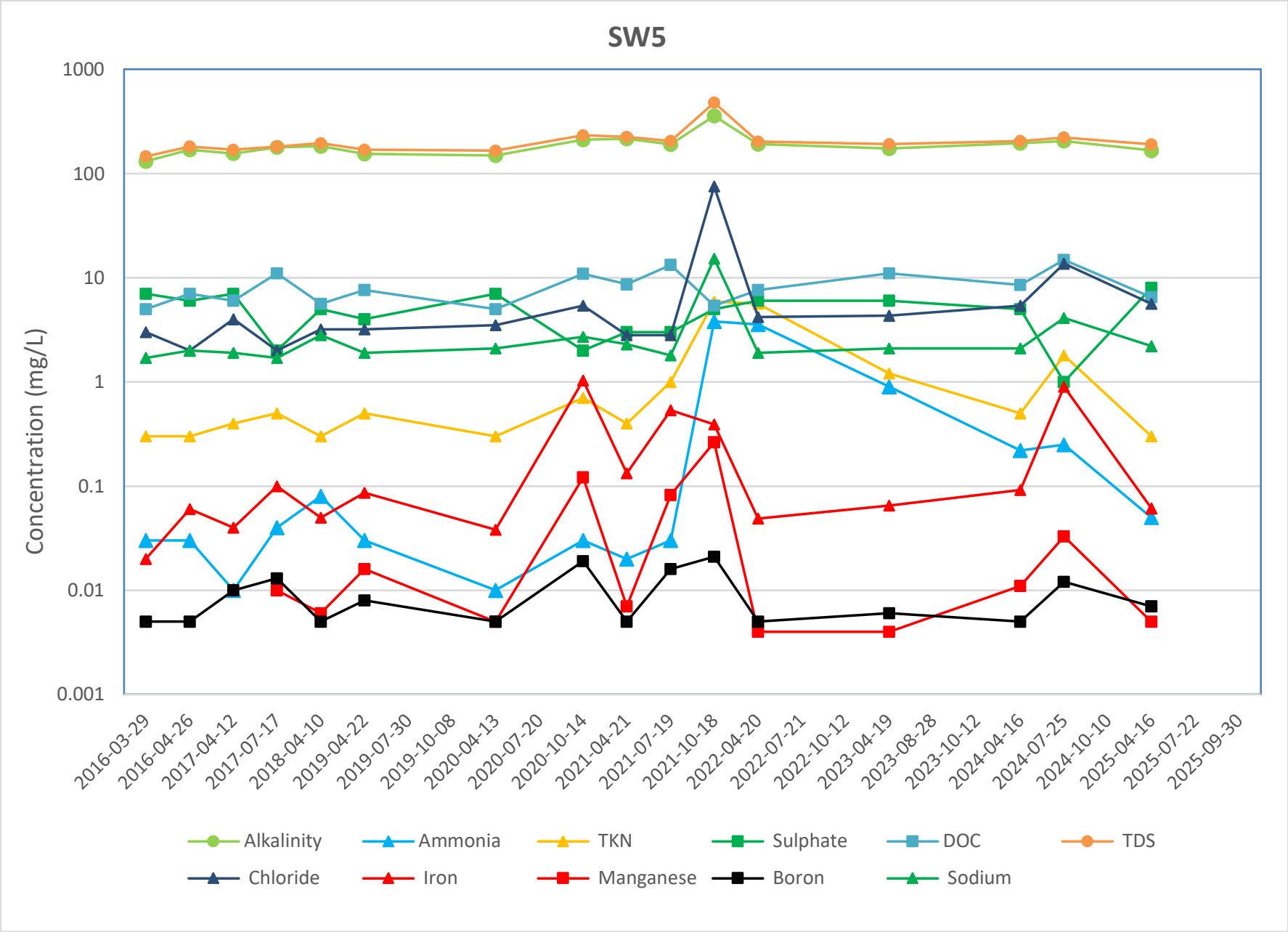
2023-10-12
2024-04-16
2024-07-25
2024-10-10
2025-04-16
2025-07-22
2025-09-30
Alkalinity
Ammonia
TKN
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


SW5
Concentration (mg/L)
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0.01
0.001
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2016-04-26
2017-04-12
2017-07-17
2018-04-10
2019-04-22
2019-07-30
2019-10-08
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2020-10-14
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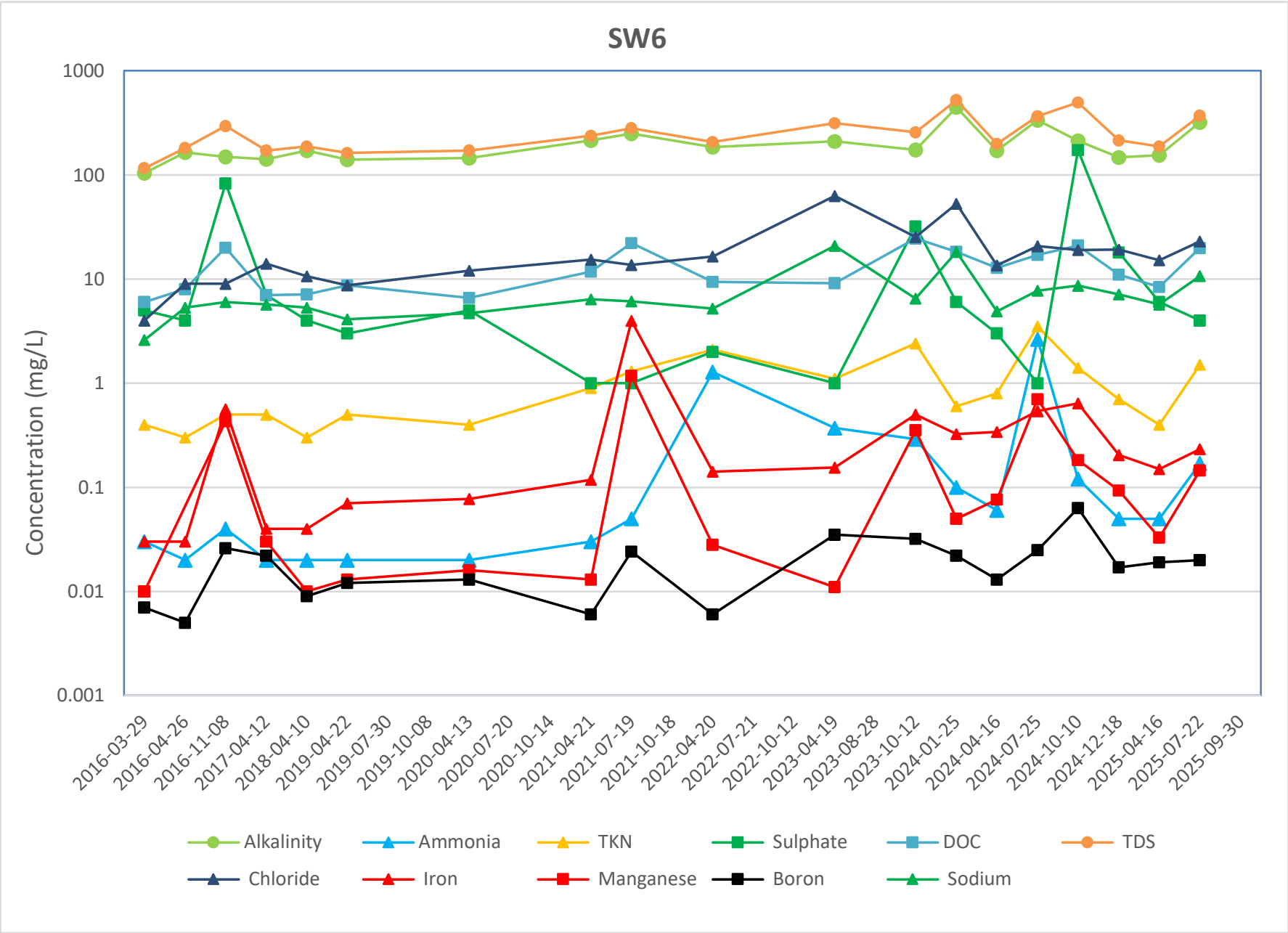
2022-10-12
2023-04-19
2023-08-28
2023-10-12
2024-04-16
2024-07-25
2024-10-10
2025-04-16
2025-07-22
2025-09-30
Alkalinity
Ammonia
TKN
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium


SW6
Concentration (mg/L)
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0.1
0.01
0.001
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2016-04-26
2016-11-08
2017-04-12
2018-04-10
2019-04-22
2019-07-30
2019-10-08
2020-04-13
2020-07-20
2020-10-14
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2022-10-12
2023-04-19
2023-08-28
2023-10-12
2024-01-25
2024-04-16
2024-07-25
2024-10-10
2024-12-18
2025-04-16
2025-07-22
2025-09-30
Alkalinity
Ammonia
TKN
Sulphate
DOC
TDS
Chloride
Iron
Manganese
Boron
Sodium

APPENDIX G

Surface Water Photos

Photograph Not Taken

SW-1: April 16, 2024

Photograph Not Taken

SW-1: September 30, 2025

SW-1: July 22, 2025

SW-2B: April 16, 2025

SW-2B: September 30, 2025

SW-4: April 16, 2025

SW-4: September 30, 2025

SW-4: July 22, 2025

SW-5: April 16, 2024

SW-5: September 30, 2025

SW-5: July 22, 2025

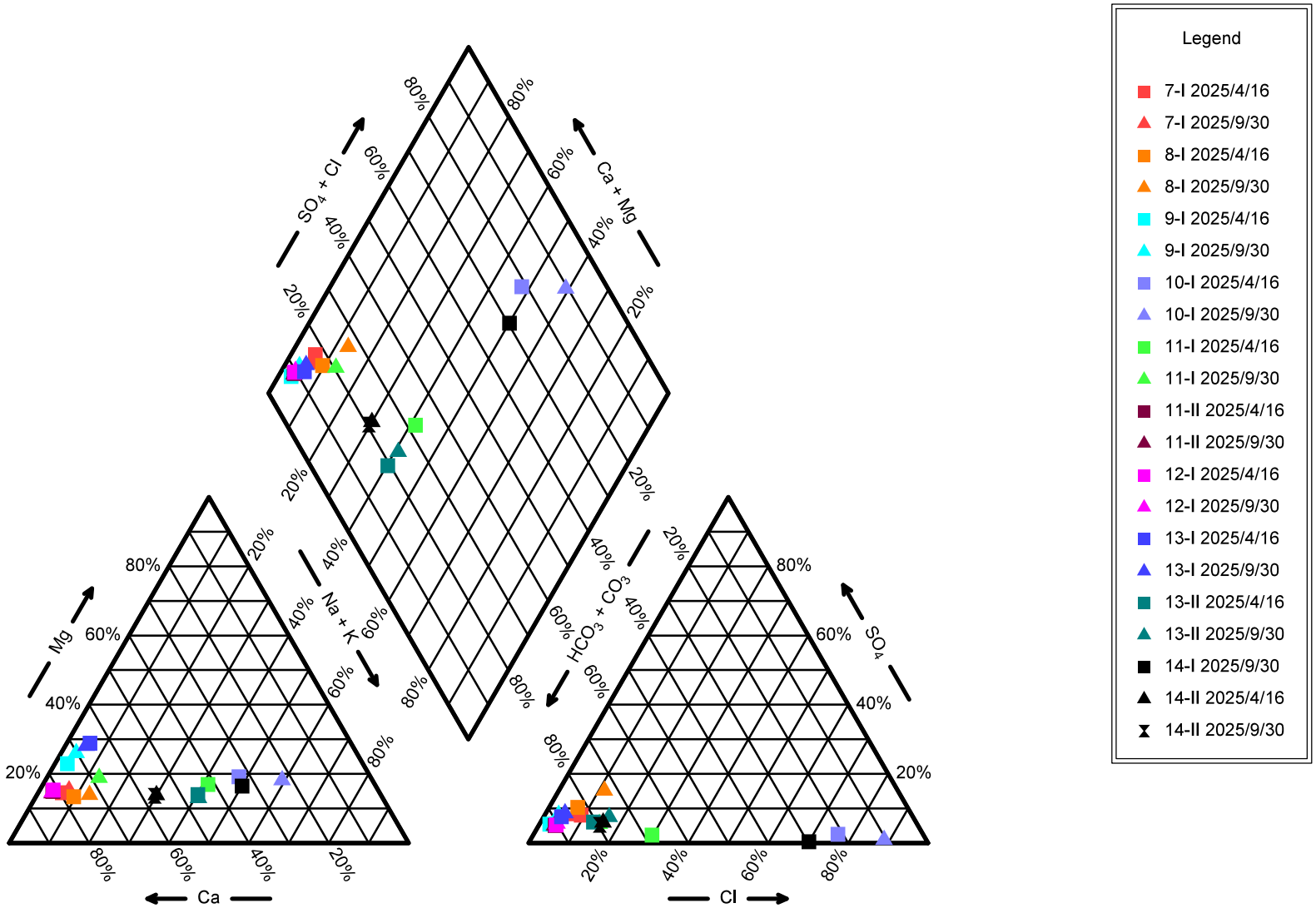
SW-6: April 16, 2025

SW-6: September 30, 2025

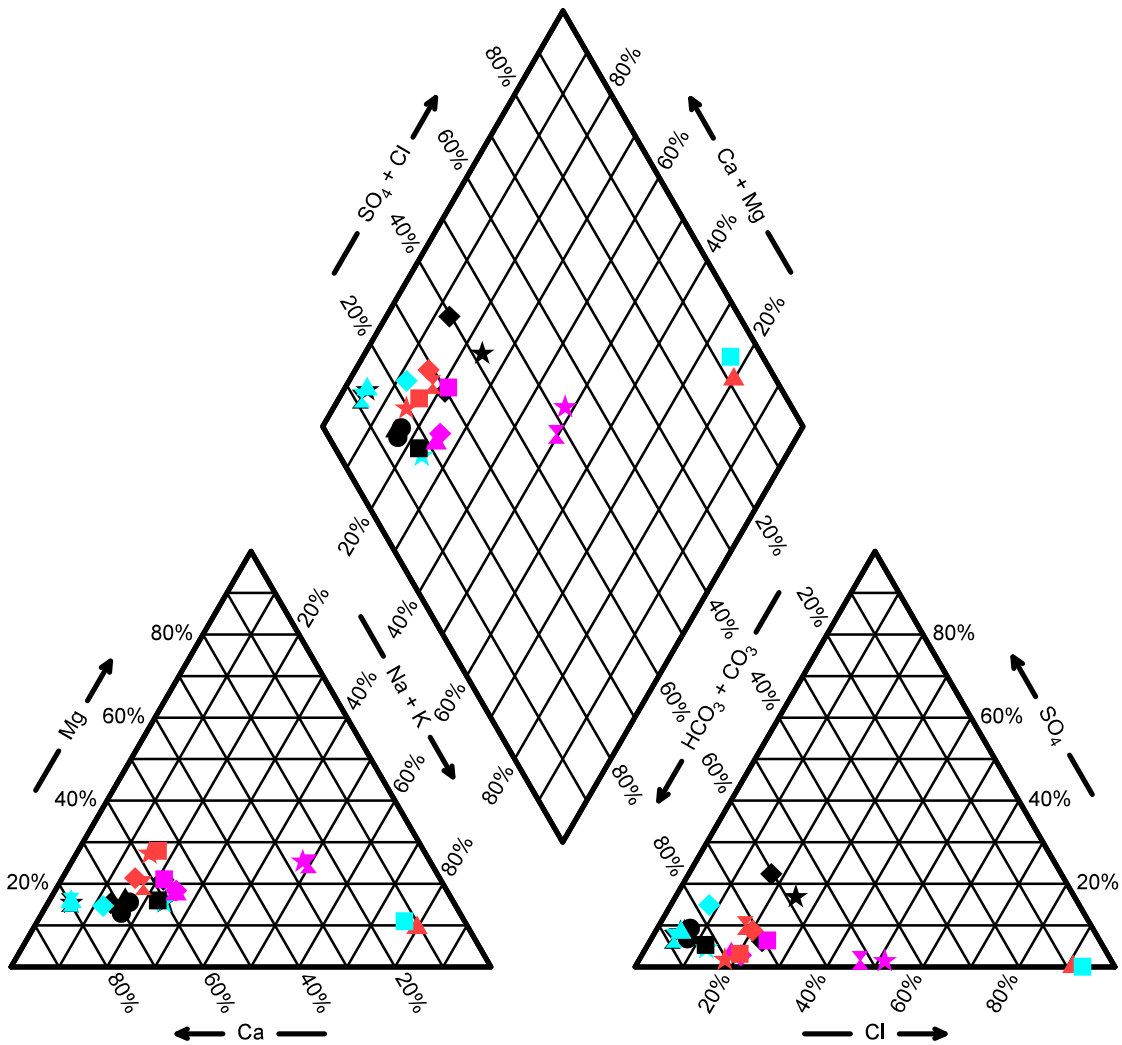
SW-6: July 22, 2025

APPENDIX H
Piper Diagrams

Piper Diagram



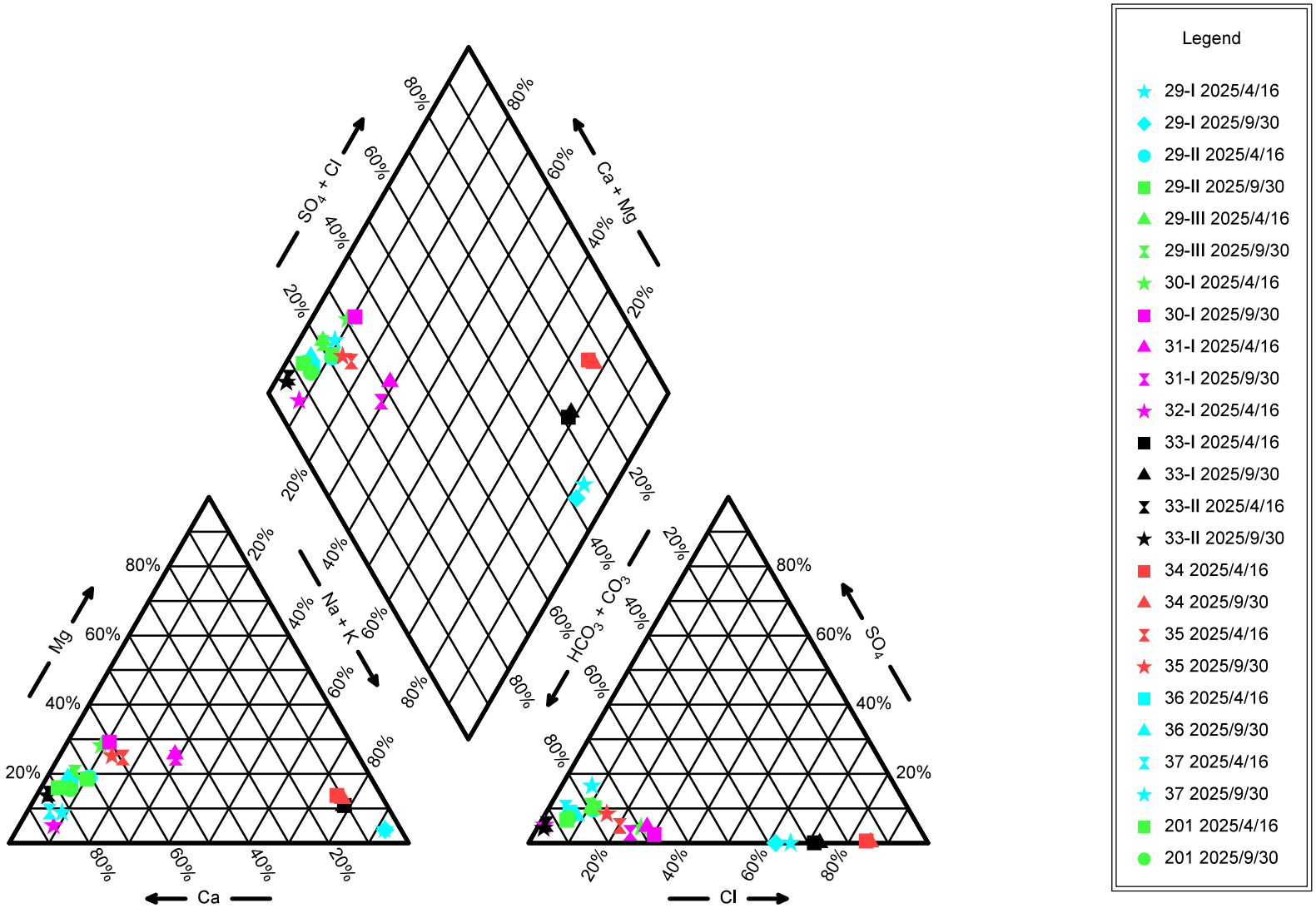
Piper Diagram



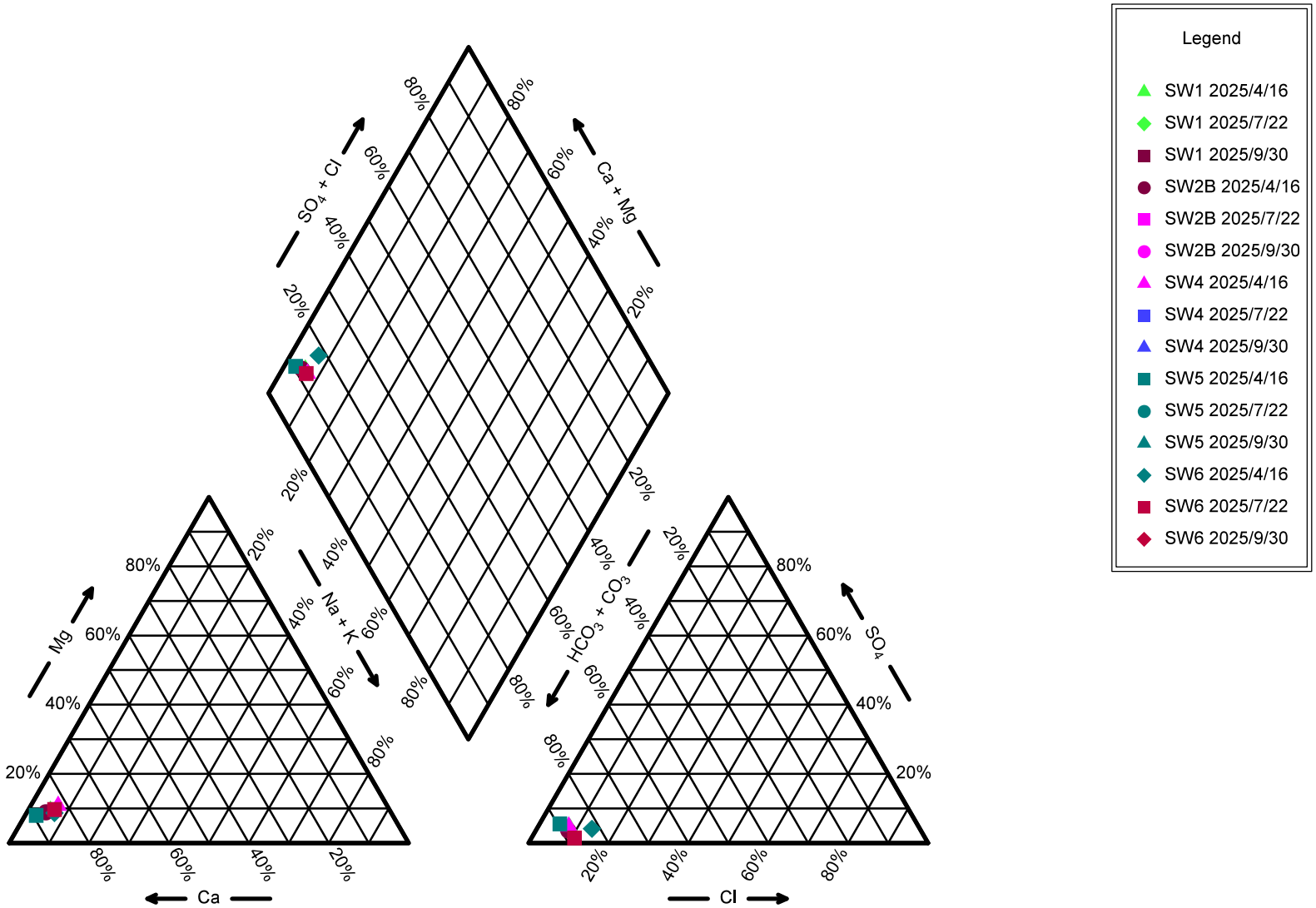
Legend

- ★ 16-I 2025/4/16
- ◆ 16-I 2025/9/30
- ● 16-II 2025/4/16
- ◆ 16-II 2025/9/30
- ★ 17-I 2025/4/16
- ■ 17-I 2025/9/30
- ▲ 17-II 2025/4/16
- ● 17-II 2025/9/30
- ★ 19-I 2025/4/16
- ⧗ 19-I 2025/9/30
- ◆ 25-I 2025/4/16
- ■ 25-I 2025/9/30
- ▲ 25-II 2025/4/16
- ◆ 25-II 2025/9/30
- ⧗ 26-I 2025/4/16
- ★ 26-I 2025/9/30
- ⧗ 26-II 2025/4/16
- ◆ 26-II 2025/9/30
- ★ 26-III 2025/4/16
- ■ 26-III 2025/9/30
- ▲ 27-I 2025/4/16
- ■ 27-I 2025/9/30
- ▲ 27-II 2025/4/16
- ⧗ 27-II 2025/9/30

Piper Diagram



Piper Diagram



APPENDIX I

Site Inspection Forms

CITY OF KAWARTHA LAKES
OPERATING LANDFILL INSPECTION FORM

LANDFILL: Eldon

Inspected by: Alan Turner

Date: April 16, 2025

Time: 10:00 am

Weather Conditions: 0°c Cloudy

A. GENERAL OBSERVATIONS

A.1 Landfill Site: Good condition

A.2 Status of Landfill Development/Construction Activities: Good.

A.3 Tipping Face: Good, organized.

A.4 Residential Container Station: Organized, labelled.

A.5 Maintenance and Administration Building: Good, did not inspect inside.

A.6 Weigh Scale Inspection Building: Good, being used.

A.7 Reuse Centre: Good

A.8 HHW Facility: Good.

A.9 Leaf & Yard Waste Composting Facility: Good, organized & really full due to downed trees & branches from ice storm

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? yes

B.2 Are staff wearing adequate safety equipment? yes

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? Good, downed trees in forested area.

C.3 Condition of vegetation? Good, downed trees in forested area,

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? Good condition.

E. LEACHATE COLLECTION SYSTEM

E.1 Are manholes free of litter and debris? yes

E.2 Condition of manholes/need repairs? Good condition

F. MAIN ENTRANCE AND INTERNAL ROADS:

F.1 Is the main entrance or internal roads in need of repair or maintenance work?

NO - Good condition, some potholes.

G. DUST CONTROL:

G.1 Any dust problems because of the internal roads, working face or fill stockpiles?

NO

G.2 Condition of Roads: Good condition

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?

litter & debris blown in debris net, as well as some North of tipping face.

J. LANDSCAPING:

J.1 Does the landscaping (trees, shrubs, and ground cover) require maintenance work (e.g. grass cutting, replacement or vegetation)?

Fallen/downed trees blocking cut the southwest of Mound. Recommend clearing. Mound vegitation good.

K. SITE PERIMETER FENCING AND SIGNING:

K.1 Is the site perimeter fencing in good condition? Yes, southwest cutline fence damaged from fallen trees from ice storm.

K.2 Are the traffic and information signs in good condition?

Good condition

L. LANDFILL OPERATIONS:

L.1 Is there sufficient material for daily and interim cover?

Yes

L.2 Is the landfill operations equipment in good working order?

Yes

L.3 Is the waste being spread, compacted and covered in accordance with the Maintenance & Operations Report?

Yes

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?

N/A - Did not inspect inside building.

M.3 Location and condition of medical emergency kits (eye wash stations and first aid kits).

N/A - Did not inspect inside building.

M.4 Staff knowledge of emergency procedures/numbers?

N/A - Did not ask.

N. OTHER COMMENTS:

MW 14-1 & MW 14-11 blocked & damaged.

O. RECOMMENDATIONS:

Replace MW 14-1, 14-11.

CITY OF KAWARTHA LAKES
OPERATING LANDFILL INSPECTION FORM

LANDFILL: Eldon

Inspected by: Kieser Gallifard

Date: 22/07/2025

Time: 2:00pm

Weather Conditions: Sunny Blue Skies 25°c

A. GENERAL OBSERVATIONS

A.1 Landfill Site: Site good condition

A.2 Status of Landfill Development/Construction Activities: bad condition

A.3 Tipping Face: good

A.4 Residential Container Station: good

A.5 Maintenance and Administration Building: good

A.6 Weigh Scale Inspection Building: good

A.7 Reuse Centre: N/A

A.8 HHW Facility: good

A.9 Leaf & Yard Waste Composting Facility: good

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? yes

B.2 Are staff wearing adequate safety equipment? yes

C. LANDFILL COVER:

C.1 Any evidence of leachate seeps or erosion of landfill cover on waste disposal fill area? _____

good condition

C.2 Condition of North Slope? good

C.3 Condition of vegetation? good

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? good

E. LEACHATE COLLECTION SYSTEM

E.1 Are manholes free of litter and debris? yes

E.2 Condition of manholes/need repairs? good

F. MAIN ENTRANCE AND INTERNAL ROADS:

F.1 Is the main entrance or internal roads in need of repair or maintenance work? _____

Good

G. DUST CONTROL:

G.1 Any dust problems because of the internal roads, working face or fill stockpiles? _____

No dust issues

G.2 Condition of Roads: Good

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? Minor wind-blown trash surrounding tipping face

J. LANDSCAPING:

J.1 Does the landscaping (trees, shrubs, and ground cover) require maintenance work (e.g. grass cutting, replacement or vegetation)? No Landscaping needed

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? Yes

L.2 Is the landfill operations equipment in good working order? Yes

L.3 Is the waste being spread, compacted and covered in accordance with the Maintenance & Operations Report? Yes

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?

N/A - Not inspected

M.3 Location and condition of medical emergency kits (eye wash stations and first aid kits).

N/A. Not inspected

M.4 Staff knowledge of emergency procedures/numbers? understood that staff are trained

N. OTHER COMMENTS:

None

O. RECOMMENDATIONS:

None

CITY OF KAWARTHA LAKES
OPERATING LANDFILL INSPECTION FORM

LANDFILL: Eldon

Inspected by: Alan Turner

Date: September 30, 2025

Time: 10:00 am

Weather Conditions: 18°C Sunny

A. GENERAL OBSERVATIONS

A.1 Landfill Site: Good condition

A.2 Status of Landfill Development/Construction Activities: Good condition

A.3 Tipping Face: Good condition, signed well.

A.4 Residential Container Station: Organized, good condition.

A.5 Maintenance and Administration Building: Outside good condition, did not inspect inside, No staff on site, landfill closed at time of visit.

A.6 Weigh Scale Inspection Building: Good condition, did not see operation as landfill closed at the time of visit.

A.7 Reuse Centre: Good condition

A.8 HHW Facility: Good condition

A.9 Leaf & Yard Waste Composting Facility: Good, organized & signed.

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? Landfill was closed at time on site.

B.2 Are staff wearing adequate safety equipment? Landfill was closed at time of visit.

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? Good, forested area dense w/ downed trees.

C.3 Condition of vegetation? Good, tall grass, smaller trees.

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?

Good condition

E. LEACHATE COLLECTION SYSTEM

E.1 Are manholes free of litter and debris?

Yes

E.2 Condition of manholes/need repairs?

Good condition

F. MAIN ENTRANCE AND INTERNAL ROADS:

F.1 Is the main entrance or internal roads in need of repair or maintenance work?

No, driveway in good working order.

G. DUST CONTROL:

G.1 Any dust problems because of the internal roads, working face or fill stockpiles?

NO, landfill was closed during site visit.

G.2 Condition of Roads: Good condition

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?

litter & debris blown into net as well as North of tipping face.

J. LANDSCAPING:

J.1 Does the landscaping (trees, shrubs, and ground cover) require maintenance work (e.g. grass cutting, replacement or vegetation)?

Fallen / downed trees blocking access Southwest of mound, needs clearing. Mound vegitation good.

K. SITE PERIMETER FENCING AND SIGNING:

K.1 Is the site perimeter fencing in good condition? Southwest access fence damaged by fallen trees, all other fence intact & good condition.

K.2 Are the traffic and information signs in good condition?

Good condition

L. LANDFILL OPERATIONS:

L.1 Is there sufficient material for daily and interim cover?

Yes

L.2 Is the landfill operations equipment in good working order?

Yes

L.3 Is the waste being spread, compacted and covered in accordance with the Maintenance & Operations Report?

Yes

M. SITE SECURITY AND SAFETY PROTOCOLS

M.1 Are waste loads being adequately inspected (weigh scale/inspection building, residential container station, tipping face)?

N/A - Landfill closed day of site visit

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?

N/A - Did not inspect inside building.

M.3 Location and condition of medical emergency kits (eye wash stations and first aid kits).

N/A - Did not inspect inside building.

M.4 Staff knowledge of emergency procedures/numbers?

N/A Landfill was closed day of site visit.

N. OTHER COMMENTS:

MW 14-111 blocked.

O. RECOMMENDATIONS:

Replace MW 14-111.

APPENDIX J

MECP Landfill Reporting Submission Forms

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.

Monitoring Report and Site Information	
Waste Disposal Site Name	Eldon Landfill Site
Location (e.g. street address, lot, concession)	311 Rockview Road
GPS Location (taken within the property boundary at front gate/ front entry)	659692 / 4934364
Municipality	City of Kawartha Lakes
Client and/or Site Owner	City of Kawartha Lakes
Monitoring Period (Year)	2024
This Monitoring Report is being submitted under the following:	
Certificate of Approval No.:	Landfill - A321004
Director's Order No.:	Type Here
Provincial Officer's Order No.:	Type Here
Other:	Type Here

Report Submission Frequency	◉ **Annual** ○ **Other**	Specify (Type Here):
The site is:	◉ **Active** ○ **Inactive** ○ **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?	○ **Yes** ◉ **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)	○ Yes ◉ 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:	◉ **Yes** ○ **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):	◉ **Yes** ○ **No** ○ **Not Applicable**	If no, list exceptions below or attach information.

Groundwater Sampling Location	**Description/Explanation for change (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.	◯ **Yes** ◉ **No** ◯ **Not Applicable**	
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:	◉ **Yes** ◯ **No** ◯ **Not Applicable**	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):	◉ **Yes** ◯ **No**	If no, specify (Type Here):

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

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.	◉ **Yes** ○ **No**	If no, the potential design and operational concerns/ exceptions are as follows (Type Here):	
6) The site meets compliance and assessment criteria.	○ **Yes** ◉ **No**	See Section 5.7 of report for RUP exceedances	
7) The site continues to perform as anticipated. There have been no unusual trends/ changes in measured leachate and groundwater levels or concentrations.	◉ **Yes** ○ **No**	If no, list exceptions and explain reason for increase/change (Type Here):	
1) Is one or more of the following risk reduction practices in place at the site: ***(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** ***(b)*** **There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or** ***(c)*** **The site meets the following two conditions (typically achieved after 15 years or longer of site operation):** ***i.*** **The site has developed stable leachate mound(s) and stable leachate plume geometry/concentrations; and** ***ii.*** **Seasonal and annual water levels and water quality fluctuations are well understood.**	◉ **Yes** ○ **No**	**Note which practice(s):**	☐ **(a)** ☒ **(b)** ☒ **(c)**
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	○ **Yes** ◉ **No** ○ **Not Applicable**		

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:

20-Mar-2026

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

○ **No changes to the monitoring program are recommended** ◉ **The following change(s) to the monitoring program is/are recommended:**	Monitoring Well reductions are recommended as part of the 2026 monitoring program. Details of this revised program are listed in Section 8.0 of the 2021-2025 Annual Monitoring Reports for the Landfill Site.
◉ **No Changes to site design and operation are recommended** ○ **The following change(s) to the site design and operation is/ are recommended:**	Type Here

Name:	Colin Ross, B.Sc., P.Geo.		
Seal:	Add Image		
Signature:		**Date:**	20-Mar-2026
CEP Contact Information:	Colin Ross		
Company:	Azimuth Environmental Consulting Inc.		
Address:	642 Welham Road, Barrie, ON 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:		**Date:**	Select Date
Signature:		**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)	Butternut Creek Wetland
Distance(s)	on-site

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:	◉ Yes ○ 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):	○ Yes ◉ No ○ **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 (change in name or location, additions, deletions)	Date
SW6 during fall event	location was dry and not sampled	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.	◯ **Yes** ◉ **No** ◯ **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:	◯ **Yes** ◯ **No** ◯ **Not Applicable**	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	Description/Explanation for change (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):	◉ **Yes** ◯ **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
total phosphorus iron unionized ammonia	0.03 mg/L 0.3mg/L 0.02 mg/L	>100% >100% >100%
Type Here	Type Here	Type Here
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)?	◉ **Yes** ○ **No**	concentrations have been found to be elevated / exceeded historically in background locations with the exception of unionized ammonia, however, ammonia concentrations were noted at many locations including background locations to be elevated during the April 2023 monitoring event in the absence of other leachate indicator parameter such that the ammonia lab data is likely not representative.

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.	◉ **Yes** ○ **No**	Some variability exists over time with respect to parameter concentrations however, there are no upward trends and it is noted that this feature is not directly connected with other surface water features.
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)):	◉ Yes ○ No ○ Not Known ○ Not Applicable	If yes, provide details and whether remedial measures are necessary (Type Here) attenuation is adequate to limit exceedances noted in GW monitors to be found in SW locations. A such, no remedial measures proposed
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	○ **Yes** ◉ **No** ○ **Not Applicable**	

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:

19-Mar-2025

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

◉ **No Changes to the monitoring program are recommended** ○ **The following change(s) to the monitoring program is/are recommended:**	Type Here
◉ **No changes to the site design and operation are recommended** ○ **The following change(s) to the site design and operation is/are recommended:**	Type Here

CEP Signature	
Relevant Discipline	Hydrogeology
Date:	20-Mar-2025
CEP Contact Information:	Colin Ross
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Address:	642 Welham Road, Barrie, ON L4N 9A1
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