

June 30, 2026

Courtney Redmond, District Manager
Peterborough District Office
2nd floor, 300 Water Street Robinson Place, South Tower
Peterborough ON, K9J 8M5

Dear Ms. Redmond,

RE: Submission of Laxton Landfill Site Annual Monitoring Report and Notification of Trigger Parameter Exceedance

Please find enclosed the Annual Monitoring Report for the reporting period ending December 31, 2025, for the Laxton Landfill Site. The report documents an exceedance of the established trigger criteria for Total Dissolved Solids (TDS) at monitoring well MW3. We wish to bring this exceedance to the Ministry's attention and provide the associated discussion and recommendations outlined within the report.

As noted by Azimuth, the overall groundwater conditions at this location appear to be stable. However, consecutive trigger parameter exceedances were identified at MW3 for TDS and confirmatory sampling was not undertaken. As a result, the next subsequent monitoring event conducted in April 2026 was reviewed to further assess conditions at this location.

The established trigger criterion for TDS at MW3 is 340 mg/L. The April 2026 monitoring results indicated that the TDS concentration at MW3 continues to exceed the trigger criterion, with a measured concentration of 344 mg/L. Over the past five years, TDS concentrations at MW3 have fluctuated within a range of 277 mg/L to 381 mg/L, with the results observed during 2025 and 2026 demonstrating a subtle decreasing trend. MW3 was historically designated as the eastern boundary trigger monitoring well. Since that time, monitoring well MW20 has been installed along the eastern road allowance boundary and is considered a more representative downgradient trigger monitoring location for this portion of the site.

Given the addition of MW20 and the evolving understanding of groundwater flow conditions in the area, including the influence of the beaver dam-controlled pond to the north, the City would like to continue monitoring at regular frequency and review the effectiveness of MW3 as a trigger monitoring location. Potential removal of MW3 as a trigger location and proceeding with MW20 may better align the trigger monitoring program with current site conditions and the existing monitoring network.

Based on the assessment provided in the Annual Monitoring Report, no further actions are recommended at this time beyond the continuation of the established groundwater monitoring program. Should future monitoring indicate increasing TDS concentrations or changing groundwater conditions, potential mitigation measures will be reviewed and proposed, if necessary.

Should the Ministry have any questions regarding the enclosed report or require any additional information, please do not hesitate to contact the undersigned.

Sincerely,



Kayla Pantaleo,
Regulatory Compliance Office

Cc. City of Kawartha Lakes, Manager of Waste Management, Heather Dzurko
MECP, Environmental Compliance Officer, Jacob Mohns
Azimuth Environmental, Senior Hydrogeologist, Colin Ross



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Laxton Landfill Site

3225 Monck Road

City of Kawartha Lakes

Prepared for City of Kawartha Lakes

AEC Project No. 26-010 | June 2026



Environmental Assessments & Approvals

June 30, 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 – Laxton Landfill Site

Dear Kayla:

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to provide the 2025 Annual Monitoring Report (AMR) for the Laxton Waste Disposal Site (Site). The data and interpretation included is to provide 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 in compliance with the existing Environmental Compliance Approval (ECA) and applicable Provincial standards. This assessment also interprets the longer-term trends at the Site such that an appropriate monitoring program can be recommended.

Trigger exceedances were noted in 2025, however, the data indicates that stable conditions exist such that no mitigation measures are proposed at this time, beyond continued monitoring. Overall, the Site continues to have no significant influence on the surrounding environment. The continued absence of detectable landfill gas at the Site would suggest that ongoing gas monitoring is not warranted assuming appropriate precautions are present.

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



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

c.c. MECP – Peterborough District Office



Table of Contents

	page
Letter of Transmittal.....	i
EXECUTIVE SUMMARY	1
1.0 INTRODUCTION.....	4
1.1 Site Background	4
2.0 GEOLOGY	4
3.0 HYDROGEOLOGIC INTERPRETATION.....	6
4.0 SUMMARY OF 2025 MONITORING PROGRAM.....	10
4.1 2025 QA/QC Samples	12
4.2 Ground Water & Leachate.....	13
4.2.1 Ground Water & Leachate Flow	13
4.2.2 Background Ground Water Quality	14
4.2.3 Leachate Quality	14
4.2.4 Downgradient Ground Water Quality	17
4.2.5 Reasonable Use Policy.....	22
4.3 Surface Water	25
4.3.1 Comparison of Ground Water to PWQO / CWQG	27
4.4 Organic Contamination Evaluation.....	28
4.5 Trigger Mechanism Evaluation	29
4.5.1 Ground Water Trigger Program	29
4.5.2 Surface Water Trigger Program.....	29
4.6 Graphical Analysis.....	30
4.7 Landfill Gas Monitoring.....	31
5.0 SITE OPERATIONS.....	31
5.1 Site Maintenance	32
5.2 2025 Waste Volumes / Site Capacity	32
5.3 Recyclable Materials Summary	32
5.4 Compost Operations	33



6.0 CONCLUSIONS.....	33
7.0 RECOMMENDATIONS.....	35
8.0 REFERENCES.....	37

List of In-Text Tables

	page
Table 1: Monitoring Well Details.....	7
Table 2: Ground Water Flow Velocities.....	8
Table 3: 2025 Monitoring Program	10
Table 4: QA/QC Analysis	13
Table 5: Average Leachate Indicator Parameter Concentrations	19
Table 6: Reasonable Use Exceedance Summary Table.....	24
Table 7: Average Leachate Indicator Parameter Concentrations at Surface Water Locations 26	
Table 8: 2025 VOC Detections.....	28
Table 9: Ground Water Trigger Limits	29
Table 10: Surface Water Trigger Limits	29
Table 11: 2025 Trigger Parameter Exceedance Summary Table	30
Table 12: Summary of Recyclable / Diversion Materials Received in 2025	32
Table 13: Proposed 2026 Monitoring Program	35

List of Figures

Figure 1	Study Area Location
Figure 2	Site Layout
Figure 3	Shallow Overburden Ground Water Elevations (April 2025)
Figure 4	Shallow Overburden Ground Water Elevations (October 2025)
Figure 5	Geological Cross Section (A-A')
Figure 6	Geological Cross Section (B-B')



List of Appendices

Appendix A:	ECA and MECP Communications
Appendix B:	Borehole Logs
Appendix C:	Ground Water Elevation & Landfill Gas 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



EXECUTIVE SUMMARY

The Laxton Landfill Site (Site) is located approximately two (2) kilometres west of Highway 35 at 3225 Monck Road, within the geographic Township of Laxton, in the City of Kawartha Lakes. The Site is currently operational and is able to accept municipal waste, non-hazardous solid industrial waste, commercial waste and leaf and yard waste. The Site also operates as a transfer facility such that it can accept household hazardous waste (HHW), leaf and yard waste, metals, and electronic equipment (WEEE). However, it is noted that HHW is not currently accepted at the transfer facility as the proper infrastructure is not present for proper handling and storage.

The Site has an approved capacity of 125,000 m³, but the 2024 ECA amendment has created an additional 22,500 m³ of capacity for a total of 147,500 m³. As of 2025, there is a remaining lifespan of approximately 3 - 7 years.

The Site is located along an ice contact sand and gravel formation that extends along a southwest – northeast axis that is surrounded by low lying peat wetland areas. Given the local topography, the height of these deposits appears to be vertically limited; however, the presence of the sand and gravel pit to the southwest and northeast would indicate that the thickness may have been historically greater in that area. The soils underlying the Site are granular varying from coarse sands and gravel to silty fine sands that extend to a bedrock contact which was observed at MW10 & MW19 to be approximately 17 to 23 m below ground surface (mbgs). Peat deposits are present away from the waste mound into the wetland areas that surround the landfill with depths up to approximately 2 m. As the water table at the Site is relatively shallow, the majority of monitoring points at the Site are also shallow.

Despite weak hydraulic gradients at the Site, ground water flow has been shown over the years to be toward the southeast and northeast. There is some variance in flow paths due to the variance in pond levels north of the waste mound as a result of changing beaver dam conditions. Shallow ground water around the site flows through Peat bogs which allow very slow water movement. Despite this overall easterly ground water flow path, some degree of radial dispersion from the waste mound occurs. The shallow surface water tributary to the north and east of the waste mound represents the local ground water discharge feature. The lack of leachate influence observed in the ground water indicates that the radial flow extent from the landfill Site is quite limited.



In general, the ground water chemistry has remained relatively consistent over the past decade. This would be anticipated in this granular geologic setting given that the landfill Site has been in operation for the past four decades. Previous shifts in water quality starting in ~2016 at a number of locations to the south have been determined to be sourced to localized changes in ground water elevations owing to development of a beaver pond north of the Site, which has altered the hydraulic conditions at the Site. However, over the past few years, stability has developed at all of these locations suggesting a new steady state condition has been reestablished.

The extent of this southeastern gradient is limited a short distance south of the waste mound with the primary regional flow path still being interpreted to be northeast along the more granular esker deposits. The geochemical trend noted at MW16-I and MW20 supports this interpretation. Some RUP exceedances (hardness, barium, aluminum, manganese, DOC and TDS) are noted within some of the boundary wells; however, these are mainly limited to elevated concentrations of naturally occurring earth elements (iron, aluminum and manganese) and natural organic sources (DOC) attributable to the surrounding peat deposits and not the landfill. Therefore, the Site is deemed to be in compliance.

Although ground water discharge is within the local tributary north and east of the landfill, the impacts would appear to be quite limited. Any elevated parameters in the tributary are related to the natural wetland water quality rather than leachate. This is evident through the minimal concentrations for chloride, ammonia and boron. Provincial Water Quality Objectives (PWQO) exceedances were noted in 2025, similar to previous years; however, these exceedances are attributed to the wetland water quality and associated geochemically reduced conditions readily mobilizing natural earth elements such as iron.

The results for 2025 gas monitoring program are consistent with previous years. Given the lack of detections, limited land use that surrounds the landfill and limited unsaturated thickness surrounding the waste mound to facilitate methane migration, methane monitoring is not warranted at this Site. It is recommended that this monitoring component could be eliminated. Despite this, an appropriate due diligence measure would be to ensure Site staff continue to utilize a hand-held combustible gas meter within any on-Site, enclosed structures to ensure landfill gases do not accumulate in those structures.



Based on the findings of the 2025 annual monitoring, as well as previous reporting and recommendations, it is proposed that the 2026 monitoring program for the Site remain as what is included in the current ECA.



1.0 INTRODUCTION

The City of Kawartha Lakes (City) is responsible for the operation and maintenance of the Laxton Landfill Site (Site) in accordance with the original Provisional Environmental Compliance Approval (ECA) (No. A321304) (Appendix A) issued by the Ministry of Environment, Conservation & Parks (MECP) February 14, 1980 and last amended October 10, 2024 to create a volumetric expansion of 22,500 m³ within the existing waste footprint for an overall capacity of 147,500 m³. 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 8.0.

The Site is located approximately two kilometers west of Highway 35 at 3225 Monck Road, within the geographic Township of Laxton, in the City of Kawartha Lakes (Figure 1). The Site is 29 hectares in size which includes the 2.5 hectare waste disposal area (Figure 2). The boundary of the Site is irregularly shaped and is bordered by a swath of mixed forest. A wetland (and an associated watercourse flowing east) is present centrally in the Site, north of the waste mound. A gravel pit is situated along the western limit of the Site and a Public Works Yard is present along its southern boundary at Monck Road. An Ontario Hydro easement crosses the Site in a southwest to northeast orientation. Following the most recent amendment to the ECA, the Site is approved to accept municipal waste, non-hazardous solid industrial wastes, commercial waste and leaf and yard waste. The Site also operates as a transfer facility such that it is approved to accept household hazardous waste (HHW), leaf and yard wastes, metals and electronic equipment (WEEE). However, it is noted that HHW is not currently accepted at the transfer facility as the proper infrastruPture is not present for proper handling and storage. The Site relies on natural attenuation for leachate and landfill gases so that there are no off-site impacts.

2.0 GEOLOGY

According to Chapman and Putnam (1984), the Laxton Landfill Site is located within the physiographic region called the Carden Plain. The Carden Plain is located between the Kawartha Lakes and Lake Couchiching and is comprised of a limestone plain with very



little overburden deposits. During the last glaciation, this area was inundated by Lake Algonquin (no longer present today), and as a result some beaches and offshore sand deposits from this historic lake are found in this area.

Based on previous reporting, as well as geological mapping of the area, it is apparent the Site is located along an ice contact sand and gravel formation that extends along a southwest – northeast axis that is surrounded by low lying wetland areas. Given the local topography, the height of these deposits appears to be vertically limited; however, the presence of the sand and gravel pit to the southwest and northeast would indicate that the thickness may have been historically greater in that area. The soils underlying the Site are stated to be granular, varying from coarse sands and gravel to silty fine sands that extend to a bedrock contact. At the Site, the bedrock contact was observed to be approximately 17 to 23 m below ground surface (mbgs) at MW10 & MW19, respectively. Peat deposits are also present around the landfill and in the wetland areas that surround the landfill with depths up to approximately 2 m. Since the water table at the Site is relatively shallow, the majority of the monitoring points at the Site are also shallow.

The Laxton Landfill Site is at a geologic transition point (ice-contact deposits) between an upland area that has a greater thickness of glaciofluvial sand and gravel deposits (~25 m) than an adjacent lower lying “wetland area”. The overburden sediments are much finer grained to the south of the landfill, while coarser deposits are found beneath the landfill itself (*i.e.*, MW10 & MW19 - Appendix B). It is noted that this distribution is typical of an ice-contact deposition or esker complex as the coarser materials are situated along the centre of this geologic feature. Regional mapping suggests the esker orientation is northeast to southwest through the Site, which accounts for the sand and gravel pits located immediately northeast and southwest of the Site.

Equally important to the Site's geochemistry, is the presence of a peat bog surrounding the landfill Site. A peat thickness of up to 2 m was reported during the drilling of MW12, MW13, MW14, MW16, MW17 and MW18. Peat forms in wetland conditions, where a near permanent inundation of shallow surface water is present, which obstructs the flow of oxygen from the atmosphere. This lack of oxygen slows the rate of decomposition (*i.e.*, anaerobic conditions) and creates a naturally geochemically reduced condition. The peat development takes many years to accumulate, and essentially, biomass production exceeds the rate of decay propagating the development of a peat bog. Traditionally, soils that occur beneath peat bogs are oxygen- and nutrient-poor, in addition to being much more acidic than other wetland environments.



The underlying bedrock in the immediate area is stated to range between Precambrian Gneisses (OGS, 1991) and Ordovician age limestone (Armstrong & Dodge, 2007). The well log for MW10 indicates the bedrock below the Site is of granitic origin. The elevated fluoride concentrations in the water quality from this location is likely natural and related to the bedrock mineralogy. The mapping also indicates that the Site is located near a transition point between the Paleozoic limestone and Precambrian bedrock.

Additional information provided in the 2009 annual report (Cambium, 2010) regarding the regional geology indicated the presence of a buried bedrock ridge that extends northeastward. A review of some local well records would support this as most of the local well logs indicate limited overburden thickness (<3 m) with the exception of immediately below the Site.

3.0 HYDROGEOLOGIC INTERPRETATION

The ground water flow system underlying the Site is controlled by the local geology. Ground water flows principally through both the underlying sand and gravel unit from the esker as well as the more regional silty fine sand aquifer, which due to their high permeability forms the pathway of least resistance. Literature and previous reporting confirm these units are underlain by Pre-Cambrian bedrock, although local MECP well records indicate some locations have limestone and shale atop the Pre-Cambrian contact. As the Site is currently operated as a natural attenuation facility, the wastes are deposited atop the native overburden materials, as such; there is an expected hydraulic connection between the waste mound and underlying aquifer system. A significant amount of low permeable interim and final cover has been emplaced across the site to reduce infiltration and leachate generation.

The ground water elevations have been monitored from 2002 to present. The water elevation data (Appendix C) suggest that the ground water table shows minimal seasonal variation (i.e., <1.5 m) at the Site. The hydraulic gradient is also quite muted at this Site with a differential lateral hydraulic head of less than 1 m over the entire Site (Figures 3 & 4). A description of the monitoring wells present at the Site is provided in Table 1 below.



Table 1: Monitoring Well Details

Monitor	Depth (m)	Screened Unit	Location
MW1	6.1	Medium Sand / Gravel	Waste Perimeter
MW2	6.1	Medium Sand / Gravel	Waste Perimeter
MW3	5.5	Medium Sand / Gravel	Waste Perimeter
MW4	7.6	Silty Fine Sand	Waste Mound
MW6	6.1	Coarse to Fine Sand	Waste Perimeter
MW7	6.1	Coarse to Fine Sand	Waste Mound
MW8	6.1	Coarse to Fine Sand	Waste Mound
MW10	25.6	Bedrock	Waste Perimeter
MW12	6.0	Silty Fine Sand	Downgradient
MW13	6.1	Silty Fine Sand	Downgradient
MW14	6.1	Silty Fine Sand	Background
MW15	4.9	Refuse	Waste Mound
MW16	4.6	Very Fine Sand	Downgradient
MW16-I	13.2	Silty Sand	Downgradient
MW17	3.0	Sand	Upgradient
MW18	3.0	Sand	Upgradient
MW19	16.8	Very Fine Sand	Downgradient
MW20-I	8.5	Sand	Waste Perimeter
MW20-II	5.5	Sand	Waste Perimeter

The permeable soils limit the lateral hydraulic gradient present around the Site. However, the lateral gradient; although slight, is interpreted to be predominantly toward the southeast and northeast.

Previous interpretations have stated that a ground water divide extends along the southern extent of the waste mound which likely corresponds to the centre line of the esker complex. Given the relative elevation of the landfill compared to the surrounding low-lying wetland areas, ground water originating from the landfill would migrate in a radial direction from the waste area into the silty-fine sand aquifer. The regional ground water flow is interpreted to be in an easterly to northeasterly direction based on the historic ground water elevations and geological setting. The presence of a buried bedrock trough extending to the northeast is likely a submerged extension of the ice contact formation that is present beneath the landfill Site. This is supported by the fact that sand and gravel pits are located along this axis in both directions. As such, the coarser grained materials within this feature likely provide a migration pathway for leachate influenced ground water migrating from the Site in this direction.



Starting in 2018, increasing concentration trends to the south (MW12, MW13, MW16, MW16-I & MW19) began to develop. When reviewing the conditions at the Site, specifically those immediately north of the waste mound over the past few years, it is noted that MW17 had become inaccessible over the past seven years due to elevated surface water levels resulting from a beaver dam in proximity to SWC. As the overburden material is known to be granular, there is a likely hydraulic connection between the surface water levels and the underlying ground water conditions, such that this flooding north of the waste mound has the ability to slightly skew the local hydraulic gradients. The elevation of the surface water in proximity to MW17 is likely at or above 271.14 m above mean sea level (mASL). This elevation is approximately 0.8 m above the historical average ground water elevation at MW17. Given the ground water elevation differentials (hydraulic gradient) are typically less than 0.2 m across the Site, this increase in the gradients to the south, at least locally alter the ground water flow patterns in proximity to the waste mound, which is evident in the ground water elevation contouring (Figure 3 & 4).

Based on the hydraulic properties, ground water velocities were calculated, with the results summarized in Table 2 below. These are noted to be reflective of the general overall conditions at the Site.

Table 2: Ground Water Flow Velocities

Hydrogeologic Unit	Hydraulic Conductivity (m/s)**	Lateral Gradient (m/m)***	Porosity	Ground Water Velocity (m/yr)
Sand and Gravel*	1.6×10^{-4} **	0.002	0.25	40
Silty Sand	1.2×10^{-6} **	0.002	0.25	0.3

Notes: *Ice contact deposits

**Based on average Hazen permeabilities presented in Hydroterra, 2002

***Gradient calculated based on October 2025 GW elevations

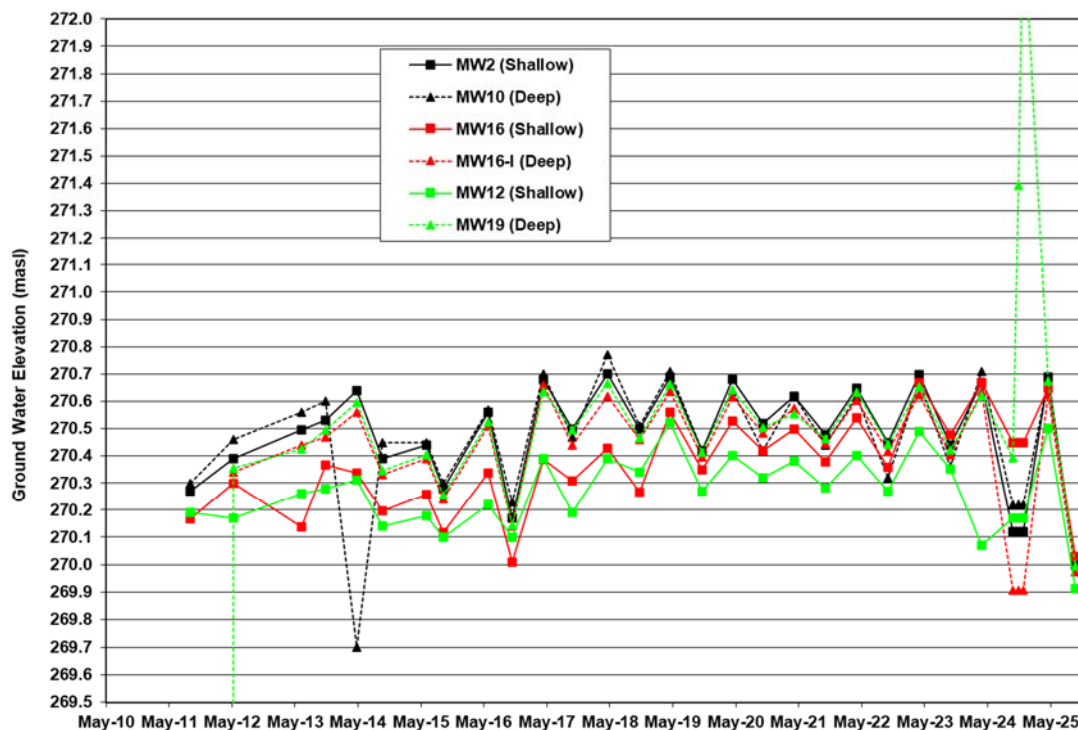
Given the northeast extent of the coarse sand and gravel deposits and ground water flow rates presented above, it is apparent that these deposits likely provide the primary pathway for potential leachate migration from the Site. As preferential ground water flow exists within this coarse sand and gravel unit, at least in a more regional context (beyond influence of beaver pond), the overall concentration of any leachate influenced parameters would be potentially further diluted through the advection and mixing



processes within this faster flowing sand and gravel unit. As such, attenuation within this unit would limit the extent of leachate impacts downgradient of the waste mound.

Characterization of vertical gradients between the shallow and deep overburden at the Site is determined through the nest present at MW16 (MW16 – shallow, MW16-I – deep), as well as comparison between MW12 (shallow) and MW19 (deep), which are in proximity to each other. Similarly, MW2 was compared to MW10 (bedrock). As illustrated in the graph below, the ground water elevation differences between these vertical pairs of monitoring wells are very low the majority of the time. However, a small but consistent upward vertical gradient is present between the shallow and deep (overburden and bedrock) for most locations over time. MW2 & MW10 have shown a more pronounced and consistent downward gradient over the past several years. MW20-I and MW20-II monitoring wells are to be surveyed in 2025, and thus have not been included in the graphic below. There are no notable deviations to report for the 2025 data.

Graphic 1: Vertical Ground Water Gradients





4.0 SUMMARY OF 2025 MONITORING PROGRAM

The 2025 monitoring program for the Site was undertaken by Azimuth Environmental Consulting, Inc. (Azimuth) and The City of Kawartha Lakes (City) staff. Azimuth completed the Spring (April) and Fall (October) monitoring events. This included collection of ground and surface water samples and gas monitoring during these events. City staff completed the remaining landfill gas monitoring events during January, February and March, while the required summer measurement was not completed in 2025.

This program (which includes 19 monitoring wells, five surface water locations and two gas monitors) is similar to what had been completed over the past several years. For reference, the ground water, surface water and gas monitor locations are illustrated on Figure 2.

Table 3: 2025 Monitoring Program

Monitoring Station	Frequency	Parameters
<u>Ground Water</u> MW1, MW2, MW3*, MW4*, MW6, MW7, MW8, MW10, MW12, MW13, MW14, MW15, MW16, MW16-I*, MW17, MW18, MW19, MW20-I & MW20-II	Semi-Annual (April / May & September / October)	DOC, phenols, conductivity, hardness, TKN, fluoride, sulphate, chloride, phosphorous, nitrate, nitrite, ammonia, alkalinity, calcium, magnesium, potassium, sodium manganese, copper, lead, molybdenum, zinc, barium, boron, cadmium, chromium, iron, aluminum, arsenic, cobalt, nickel, silver, strontium, vanadium, pH, COD, TDS * VOCs – annual during Fall event Water Level Measurements



Monitoring Station	Frequency	Parameters
<u>Surface Water</u> SWA, SWC2, SWD, SWF & SWG	Semi- Annual (April / May & September / October)	BOD, phenols, DOC, TKN, fluoride, nitrate, nitrite, ammonia, alkalinity, hardness, chloride, phosphorous, sulphate, aluminum, antimony, arsenic, barium, boron, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, potassium, selenium, silver, sodium, strontium, thallium, vanadium, zinc, pH, conductivity, TSS, TDS, COD, turbidity

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

Surface water samples were collected at a depth about equal to half of the surface water features total depth (where possible), while minimizing the potential for sediment entrainment as samples were not field filtered.

For both ground and surface water sample collection, field parameters are collected including pH, electrical conductivity, temperature and dissolved oxygen (surface water only). Flow, if present is documented and measured.

Landfill gas is collected at all monitoring well locations using an RKI Eagle Photo Ionization Detector (PID) which is capable of measuring methane. This instrument has an accuracy of +/-5% of reading. It is noted that this instrument is commonly used for landfill gas monitoring within landfill gas monitoring networks.

Azimuth calibrates the gas meters prior to each monitoring season, with “bump” testing completed ahead of every monitoring event using methane gas standards at the office to confirm the equipment is measuring correctly. If bump testing indicates variance from standard, then a full calibration is completed, or the unit is sent in for servicing / cleaning of the unit.



The 2025 program was completed as required with the exception of ground water sample collection from MW15 (dry), MW17 (area flooded) and MW18 (area flooded) during spring & fall monitoring events, and surface water locations being dry during and fall (SWA & SWD) monitoring events.

In 2025, the analytical testing was completed by Caduceon Environmental Laboratories (Caduceon) of Richmond Hill or Kingston, Ontario. It is noted that 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.

4.1 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, four QA/QC samples were collected out of 38 routine samples. 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 table below. 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. It is noted that this variance is 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. The majority of the parameters listed had concentrations within the historical range for the corresponding parameter and location.



Table 4: QA/QC Analysis

April (MW6)			
Parameter	Results (mg/L)		Difference (%)
Ammonia	0.22	0.11	67%
Antimony	0.0002	0.0001	67%
April (MW8)			
Parameter	Results (mg/L)		Difference (%)
Iron	0.011	0.009	20%
Phenols	0.003	0.002	40%
Ammonia	0.09	0.06	40%
Aluminum	0.02	0.01	67%
October (MW4)			
Parameter	Results (mg/L)		Difference (%)
Fluoride	0.2	0.1	67%
October (MW20-I)			
Parameter	Results (mg/L)		Difference (%)
Ammonia	0.25	0.36	36%

4.2 Ground Water & Leachate

4.2.1 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 in 2025 was generally consistent with the historical data set.

The 2025 ground water elevations, as well as the historical data set have been included in Appendix C.

The long-term trend in the water elevation data shows that the measurements at all monitoring locations fall within a general one meter range from ~270 mASL to 271 mASL, with minor and isolated exceptions for the period of record.

The other important point to this interpretation as identified above (Section 3.0) is that there is a small lateral hydraulic gradient and therefore little actual off-site ground water movement.

As noted previously, contouring of the measured water level data demonstrates the direction of ground water flow in the vicinity of the waste (Figures 3 & 4), which is similar to previous years with a generally south eastern flow path which is interpreted to shift



towards the northeast along the buried bedrock trough. The data is generally consistent between the Spring and Fall.

4.2.2 Background Ground Water Quality

The background ground water chemistry is characterized at MW14. As noted above, ground water flow has fluctuated between east to southeast, so MW14 is out of the direct flow from the landfill; but is also sufficiently removed from the waste mound so not to be influenced by the radial dispersive flow detected within this system. As such, it represents the most appropriate background location within the current monitoring well network. The same has historically been noted to be true with the MW13 monitoring location, which is situated immediately northeast of MW14; however, this location has become leachate influenced over the past six years owing to the shift in ground water flow direction towards the south with the development of the beaver pond north of the waste mound. A subtle increasing trend has been observed for boron, chloride and DOC over the past two years, which could be indicative of potential onset of leachate impacts at MW14, albeit the concentrations are still very low. If these trends continue, a new background monitoring well could be considered, although there is a substantial historical dataset representing background water quality at this site.

The background water quality can be characterized as a calcium / magnesium carbonate dominated water. The calcium content is twice the magnesium content. As a result, the water quality is naturally hard. The water quality has a low level of mineralization, which has resulted in consistent concentrations for most parameters. The water quality does show a geochemically reduced signature typical of an anoxic peat wetland environment and as a result the iron solubility limit is increased in this reduced state. The organic nitrogen (*i.e.*, TKN minus ammonia) and phosphorous concentrations indicative of decaying vegetation reflect the peat environment present at this Site. Iron parameters routinely exceed the Ontario Drinking Water Quality Standards (ODWQS, 2006). However, these parameters are determined to be naturally sourced and are commonly found within the ground water within the Canadian Shield and associated peat environments. This is confirmed through the lack of any elevated leachate indicator parameter and the consistency in the data over time, outside the recent trending noted above (Appendix E).

4.2.3 Leachate Quality

Presently, the best available estimate of leachate quality at the Laxton Landfill Site is the analytical data obtained from MW4. This monitor is screened immediately below the waste (Figure 2). The concentration of selective leachate parameters within the waste



area for all samples collected between 2008 and 2025 has been illustrated in the time trend graphs provided in Appendix F. Summary tables are also included in Section 4.2.4, which summarize the average concentrations for several leachate indicator parameters.

For the Laxton Landfill Site, the leachate strength is relatively low despite it still being an active Site; but this is likely due to the fact that the landfill has a relatively small footprint and receives a limited waste volume per annum. The dominant geochemical signature remains as a calcium carbonate saturated water. However, the leachate signature for the Laxton Landfill Site shows geochemically reduced conditions as noted below. Several parameter concentrations are elevated over the background water quality and it is these differences that are used to define the leachate influence in the surrounding environment.

One of the most significant deviations noted between the leachate and natural background levels is with respect to nitrogen species (*i.e.*, Total Kjeldahl Nitrogen [TKN] and total ammonia [as N]). TKN is a measure of the total nitrogen in the system (organic nitrogen + ammonia). An elevation in TKN concentration relative to ammonia concentration would be typical of the peat environment present at this Site, where the organic nitrogen (natural source) would represent the primary nitrogen species. An elevated concentration of both TKN and ammonia is indicative of a geochemically reducing environment, as is typical of ground water conditions in the immediate vicinity of any landfill Site. It is noted that wetland environments such as present around the Site do contain measurable concentrations of natural ammonia as a result of the geochemically reduced conditions present in this environment as noted historically at MW18 (upgradient). As such, it is important to review parameter concentrations relative to other leachate indicator parameters to determine potential for leachate source vs. natural.

The presence of TKN and ammonia within a landfill environment is primarily due to the consumption of available dissolved oxygen within the subsurface by bacteriological activity. This reaction 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] dissolved in the leachate). This accounts for the evaluation of both nitrogen and sulphate parameters when assessing leachate impacts. The high-water table condition and organic rich environment of the



bog replicate this poor-oxygen environment and accounts for the detectable concentration of ammonia and TKN, albeit significantly diminished from a landfill setting.

These geochemically reducing conditions will also allow for valence changes in many earth metal species which tends to increase the measured concentration of metal ions. This is evident at this Site with the significantly elevated iron and manganese concentrations (see Table 4 – Section 4.2.4). The mineral rich waters from the landfill have elevated total dissolved solids (TDS) and also show an elevated chemical oxygen demand (COD) as a result of the reduced conditions and presence of organics. Dissolved organic carbon (DOC) provides a similar measure of the carbon / organic rich waters from the landfill. All three of these general parameters are indirect measurements of the landfill geochemistry. Other traditional landfill parameters are often elevated such as chloride, and boron, but to a much lesser extent than the COD, TDS and DOC concentrations owing to their relative presence / availability in the waste stream.

Boron is also a more definable leachate parameter given its elevated concentration in the leachate and relatively minimal concentrations in the background water quality. This parameter is also highly mobile and has been identified as one of the parameters in some of the downgradient locations that has indicated more notable shifts in concentrations relating to the previously discussed hydraulic gradient shifts associated with the beaver pond.

A final characteristic of the leachate quality at MW4 is its relative consistency over time. Although some variability and declining trends have been noted for certain parameters, the overall water quality has remained relatively similar for the past 17 years, without any increasing trends despite being an active site. The declining concentration trends are likely the result of the active waste area being further from the northeastern end of the waste mound. Similarly, there has also been more cover material added in the northeast over time which may lower the leachate generation in that area. Finally, the flooded conditions immediately north of this area discussed in Section 3.0 may contribute to localized alterations in the ground water flow patterns that could influence the chemistry with more dilute background water quality flowing towards this location from the north.

In summary, the Laxton Landfill Site will continue to yield a relatively consistent geochemical signature because it maintains a quasi-steady state condition. This is due to low annual landfill tonnages and active microbial population that breaks leachate down. Over time, the carbon-rich source present in the landfill will be depleted which will result in geochemical changes bringing conditions in line with the background.



Despite some subtle declining trends which are likely due to localized changes in landfilling and water levels, the overall leachate quality is consistent. Therefore, the effect the Laxton Landfill Site has on its surrounding environment would continue to be relatively steady and minor throughout the operational lifespan of the Site and will likely show a slow decline over time.

The leachate indicator parameters (LIPs) identified for this Site in 2025, are the same as to 2024 and are as follows:

- | | | |
|----------------------------------|------------------------|--------------|
| • Total Dissolved Solids (TDS) | • Calcium | • Alkalinity |
| • Chemical Oxygen Demand (COD) | • Chloride | • Iron |
| • Dissolved Organic Carbon (DOC) | • Manganese | • Sodium |
| • Total Kjeldahl Nitrogen (TKN) | • Potassium | • Sulphate |
| • Boron | • Ammonia ¹ | |

4.2.4 Downgradient Ground Water Quality

Currently the ground water quality downgradient of the Laxton Landfill Site is monitored via 16 locations, with many of these locations immediately adjacent to the waste area. These monitoring wells target three aquifer units including shallow wells within the silty sand (12), deep sand and gravel (3), as well as a single well screened within the underlying bedrock.

The Site is located in a stagnant area which can be characterized as marshy / boggy lands and slow ground water movement. The abundance of peat materials in the Site vicinity attests to this condition. The slow movement and organic-rich peat materials create a naturally geochemically reduced environment, which also portrays an elevated dissolved organic signature sometimes associated with high nitrogen levels. This natural condition can be confused with the geochemically reduced conditions created by the landfill setting and therefore caution must be exercised in interpreting results. The peat will also readily sorb organic compounds and further attenuate the leachate plume as discussed below.

The geochemically reducing conditions generated within the landfill have also created additional indicators which affect the overall water quality at the Site. These reduced conditions allow for the valence changes of naturally occurring earth elements such as iron and manganese, which as a result cause them to be more soluble and present at

¹ Unionized ammonia for surface water assessment



more elevated concentrations within the groundwater. However, the landfill also generates an ammonia signature and slightly elevated chlorides. Another parameter which is likely solely attributable to the landfill is boron. Although boron is elevated in the leachate it is consistently below detection limits at most downgradient locations. The absence of these particular components of the landfill leachate signature in the surrounding monitoring network is indicative of natural water quality instead of leachate. Thus, while downgradient locations may show elevated iron and manganese concentrations as well as elevated DOC, they represent the natural peat environment when absent of an elevated more definable LIP's ammonia and boron.

A review of the geochemical database has indicated that the water quality at the Site has generally consistent water quality, unless influenced by leachate. A summary of the average concentrations for leachate indicator parameters in the surrounding wells at the Site is provided in Table 5 below. The values in this table are averages over the previous five years (2021– 2025) to represent the most recent data.

As can be observed, downgradient leachate influence is negligible at most locations, with the exception of MW1, MW2, MW3, MW7, MW12, MW13, MW16 & MW20-I which have ~~the most~~ elevated leachate indicator concentrations (*i.e.*, ammonia, alkalinity, chloride & boron).

It is noted that these perimeter locations are in proximity to the toe of the waste such that leachate influence is expected. These results support the previously interpreted potential ground water flow direction to the northeast as MW3 represents the closest downgradient monitor along the ice contact formation. With the active waste area now being in closest proximity to MW7, increased concentrations for a number of parameters have been noted and will likely continue for the duration of filling in this area. However, the trends are relatively muted owing to the low tonnages of waste accepted at the landfill and low source input. Similarly, with the movement of landfilling to the southwest, MW1 began to show leachate influence in 2015, which relates to the proximity of waste to this location as well as the interpreted northeastern flow pattern such that any southern flow component is likely shifted north within the bedrock trough such that concentrations are more elevated at that location than monitors further east.



Table 5: Average Leachate Indicator Parameter Concentrations

Parameters	ODWQS	Background	Leachate	Downgradient (in order of proximity to waste)													
		MW14	MW4	MW8	MW1	MW2	MW3	MW6	MW10*	MW7	MW16-I	MW16	MW20-I	MW20-II	MW19	MW13	MW12
Alkalinity	500	109	612	158	165	188	285	250	217	270	141	196	275	166	117	140	135
Calcium		28	187	35	55	56	78	79	155	74	39	48	75	41	29	35	32
Chloride	250	5	2	7	10	10	19	2	17	26	10	11	25	6	5	10	7
DOC	5	3	27	25	7	6	12	16	10	15	5	6	9	11	4	3	4
Iron	0.3	0.4	95	0.01	0.01	0.01	17	3.2	5	7	0.04	0.1	1	3	0.01	0.2	1
COD		9	107	60	13	16	36	37	20	139	10	525	40	59	14	10	20
Manganese	0.05	0.01	6	1	2	2	3	0.2	0.4	1	0.2	1	1	1	0.1	0.02	0.1
Sodium	200	2	5	2	18	14	19	3	15	28	10	15	20	6	8	14	13
Sulphate	500	15	26	7	68	41	45	23	286	46	30	31	47	14	21	33	30
TDS	500	127	621	196	248	244	355	269	511	360	185	236	352	187	145	187	175
Ammonia		0.3	8	0.2	0.2	0.4	4	0.2	0.1	6	0.1	0.2	0.2	0.3	0.1	0.1	0.2
TKN		0.4	10	5	0.5	1	4	4	0	8	0.3	2	1	1	0.3	0.2	0.4
Boron	5	0.1	0.4	0.1	1	1	1	0.1	0.4	1	0.3	1	1	0.2	0.3	1	1
Potassium		2.2	14	44	4	4	11	3	3	13	3	4	5	2	3	3	3

* Bedrock monitoring well

ODWQS - Ontario Drinking Water Quality Standards

Bold and highlighted indicates exceedance

All data in mg/L

Average Concentrations from 2021-2025 (where available)



For use of COD as an indicator parameter, which is the quantity of chemical to oxidize the water, the conditions must be carefully assessed in a peat rich environment because of the natural organic content potentially present in the water samples. For example, elevated COD concentrations at MW17 and MW18 (historically when able to be sampled)

The dilute leachate influence observed at the perimeter locations has historically been interpreted to be the result of radial dispersion the limited horizontal hydraulic and concentration gradients observed at the Site and the attenuative capacity of the natural peat layer. Any leachate influence aside from the leachate wells is observed to be relatively weak.

The one other item to note is the differing water quality observed within the bedrock (MW10), which is located at the toe of the waste. This location has several elevated leachate indicator parameters; however, there has been a notable absence of chloride, ammonia and boron, which are dominant in both MW3 & MW4. The recent exception to this is October 2023, 2024, and 2025 where TKN and ammonia concentrations were elevated above the historical range, while boron, sodium, COD, chloride, calcium and sulphate had increased concentrations in 2025 above the historical range. Similar trending has not been observed at the proximal boundary wells MW1 & MW2 and this monitor has not shown similar leachate trends to those other locations in the past which has suggested that the deep bedrock well is hydraulically isolated from the overburden. For such abrupt changes to take place, more than 10 years following trending at the other shallower perimeter locations, it is possible that the trends are more reflective of a failed annular seal than migration of leachate impacts into the bedrock. MW10 also has fluoride, sulphate and strontium concentrations that are higher than that observed in the leachate, which indicate that the water quality within the bedrock is naturally mineralized and unique from the overlying ground waters. As such there is potential for the deeper naturally mineralized water quality to change over time unrelated to the landfill. It is recommended that this trend continue to be monitored in 2026.

The newest monitoring wells MW20-I and MW20-II, located east of the waste mound at the eastern property limits (City owned road allowance) were sampled in 2025 during both monitoring events for the third year and showed relatively consistent concentrations between sampling events. The water quality at these locations is similar to other wells found south and southeast at similar distances from the waste mound with low but measurable leachate presence, although a more minimal ammonia concentrations than other locations. The deeper monitor has more elevated concentrations for most leachate indicator parameters which suggests that leachate migration is deeper within the overburden profile.



As there appears to be a slight but measurable leachate influence in the downgradient 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 appropriate monitoring program for the Site and has been illustrated at all monitoring locations in the graphs presented in Appendix F.

As can be observed in these graphs, the ground water chemistry has remained relatively consistent for the last 16 years, although some subtle, but upward trends are noted at the waste mound perimeter wells MW1, MW2, MW3 and MW7 (although more consistent recently), more distant locations at MW12, MW13 and MW16, as well as the two deep overburden monitoring wells MW16-I and MW19, all of which have been occurring for the past six to ten years, but like the perimeter locations have shown more stability the past few years. Some declining trends are also observed for chloride over the same period which may relate to an overall shift in leachate signature. It is also noted that they all show more consistent trends with respect to boron which would support a defined but weak leachate source with distance from the waste mound. Most of these trends are relatively recent, which developed between 2014 to 2016 but have become stable over the past 3 – 5 years. It is interpreted that these trends are attributed to the slight alteration of the hydraulic conditions resulting from the beaver pond located near SWC. The recent stability is interpreted to be a function of the Site reaching a steady state in the current hydraulic condition.

As discussed in Section 3.0, these flooded conditions create an increased hydraulic gradient which is directing ground water flow patterns further south, although the overall flow patterns beyond this localized condition is expected to follow the interpreted regional flow direction to the east to northeast. Another possibility for these trends could be that they are reflective of the movement of the active waste area further southwest such that they are now in a more downgradient location relative to the newly emplaced wastes. MW16-I targets the deep overburden and the trends were more limited in the shallow unit at MW16, although the hydrogeological interpretation for the Site would suggest the deeper, more granular material represents the primary flow path for ground water beneath the Site. The trends at MW12, MW13 and MW19 could have a similar rationale as at MW1 and MW2 with the alterations to hydraulic conditions or movement of the active waste area. The fact that similar trends have not been observed at MW14 would indicate these trends do not reflect an overall or regional southern flow path.



Although semi-annual monitoring has been completed at all locations historically, seasonal variation is minimal at the Site and the variation is limited to some occasional minor concentration elevations during the fall monitoring events for COD, TKN and ammonia.

In addition to the above assessment, all 2025 downgradient values were compared to ODWQS in the chemistry summary tables (Appendix E) and indicated relatively similar results to previous years. These exceedances included iron, manganese, TDS and DOC. Of these parameters, TDS is only observed to exceed in the bedrock monitor. The TDS is likely related to the elevated hardness at this location. In geochemically reduced environments, naturally occurring earth elements (*i.e.*, iron, aluminum and manganese) can show elevated parameter concentrations; however, these are more reflective of the valence state than in a dissolved phase plume migrating from the landfill. The DOC, iron and manganese reflect the geochemically reduced conditions associated with both the leachate plume and natural wetland conditions, such that the source is not easily distinguishable. As noted in the MW14 geochemistry as well as historical water quality upgradient of the waste mound at MW17 and MW8 would suggest iron, DOC, manganese and aluminum are naturally present in the background water quality.

4.2.5 Reasonable Use Policy (RUP)

Calculations with respect to MECP's Reasonable Use Policy (RUP) B-7 were performed using the 2025 monitoring program results at MW14 as the reference background location for the Site.

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

"The quality cannot be degraded by an amount in excess of 50% of the difference between background and the Ontario Drinking Water Standards for non-health related parameters and in excess of 25% of the difference between background and the ODWS for health-related parameters. Background is considered to be the quality of the ground water 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. It is noted that iron has been excluded from this assessment as the background concentration already exceeds the ODWQS.

As this assessment is based on compliance at the downgradient property boundaries, MW3, MW12, MW13, MW16, MW16-I, MW17, MW18, MW19 as well as the newest monitors along the eastern boundary MW20-I & MW20-II were used as these locations are the furthest east and southeast locations at the Site. Specific exceedances for RUP are illustrated in the following table and chemistry summary chemistry tables (Appendix E), including manganese, DOC and TDS. These exceedances and concentrations were similar to previous years with similar concentration ranges.



Table 6: Reasonable Use Exceedance Summary Table

Location	Boundary	Parameter	ODWQS	RUP	Concentrations Exceeding RUP*	
					Spring 2025	Fall 2025
MW3	East	DOC	5	3.6	<u>11</u>	<u>13.5</u>
		Iron	0.3	0.36	<u>13.2</u>	<u>20.4</u>
		TDS	500	314	356	353
		Manganese	0.05	0.03	<u>2.76</u>	<u>3.14</u>
		Barium	1	0.33	0.264	0.363
MW12	East	DOC	5	3.6	4.3	4.5
		Iron	0.3	0.36	<u>1.32</u>	<u>1.52</u>
		Manganese	0.05	0.03	<u>0.181</u>	<u>0.087</u>
MW13	East	DOC	5	3.6	2.4	3.8
		Iron	0.3	0.36	0.151	0.335
MW16	East	DOC	5	3.6	<u>5.7</u>	<u>6</u>
		Manganese	0.05	0.03	<u>0.823</u>	<u>0.791</u>
MW16-I	East	DOC	5	3.6	4.6	4.7
		Manganese	0.05	0.03	<u>0.173</u>	<u>0.179</u>
MW17	North	Monitor Not Sampled - Flooded/Submerged				
MW18	North	Monitor Not Sampled - Flooded/Submerged				
MW19	East	DOC	5	3.6	4.1	3.8
		Manganese	0.05	0.03	<u>0.066</u>	<u>0.063</u>
MW20-I	East	Alkalinity	500	304	320	230
		DOC	5	3.6	<u>10.7</u>	<u>8</u>
		Iron	0.3	0.36	<u>1.01</u>	<u>1.01</u>
		Manganese	0.05	0.03	<u>1.37</u>	<u>0.842</u>
		TDS	500	314	407	297
MW20-II	East	Aluminum	0.1	0.06	0.07	0.04
		Chromium	0.05	0.013	<0.001	0.002
		DOC	5	3.6	<u>8</u>	<u>13.5</u>
		Iron	0.3	0.36	<u>1.71</u>	<u>3.89</u>
		Manganese	0.05	0.03	0.55	<u>0.764</u>

Notes: All values are in mg/L

* - Concentrations in bold exceed RUP and Underline for ODWQS

The use of these parameters as leachate indicators is not entirely applicable in a peat-rich naturally reduced environment. DOC concentrations are typically naturally elevated in such peat rich environments due to the elevated decomposition of natural organic matter, while manganese and aluminum can be natural in source (*i.e.*, geochemically reduced conditions



increase dissolution of naturally occurring earth elements). As such we recommend manganese not be considered a compliance parameter for the Site. Concentrations of other more defined indicator parameters (*e.g.*, boron & chloride) are all well below RUP limits in downgradient monitoring locations. Of particular importance is chloride since it is a conservative tracer for ground water migration. The dilution of this parameter in downgradient monitors suggests that the landfill influence is greatly diminished away from the waste mound. Thus, the parameters noted above are not likely related to the landfill geochemistry.

The remaining alkalinity, TDS, chromium and barium exceedances were limited to MW3, MW20-I and MW20-II. It is noted that these exceedances were only marginally above the RUP limit and have historically shown to fall within a consistent range with no consistent upward trend for these parameters at exceedance locations.

4.3 Surface Water

The purpose of this monitoring network has been to establish any potential influence the landfill may be having on the water quality of the tributary as this feature may represent a ground water discharge location downgradient of the landfill. Monitoring locations SWA, SWC2, SWD & SWF represent locations along the tributary north of the waste mound with SWA representing a background location.

Table 7 summarizes average concentrations of leachate indicator parameters between up- and downstream monitoring locations along the tributary. The elevated TSS concentrations would indicate sediment entrainment is likely influencing metals and a few other parameter concentrations as elevations of iron, manganese, COD and DOC are present without corresponding elevations or more dominant leachate indicator parameters such as boron, ammonia or chloride. As such, this summary would indicate there is no definable difference in upstream and downstream water quality owing to leachate influence.

As shown in the time trend chemistry graphs provided in Appendix F, surface water quality over time is relatively variable over time with some seasonal variation observed, most notably at SWC2; the overall variability is attributed in part to the sediment laden samples due to the stagnant nature of the surrounding wetland complex.



Table 7: Average Leachate Indicator Parameter Concentrations at Surface Water Locations

Parameters	PWQO	Upstream	Leachate	Leachate	Downstream	
		SWA	MW4	SWD	SWF	SWC2
Alkalinity		133	612	147	134	161
Calcium		32	187	35	33	40
Chloride		3	2	2	2	3
DOC		20	27	17	15	14
Iron	0.3	0.3	95	1	1	7
COD		56	107	76	45	38
Manganese		0.2	6	0.1	0.1	0.2
Sodium		2	5	2	1	3
Sulphate		4	26	3	5	8
TDS		137	621	150	138	172
Ammonia		0.1	8	0.2	0.5	0.2
TKN		1	10	2	1	1
Boron	0.2	0.01	0.4	0.01	0.01	0.1
TSS		12	NA	90	53	17
Potassium		1	14	1	1	1

PWQO - Provincial Water Quality Objectives

Bold and highlighted indicates exceedance

All data in mg/L

Average Concentrations from 2021-2025 (where available)

As discussed previously, the geochemically reduced conditions associated with the wetland environment would likely cause elevated concentrations for naturally occurring earth metals. At sufficient levels, the microbial activity will deplete the available oxygen and potentially influence the metal valence for iron and manganese. The warm summer conditions appear to influence these reactions. The elevated DOC, which is also found at all monitoring locations, is likely more the result of the peat rich environment opposed to leachate influence.

In addition to the average concentration data presented above, the 2025 results (Appendix E) also confirm the downstream water quality (SWC2) is relatively similar, if not lower concentrations to that of the upstream (SWA), which has been typically historically. The exception to this in 2025 is boron, which was found at concentrations of 0.272 – 0.318 mg/L at SWC2, relative to the background concentrations of 0.008 - 0.012 mg/L. PWQO was exceeded at the downstream locations for several parameters including iron, total phosphorus, boron and aluminum. With the exception of boron, these parameters have also been shown to exceed historically in the background water quality with exceedances associated with elevated TSS concentrations such that sediment entrainment is creating the elevated concentrations. The boron concentrations in 2025 were higher than they have been historically, where the range was 0.005 – 0.1 mg/L. This parameter is considered sourced to leachate potential through



ground water discharge east of the waste mound or through toe seepage, although no defined seeps or springs have been observed on the waste mound. Despite the boron PWQO exceedances, they are considered only marginal elevations and the overall water quality does not indicate significant change owing to leachate influence. Further, given the interim nature of the boron PWQO, the CWQG value of 1.5 mg/L is the more readily applicable criteria for boron in surface water, which these concentrations fall well below for. Thus, as with previous years, the overall water quality within the surface water indicates meaningful leachate influence resulting from the operations of the landfill, although conditions should be closely monitored given the 2025 boron concentrations.

For reference, surface water photos for all locations have been included in Appendix G.

4.3.1 Comparison of Ground Water to PWQO / CWQG

As included in the appended chemistry summary tables, comparison has been done with PWQO, as well as CWQG, where PWQO is not available or CWQG is more appropriate (*i.e.*, boron, PWQO interim value). A number of parameter exceedances are observed including chromium, cadmium, copper, cobalt, aluminum, iron and vanadium. Concentrations are generally more elevated at locations that are adjacent to the waste mound, with diminished concentrations and exceedance frequencies at more distant locations. It is noted that these parameters are also exceeded on occasion at MW14, which is the background location, although much more infrequently and more limited concentrations. This would indicate these parameters are observed to some degree naturally, albeit at low levels.

The presence of these metals above PWQO/CWQG in ground water surrounding the Site is not unexpected given the overall leachate influence observed at most locations, albeit reduced with distance from the waste mound. However, these concentrations are not interpreted to be influencing the surrounding surface water at the Site. Based on the overall interpretation of surface water quality at the Site presented in previous monitoring reports, there is no significant change between up and downstream water quality at the Site. Numerous PWQO/CWQG parameter exceedances have been observed in surface water at the Site; however, exceedances and concentration ranges are found to be similar between up and downstream locations, with these exceedances attributable to sediment entrainment as exceedances are almost exclusively observed when there is a measurable total suspended solids (TSS) concentration. This is consistent in both the up and downstream locations, which supports sediment entrainment as the source of exceedances opposed to being landfill derived. Further, the major ion chemistry tends to remain consistent during the exceedance sampling events, with no meaningful elevations of definable leachate indicator parameters in the downstream locations. The expectation is for these metals exceedances to be sourced to the



landfill, there would need to be a similar scale elevation in most other major ion concentrations, which does not occur. This would indicate that the attenuative capacity of the Site is sufficient to limit leachate impacts to the surrounding environment. It is interpreted that this will continue in an expanded configuration as there will be an overall maintenance of annual waste volumes.

The fact there is no visible seepage areas along the waste mound or toe or waste mound would suggest there is limited potential for a meaningful ground water contribution occurring to the adjacent surface water. Also, with the development of the beaver pond north of the waste mound, there has been more limited presence of surface water south / southeast downgradient of the waste mound, which would support a limited potential for leachate impacts to surface water in this area.

4.4 Organic Contamination Evaluation

As part of the monitoring program in 2025, volatile organic compounds (VOC) sampling was completed at MW3, MW4, & MW16-I in conjunction with the general chemistry sampling at each of the locations. All VOC detections for ground water sampling locations are summarized below in Table 8.

Table 8: 2025 VOC Detections

Parameter	ODWQS	MDL	MW3 (Fall)	MW4 (Fall)
Benzene	5	0.5	<0.5	0.7
Monochlorobenzene (Chlorobenzene)	80	0.5	1	<0.5

MDL - minimum detection limit

All measurements in µg/L

bold indicates ODWQS exceedance

It is noted that these detections and concentrations are similar to what has been observed at this leachate location historically. However, trace detections for other parameters have been periodically observed historically.

Given these trace detections (no detections exceeded ODWQS criteria) and lack of meaningful historical VOC presence within the leachate and ground water at the Site, there is unlikely a meaningful organic source within the waste mound and that these parameters have been actively degraded over time.



4.5 Trigger Mechanism Evaluation

An updated Trigger Mechanism & Contingency Plan was prepared and submitted as part of the 2024 ECA amendment by WSP. The proposed trigger criteria includes both ground water and surface water components, which are as follows. This program remains the same as the 2016 plan, beyond the addition of the new eastern boundary wells MW20-I/II.

4.5.1 Ground Water Trigger Program

The ground water trigger locations have been established at downgradient monitoring locations MW3, MW12, MW16, MW16-I, MW19, MW20-I and MW20-II.

Table 9: Ground Water Trigger Limits

Parameter	ODWQS	Trigger Limit
Chloride	250	128
Boron	5.0	1.3
TDS	500	340

All concentrations in mg/L

4.5.2 Surface Water Trigger Program

The surface water trigger locations have been established at downstream monitoring locations SWF as it represents the last on-site downgradient location.

Table 10: Surface Water Trigger Limits

Parameter	PWQO	Trigger Limit
Chloride	-	128
Boron	0.2	0.11*
Unionized Ammonia	0.02	0.011

All concentrations in mg/L

* - boron exceedances are discounted when TSS concentrations are above 25 mg/L.

A trigger exceedance of the above criteria for both ground and surface water locations occurs when the concentrations of the trigger parameter exceed the trigger levels during two consecutive sampling events, at which time confirmatory monitoring will be implemented.

There were no surface water parameter trigger exceedances in 2025, but there were ground water trigger parameter exceedances, which are summarized in the following Table.



Table 11: 2025 Trigger Parameter Exceedance Summary Table

Location	Parameter	ODWQS	RUP	Concentrations Exceeding RUP*	
				April, 2025	October, 2025
MW3	TDS	500	340	356	353
MW20-I	TDS	500	340	407	297

Bold indicates trigger exceedance, while bold / underlined indicates ODWQS exceedance

All concentrations in mg/L

Given consecutive trigger parameter exceedances were noted at MW3 for TDS, confirmatory sampling at MW3 should have been undertaken. This confirmatory sampling was not completed, such that the next subsequent monitoring event completed in April 2026 was reviewed, which indicated that the TDS concentration continues to exceed trigger criteria with a concentration of 344 mg/L. A review of the remaining water quality parameters for this location would indicate that leachate influence at this location is present but conditions are stable with TDS concentrations over 2025 into 2026 showing a subtle decreasing trend. As such, it is not recommended that any further actions be undertaken beyond continued monitoring. If TDS concentrations are noted to increase, then potential mitigation measures such be reviewed and proposed if necessary.

4.6 Graphical Analysis

An alternate evaluation technique (to identify unique waters) can be undertaken to compare the major ion chemistry of different water sources or waters that have been mixed with two or more sources. For this analysis, the 2025 ratios of major ion data (for all monitoring points) were compared for the current monitoring network. The major ion data were plotted on Piper diagrams, which show the geochemical signatures and trends. Generally, the data from a common source should cluster in one location on the diagram. Any deviation from this cluster can be easily observed and evaluated as a possible trend or influence from an alternate source (*i.e.*, leachate). The Piper diagrams are shown in Appendix H.

Overall, the diagrams show that the geochemical signatures correlate with the general discussion on water quality presented previously in this report. MW4, which illustrates the leachate signature for the Site shows a more carbonate / bicarbonate dominated result than the remaining locations. MW3, MW6, MW8 and MW18 were the monitors that more closely match the leachate signature.



The other notable trend is at MW10, which indicates a much different signature, with a stronger sulphate influence. This would support the source of this being a more mineralized bedrock water quality, uninfluenced by leachate.

Although not typically observed in surface water due to more meteoric conditions, all surface water locations indicated very similar signatures which would confirm the consistency in water quality between the up and downstream locations and any leachate impact is negligible.

4.7 Landfill Gas Monitoring

The landfill gas monitoring program at the Site includes methane gas measurements at two (2) dedicated gas monitoring wells (GP-1 & GP-2), which are located south of the active waste area (Figure 2). Measurements were completed on five occasions throughout 2025 including under frozen ground conditions in January and February, which would represent conditions most conducive for methane migration and detection due to limited atmospheric venting. The results for 2025 are summarized in Appendix C, along with the results collected since 2015 and indicate that there have been no detections over this period. Given the lack of detections and limited sensitive land uses that surround the landfill, methane monitoring is not warranted at this Site. It is recommended that this monitoring component could be eliminated.

5.0 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 hours of operation for the Site in 2025 were unchanged from previous years:

Winter – October 16 to April 30

Thursday: 11:00 AM to 5:00 PM

Sunday: 12:00 PM to 4:00 PM

Summer – May 1 to October 15

Thursday: 11:00 AM to 5:00 PM

Sunday: 11:00 AM to 5:00 PM

Holiday Mondays: 11:00 AM to 5:00 PM



5.1 Site Maintenance

The City conducted regular litter and debris collection programs as necessary throughout the 2025 operating year. The Site inspection logs are included in Appendix I, which were completed as part of April and October monitoring events. These reports indicated that similar to previous years, the area north of the landfill was noted to be flooded due to beaver activity such that MW17 and MW18 were under water. Also, litter was noted in the wetland surrounding the waste area, which is regularly addressed by City staff throughout the year during their inspections. The Monitoring wells were observed to be in good condition.

5.2 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 1,866, m³ including waste and cover material was determined, which falls within the range over the previous five years of 1,745 – 2,492 m³/year.

Currently, the remaining waste capacity is 19,567 m³ based on a cut and fill calculation between current (2025) and final contours. It is noted that the topographic surface utilized in the 2024 calculations had been revised due to improper boundaries used for those calculations which underestimated the remaining capacity in the 2024 annual monitoring report. Based on the remaining capacity and the annual fill rate range of 1,700 to 2,500 m³, there is a remaining lifespan of approximately 8 - 11 years.

5.3 Recyclable Materials Summary

The Site 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 12: Summary of Recyclable / Diversion Materials Received in 2025

Item	Number of Units	Units
Paper	13	Tonnes
Containers	12	Tonnes
Metal	24	Tonnes
Textiles	1	Tonnes
Leaf and Yard Waste*	752	Tonnes
Electronics	11	Tonnes

* - utilized for cover material, not diverted off-site



Based on the diversion quantities listed above and 950 tonnes of waste received in 2025, the total divertible material received at the Site in 2025 was approximately 61 tonnes. Of the material received at the Site, approximately 6% of the material was diverted, which is a significant increase when compared to similar to previous years.

5.4 Compost Operations

As completed in previous years, the City has utilized unfinished leaf and yard compost mixed with sand or sandy soil at a ratio of one (1) part compost to three (3) parts sand in place of topsoil. Prior to these applications, the mixture was tested for slump, permeability, and O.Reg. 347/90 and O.Reg. 153/04 Table 9 site condition standards (SCS). Table 9 SCS is applied because a water body (i.e., wetland) is situated at the north end of the Site. As the “unfinished compost” consists of leaf and yard cuttings only, there is no expectation for an increase in vermin activity. Unfinished leaf and yard compost was used on Site in 2025 to mix with soil for alternative daily cover or for interim cover only, no material was removed from the Site.

6.0 CONCLUSIONS

Based on the interpretation presented in the above sections, the environmental setting at the Laxton Landfill Site is relatively well understood and appears to have a minimal influence on the surrounding environment based on the past 45 years of operations. The presence of a peat bog surrounding the Laxton Landfill Site serves to mitigate leachate strength and migration such that there are no significant off-site impacts. The peat bog slows surface and ground water flow to the point where the dispersive and advective flows have a similar magnitude of influence. The slow movement and organic-rich peat materials create a naturally geochemically reduced environment which also portrays an elevated dissolved organic signature. This natural condition can be confused with the reduced conditions created by the landfill. However, at the Laxton Landfill, natural conditions are dominant in effecting the chemistry of the ground water and surface water around the site.

The geochemically reducing conditions generated within the landfill have allowed naturally occurring parameters to become elevated in concentrations which are unrelated to the landfill operations, including iron and manganese. However, the landfill also generates an ammonia signature and has detectable boron and chloride concentrations, albeit below Provincial standards. The absence of these two particular components of the landfill leachate signature, distinguish that signature from the natural setting. While downgradient locations may show elevated iron and manganese concentrations, as well as elevated DOC; they represent the natural peat environment when absent of elevated ammonia, boron and chloride concentrations. These natural conditions have been observed in many surrounding locations as



well as within the tributary and the potential for significant off-site leachate impact is considered minimal.

Based on the data and physiography and underlying geology, the regional flow path is eastwards and northeastwards. It is apparent that flow from the waste mound does create some degree of radial migration or dispersion, which is evidenced by the geochemical data. However, the extent of this radial flow / dispersion is observed to be limited. Similarly, the chemistry trends and shift in ground water flow patterns observed at several southeastern monitoring locations indicate that the presence of the beaver pond near SWC have locally shifted the hydraulic gradients at the Site, by increasing the surface water levels immediately north of the waste mound approximately 1 m above grade. This alteration causes a slight shift in water quality to the southeast through increasing localized ground water flow in this direction. Despite these localized conditions, the more regional flow path likely follows the axis of the granular ice contact deposits to the northeast.

The general consistency observed in the historic data set for the current monitoring network would indicate that leachate impacts are quite limited, especially beyond the proximal monitoring points. Some RUP exceedances (hardness, manganese, DOC and TDS) are noted within many of the distant and boundary wells; however, these are mainly limited to elevated concentrations of naturally occurring earth elements (iron and manganese) and natural organic sources (DOC) attributable to the surrounding peat deposits and not the landfill. Therefore, the Site is deemed to be in compliance.

The data collected thus far at the Site from the existing monitoring network, which includes 19 monitoring wells and 5 surface water locations does not indicate significant leachate influence beyond the perimeter of the waste such that significant elevations are not expected to extend much beyond the eastern extent of the landfill.

The trigger mechanism evaluation in 2025 indicated compliance with respect to surface and ground water at the Site, as per the Trigger Mechanism program presented and submitted as part of the 2024 ECA amendment.

Although ground water discharge is likely within the tributary north and east of the landfill, the impacts would appear to be quite limited with a number of the elevated leachate indicator parameters more likely related to the natural wetland water quality rather than leachate. This is evident through the minimal concentrations for chloride, ammonia and boron and is likely mitigated by the peat rich environment present at or near the ground surface.



The results for the 2025 gas monitoring program are consistent with previous years. Given the lack of detections and limited sensitive land uses that surround the landfill, it is questioned whether methane monitoring is warranted at this Site. It is recommended that this monitoring component could be eliminated, but monitoring of combustible gas concentrations within any Site buildings should continue.

7.0 RECOMMENDATIONS

The monitoring program recommended for 2026 is identified in Table 12 (below) and is based on the program outlined in the 2024 amended ECA. This monitoring program includes some changes, including removal of SWG station from the surface water monitoring program, as well as the July monitoring event. The ground water monitoring program included reduction in VOC analysis to the fall monitoring event at select locations. Overall, the Site is effectively monitored through the shallow and deep overburden monitoring wells. These wells provide the most representative locations for establishing leachate impacts downgradient of the landfill. Similarly, the surface water monitoring network is sufficient for determining potential leachate impacts.

It is recommended that the gas monitoring component should be eliminated. This recommendation has been made historically and not endorsed by the MECP during the ECA amendment; however, Azimuth continues to recommend that this program is unwarranted.

The following table outlines the proposed monitoring program for 2026.

Table 13: Proposed 2026 Monitoring Program

Monitoring Station	Frequency	Parameters
<u>Ground Water</u> MW1, MW2, MW3*, MW4*, MW6, MW7, MW8, MW10, MW12, MW13, MW14, MW15, MW16, MW16-I*, MW17, MW18, MW19, MW20-I & MW20-II	Semi-Annual (April / May & September / October)	DOC, phenols, conductivity, hardness, TKN, fluoride, sulphate, chloride, phosphorous, nitrate, nitrite, ammonia, alkalinity, calcium, magnesium, potassium, sodium manganese, copper, lead, molybdenum, zinc, barium, boron, cadmium, chromium, iron, aluminum, arsenic, cobalt, nickel, silver, strontium, vanadium, pH, COD, TDS * VOCs – annual during Fall event Water Level Measurements



Table 13: Proposed 2026 Monitoring Program

Monitoring Station	Frequency	Parameters
<u>Surface Water</u> SWA, SWC2, SWD & SWF	Semi- Annual (April / May & September / October)	BOD, phenols, DOC, TKN, fluoride, nitrate, nitrite, ammonia, alkalinity, hardness, chloride, phosphorous, sulphate, aluminum, antimony, arsenic, barium, boron, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, potassium, selenium, silver, sodium, strontium, thallium, vanadium, zinc, pH, conductivity, TSS, TDS, COD, turbidity



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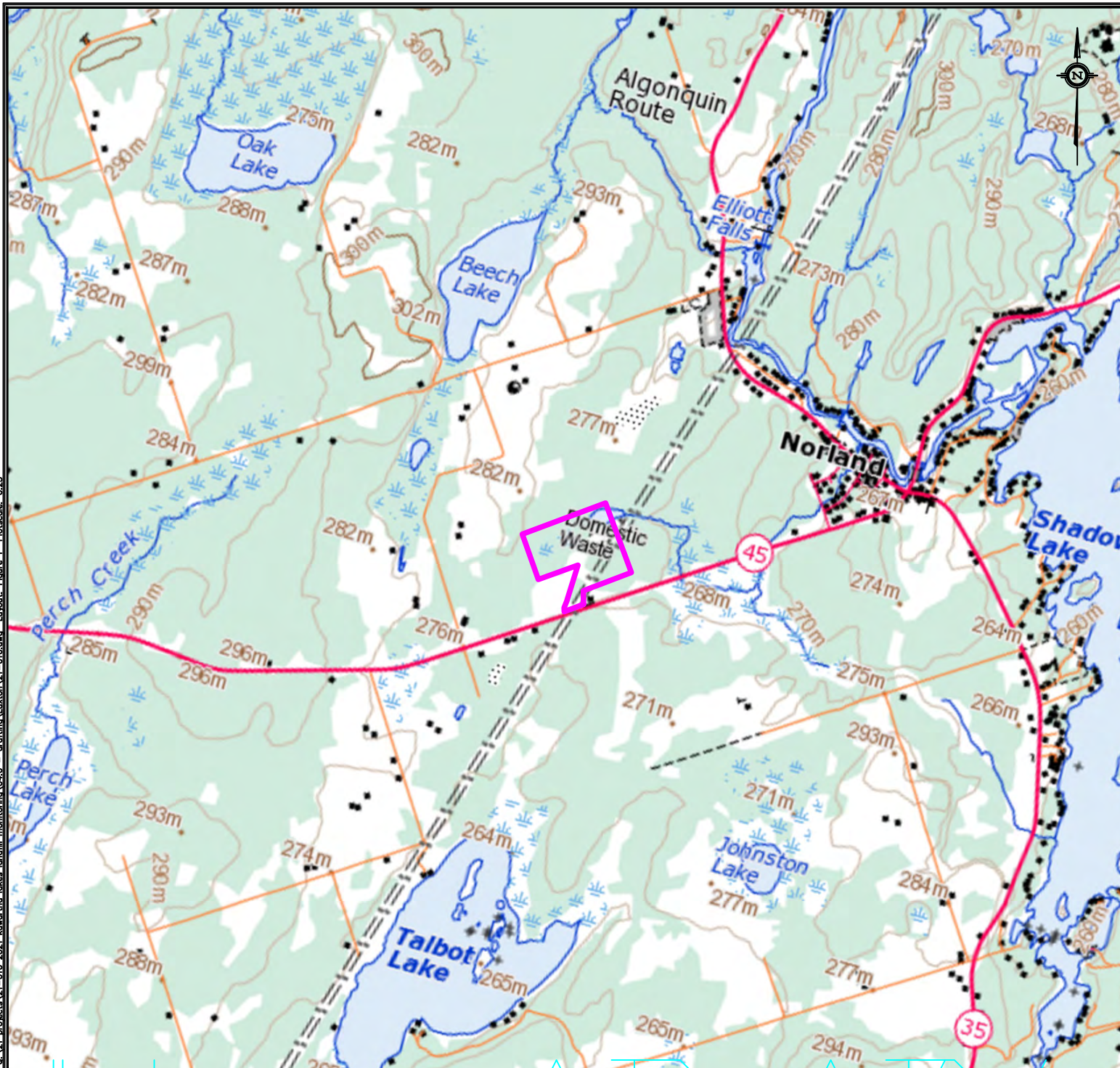
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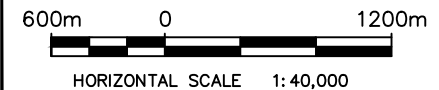
FIGURES

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— Approx. Property Boundary



Study Area Location

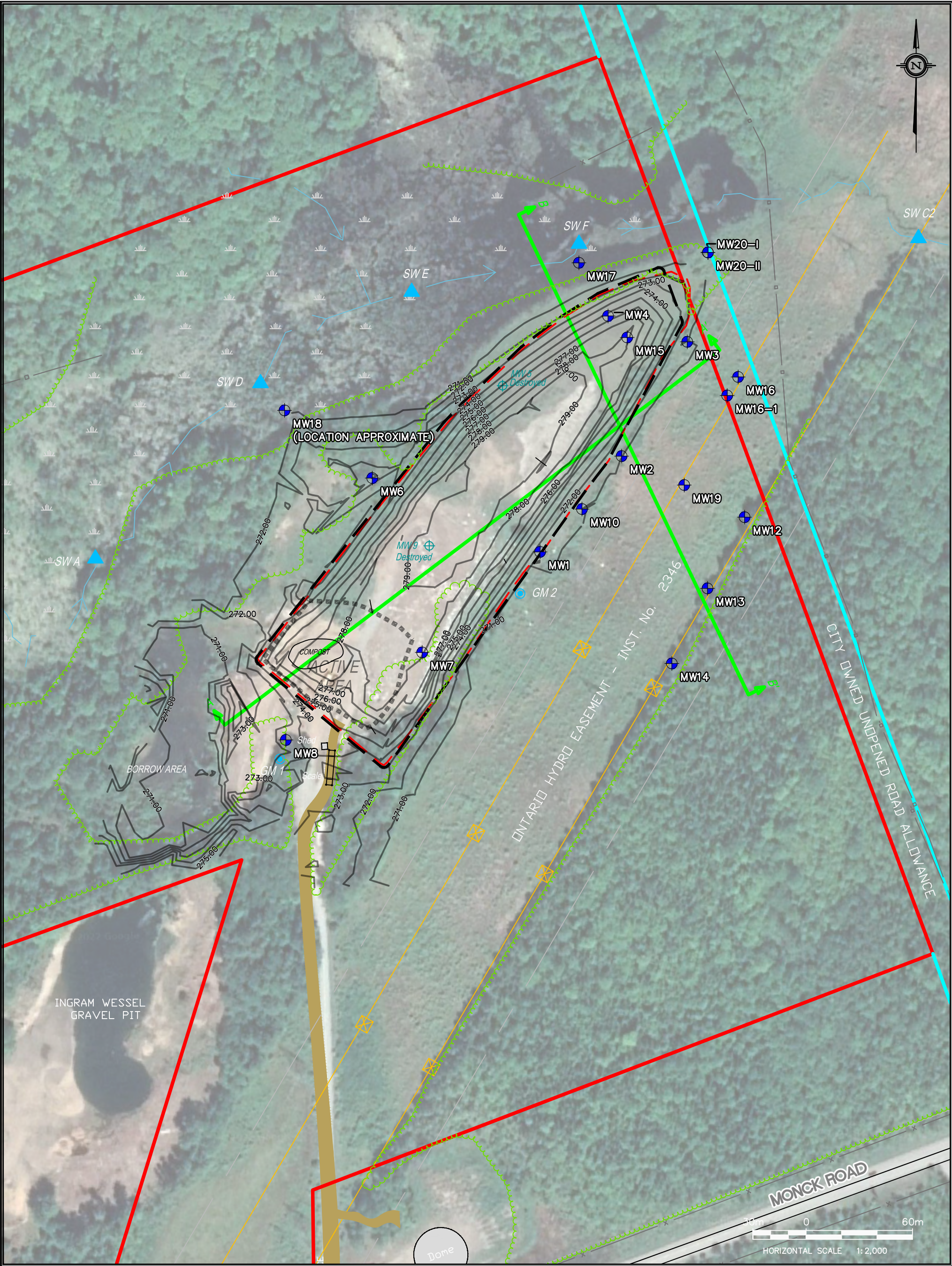
Laxton Waste Disposal Site
 City of Kawartha Lakes, ON

DATE ISSUED: May 2026
 CREATED BY: JLM
 PROJECT NO.: 26-010
 REFERENCE: Gazetteer Canada

Figure No.

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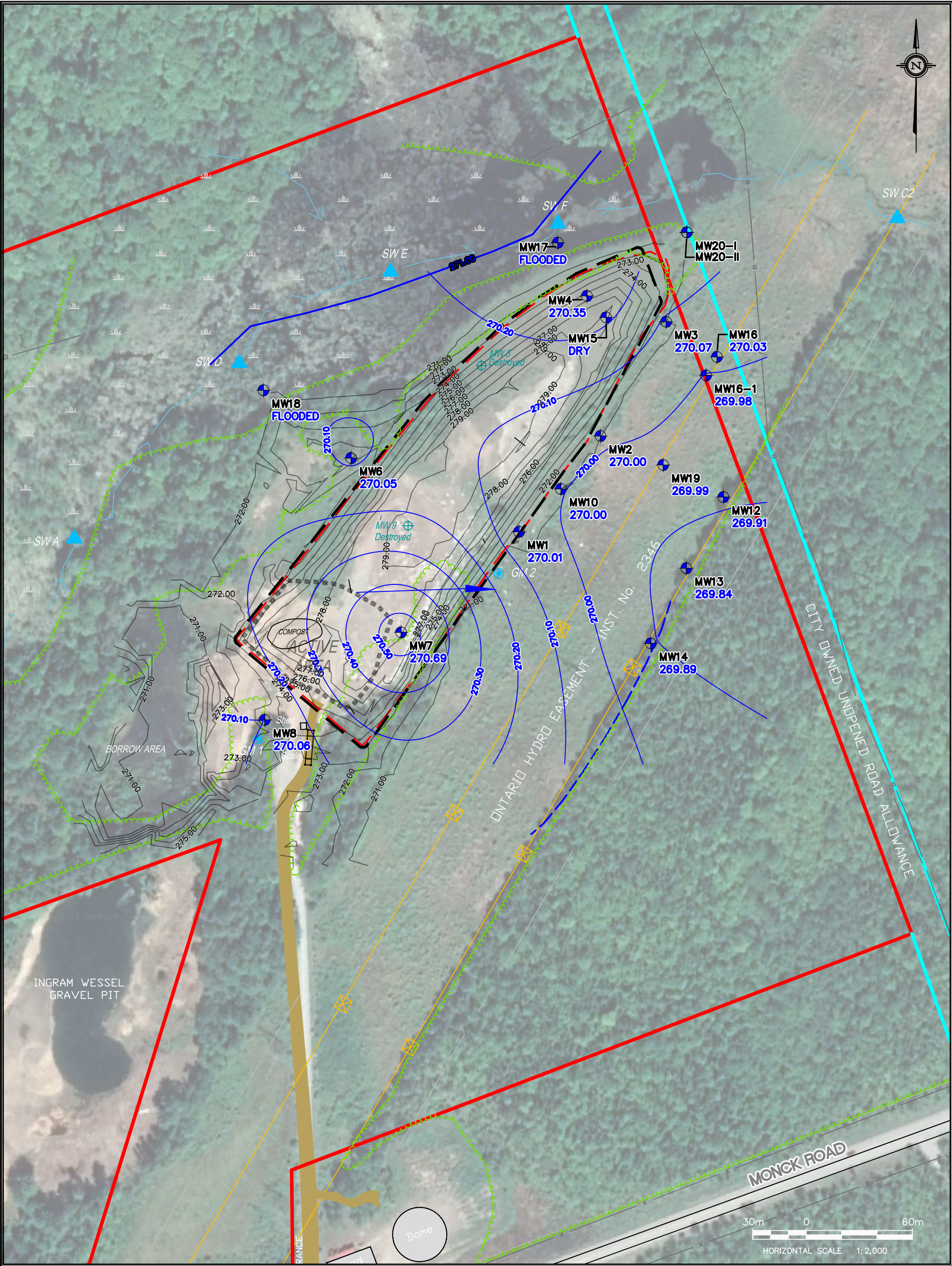
- Approx. Property Boundary
- City Owned Unopened Road Allowance
- Monitoring Well - Destroyed
- Monitoring Well
- Surface Water Sampling Locations
- Gas Probe
- Proposed Monitoring Well Nest
- Existing Limit of Refuse
- Approved Limit of Refuse
- Cross-Section Locations
- Active Area



Site Layout

Laxton Waste Disposal Site
City of Kawartha Lakes, ON

DATE ISSUED:	May 2026	Figure No. 2
CREATED BY:	JLM	
PROJECT NO.:	26-010	
REFERENCE:	Cambium Environmental	



LEGEND:

- Approx. Property Boundary
- City Owned Unopened Road Allowance
- Monitoring Well - Destroyed
- Monitoring Well
- Surface Water Sampling Locations
- Gas Probe
- Proposed Monitoring Well Nest
- Existing Limit of Refuse
- Approved Limit of Refuse
- Active Area
- Inferred Direction of Ground Water Flow
- Ground Water Elevation (October 2025)
- 0.10m Ground Water Contours



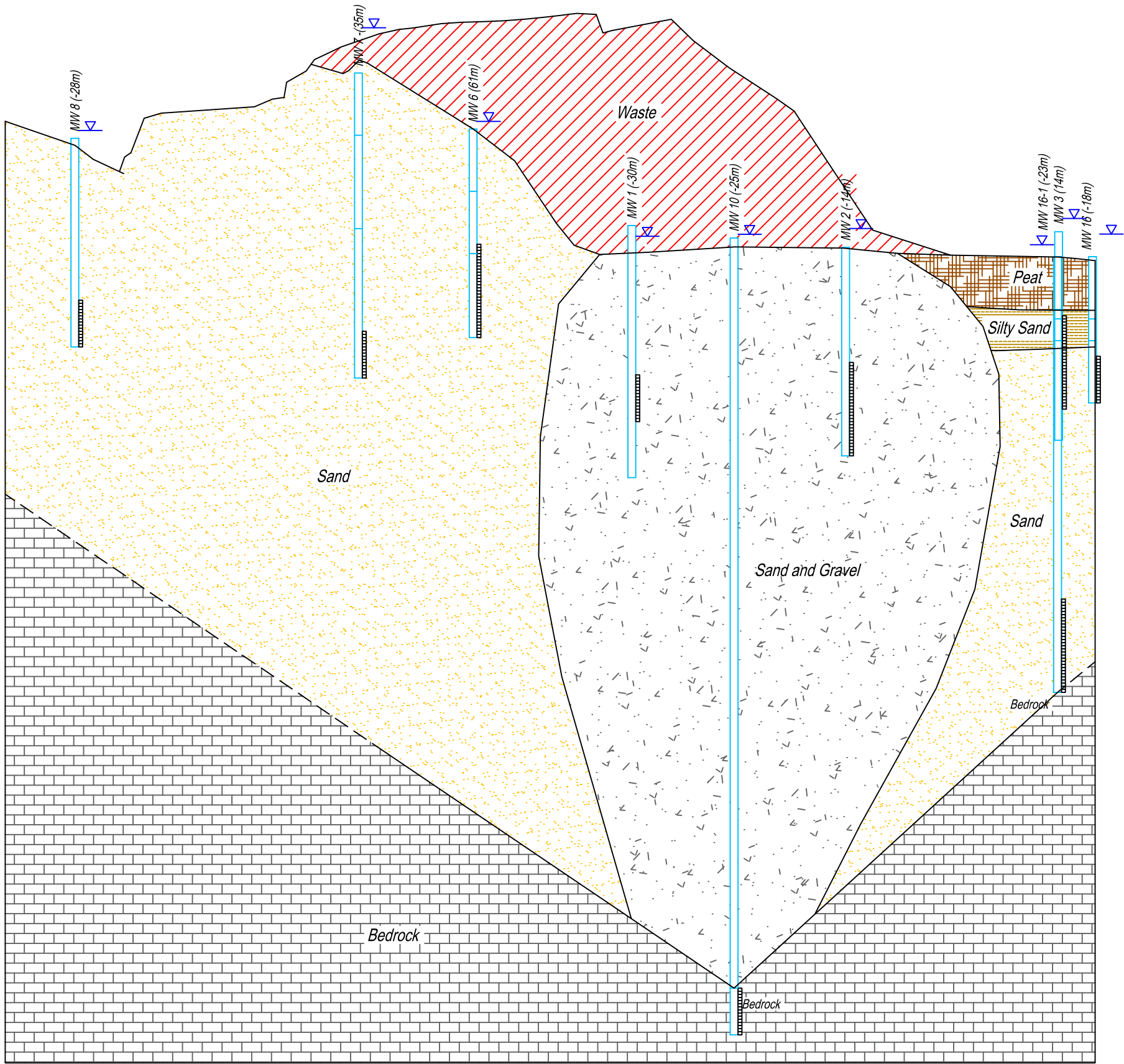
Shallow Overburden Ground Water Elevations
October 2025

Laxton Waste Disposal Site
City of Kawartha Lakes, ON

DATE ISSUED:	May 2026	Figure No. 4
CREATED BY:	JLM	
PROJECT NO.:	26-010	
REFERENCE:	Cambium Environmental	

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LEGEND:

- Ground Water Elevation (April 2024)
- Screen
- Peat
- Sand
- Sand and Gravel
- Sandy Silt
- Silty Sand
- Bedrock
- Waste

10x Vertical Exaggeration
Not to Scale



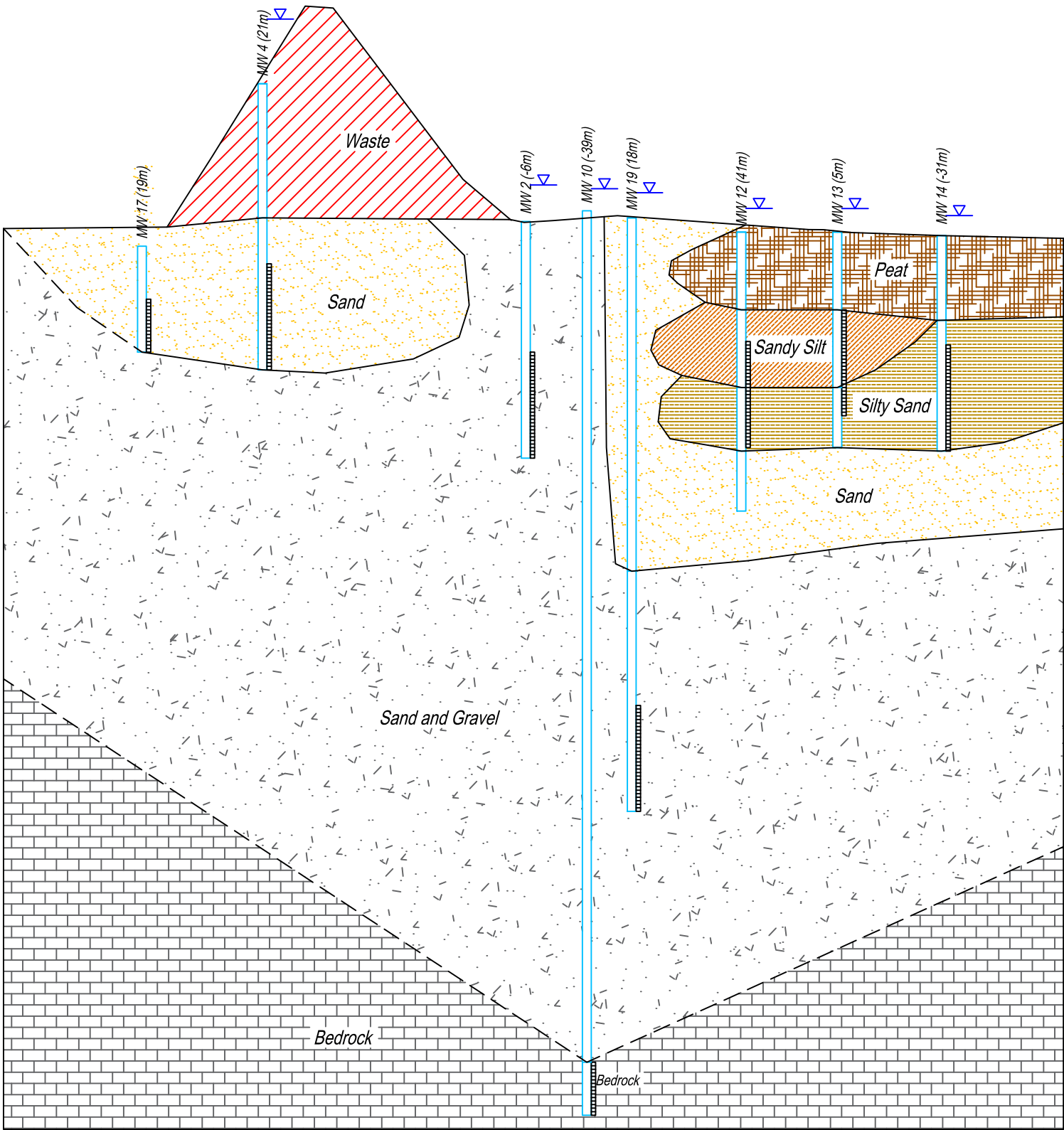
Cross Section
A-A'

Laxton Waste Disposal Site
City of Kawartha Lakes, ON

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

Plotted by: ALJU on May 8, 2026 at 11:04am
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DAYSTAMP: Q:\20 Projects\20-010 2020 Kawartha Lakes Landfill Monitoring\04.0 - Drafting\Laxton\20-010.dwg



LEGEND:

- Ground Water Elevation (April 2024)
- Screen
- Peat
- Sand
- Sand and Gravel
- Sandy Silt
- Silty Sand
- Bedrock
- Waste

10x Vertical Exaggeration
Not to Scale



Cross Section
B-B'

Laxton Waste Disposal Site
City of Kawartha Lakes, ON

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



APPENDICES

Appendix A:	ECA and MECP Communications
Appendix B:	Borehole Logs
Appendix C:	Ground Water Elevation & Landfill Gas 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

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER A321304
Issue Date: October 10, 2024

The Corporation of the City of Kawartha Lakes
322 Kent St W
Kawartha Lakes, Ontario
K9V 4T7

Site Location: Laxton Landfill Site
3225 Monck Rd Lot 6, Concession 9, former Laxton Township
Kawartha Lakes City

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

the use and operation of 2.5 hectare of waste disposal/recycling /reuse/composting site within a total site area of 29 hectares.

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

“Approval” means this Environmental Compliance Approval and any Schedules to it;

"Batteries" within the context of this Approval, mean discarded devices in which energy was stored as electricity or converted into electricity and was used as a source of power and include Batteries as defined in O. Regulation 30/20;

"Blue Box Waste" within the context of this Approval, means:

- a. each of the categories set out in Schedule 1 of O. Regulation 101/94 (entitled "Blue Box Waste"), including Part I ("Basic Blue Box Waste") and Part II ("Supplementary Blue Box Waste") of O. Regulation 101/94; and
- b. discarded Blue Box Materials, as defined in O. Regulation 391/21;

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

“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 II.1 of the EPA;

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

"EEE" within the context of this Approval, means electrical and electronic equipment as defined in O. Regulation 522/20, the equipment subject to requirements of O. Regulation 522/20 and the equipment listed in O. Regulation 522/20 but exempted from the requirements of O. Regulation 522/20;

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

"MHSW" within the context of this Approval, means waste that is limited to the following materials:

- a. Municipal Hazardous Waste and Municipal Special Waste as defined in O. Regulation 387/16; and
- b. discarded materials derived/originating from Hazardous and Special Products as defined in O. Regulation 449/21;

"Minister" means the Minister of the Ministry or such other member of the Executive Council as may be assigned the administration of the EPA and OWRA under the *Executive Council Act*, R.S.O. 1990, c. E.25;

"Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

“NMA” means the *Nutrient Management Act, 2002*, S.O. 2002, c. 4, as amended;

“O. Reg. 101/94” means Ontario Regulation 101: (Recycling and Composting of Municipal Waste), made under the EPA, as amended;

“O. Reg. 232/98” means Ontario Regulation 232/98: (Landfilling Sites), made under the EPA, as amended;

"O. Regulation 30/20" means Ontario Regulation 30/20: Batteries, made under the Resource Recovery and Circular Economy Act, as amended;

"O. Regulation 387/16" means Ontario Regulation 387/16: Municipal Hazardous or Special Waste, made under the Waste Diversion Transition Act, as amended;

"O. Regulation 389/16" means Ontario Regulation 389/16: Waste Electrical and Electronic Equipment, made under the Waste Diversion Transition Act, as amended;

"O. Regulation 391/21" means O. Reg. 391/21: Blue Box, made under the Resource Recovery and Circular Economy Act, as amended;

"O. Regulation 449/21" means Ontario Regulation 449/21: Hazardous and Special Products, made under the Resource Recovery and Circular Economy Act, as amended;

"O. Reg. 463/10" means Ontario Regulation 463/10 (Ozone Depleting Substances and Other Halocarbons), made under the EPA, as amended;

"O. Regulation 522/20" means Ontario Regulation 522/20: Electrical and Electronic Equipment, made under the Resource Recovery and Circular Economy Act, as amended;

"Ontario Drinking Water Quality Standards" means Ontario Regulation 169/03 (Ontario Drinking Water Quality Standards), made under the SDWA, as amended;

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

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

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

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

"Reg. 347" means R.R.O. 1990, Reg. 347: (General - Waste Management), made under the EPA, as amended;

"Reg. 903" means R.R.O. 1990, Reg. 903: (Wells), made under the OWRA, as amended;

"Resource Recovery and Circular Economy Act" means the *Resource Recovery and Circular Economy Act*, 2016, S.O. 2016, c. 12, Sched. 1, as amended;

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

"Schedules" means the following schedules attached to this Approval and forming part of this Approval namely:

- o Schedule 1 - Supporting Documentation;
- o Schedule 2 - Landfill Gas Water Monitoring Program;
- o Schedule 3 - Surface Water Monitoring Program; and
- o Schedule 4 - Groundwater Monitoring Program;

“Site” means the entire waste disposal site, including the buffer lands, and contaminant attenuation zone at Laxton Landfill Site, 3225 Monck Rd Lot 6, Concession 9, (Part of East Half of Lot 6, Concession 9, City of Kawartha Lake), former Laxton Township, City of Kawartha Lakes;

"Standards Document" means the Ministry's document entitled "Ontario Compost Quality Standards" dated July 25, 2012, as amended and including the following documents to provide operational guidance to accompany the "Ontario Compost Quality Standards":

- a. Guidance for Generators of Category AA, A, and B Compost and the Ontario Compost Quality Standards – Maturity, Effective July 1st, 2015, as amended;
- b. Guidance for Generators of Category AA, A, and B Compost and the Ontario Compost Quality Standards – Foreign Matter, Effective July 1st, 2015, as amended;
- c. Guidance for Generators of Category AA, A, and B Compost and the Ontario Compost Quality Standards – Sharp Foreign Matter, Effective July 1st, 2015, as amended;

“Trained Personnel” means personnel knowledgeable in the following through instruction and/or practice:

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

"Waste Diversion Transition Act" means the *Waste Diversion Transition Act*, 2016, S.O. 2016, c. 12, Sched. 2, as amended;

"WEEE" within the context of this Approval, means waste electrical and electronic equipment consisting of devices that required an electric current to operate. WEEE is limited to the following:

- a. the devices listed in O. Regulation 389/16; and
- b. discarded devices originating/derived from the EEE;

"White Goods Containing Refrigerants" means the White Goods which contain, or may contain refrigerants; and

"White Goods" means the white goods (appliances) with or without the refrigerants.

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

TERMS AND CONDITIONS

1. GENERAL

Compliance

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

In Accordance

3. Except as otherwise provided by this Approval, the Site shall be designed, developed, built, operated and maintained in accordance with the documentation listed in the attached Schedule 1.

Interpretation

4. Where there is a conflict between a provision of any document listed in Schedule 1 in this Approval, and the conditions of this Approval, the conditions in this Approval shall take precedence.
5. Where there is a conflict between the application and a provision in any document listed in Schedule 1, 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 1, the document bearing the most recent date shall take precedence.
7. The conditions of this Approval are severable. If any condition of this Approval, or the application of any condition of this Approval to any circumstance, is held invalid or

unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.

Other Legal Obligations

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

Adverse Effect

9. The Owner and Operator shall take steps to minimize and ameliorate any adverse effect on the natural environment or impairment of water quality resulting from the Site, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.
10. Despite the Owner, Operator or any other person fulfilling any obligations imposed by this Approval the person remains responsible for any contravention of any other condition of this Approval or any applicable statute, regulation, or other legal requirement resulting from any act or omission that caused the adverse effect to the natural environment or impairment of water quality.

Change of Ownership

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

Registration on Title Requirement

14. Prior to dealing with the property in any way, the Owner shall provide a copy of this Approval and any amendments, to any person who will acquire an interest in the property as a result of the dealing.
15.
 - a. Within thirty (30) calendar days from the date of issuance of this Approval, the Owner shall submit to the Director a completed Certificate of Requirement which shall include:
 - i. a plan of survey prepared, signed and sealed by an Ontario Land Surveyor, which shows the area of the Site where waste has been or is to be deposited at the Site;
 - ii. proof of ownership of the Site;
 - iii. a letter signed by a member of the Law Society of Upper Canada or other qualified legal practitioner acceptable to the Director, verifying the legal description provided in the Certificate of Requirement;
 - iv. the legal abstract of the property; and
 - v. any supporting documents including a registerable description of the Site.
 - b. Within fifteen (15) calendar days of receiving a Certificate of Requirement authorized by the Director, the Owner shall:
 - i. register the Certificate of Requirement in the appropriate Land Registry Office on the title to the property; and
 - ii. submit to the Director and the District Manager, written verification that the Certificate of Requirement has been registered on title.

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 Approval relates, and without limiting the foregoing:
 - a. to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this Approval are kept;
 - b. to have access to, inspect, and copy any records required to be kept by the conditions of this Approval;
 - c. to inspect the Site, related equipment and appurtenances;
 - d. to inspect the practices, procedures, or operations required by the conditions of this Approval; and
 - e. to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Approval or the EPA, the OWRA, the PA, the SDWA or the NMA.

Information and Record Retention

17.
 - a. Except as authorized in writing by the Director, all records required by this Approval shall be retained at the Site for a minimum of two (2) years from their date of creation.
 - b. The Owner shall retain all documentation listed in Schedule 1 for as long as this Approval is valid.
 - c. All monthly summary reports of waste records collected are to be kept at the Site until they are included in the Annual Report.
 - d. The Owner shall retain employee training records as long as the employee is working at the Site.
 - e. The Owner shall make all of the above documents available for inspection upon request of Ministry staff.
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 Approval or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:
 - a. an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any term or condition of this Approval or any statute, regulation or other legal requirement; or
 - b. acceptance by the Ministry of the information's completeness or accuracy.
19. The Owner shall ensure that a copy of this Approval, in its entirety and including all its Notices of Amendment, and documentation listed in Schedule 1, are retained at the Site at all times.
20. Any information related to this Approval and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, RSO 1990, CF-31.

2. SITE OPERATION

Operation

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

Signs

2. The Owner shall install and maintain a sign at the entrance to the Site. The sign shall be visible and readable from the main road leading to the Site. The following information shall be included on the sign:
 - a. the name of the Site and Owner;
 - b. the number of the Approval;
 - c. the name of the Operator;
 - d. the normal hours of operation;
 - e. the allowable and prohibited waste types;
 - f. the telephone number to which complaints may be directed;
 - g. a warning against unauthorized access;
 - h. a twenty-four (24) hour emergency telephone number (if different from above); and
 - i. a warning against dumping outside the Site.
3. The Owner shall install and maintain signs to direct vehicles to working face and waste diversion areas.
4. The Owner shall provide signs at waste diversion areas informing users what materials are acceptable and directing users to appropriate storage areas.

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

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

Burning Waste Prohibited

6. Burning of waste at the Site is prohibited.

Site Access

7. Waste shall only be accepted during the following time periods: Waste/reuse material shall only be accepted at the Site from 6:00 am to 8:00 pm - Monday to Sunday.
8. On-site equipment used for daily site preparation and closing activities shall only be used from 6:00 am to 8:00 pm - Monday to Sunday.
9. With the prior written approval from the District Manager, the time periods may be extended to accommodate seasonal or unusual quantities of waste.

Site Security

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

3. EMPLOYEE TRAINING

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

4. COMPLAINTS RESPONSE PROCEDURE

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

5. EMERGENCY RESPONSE

1. All Spills as defined in the EPA shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.

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 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. INSPECTIONS, RECORD KEEPING AND REPORTING

Daily Log Book

1. A daily log shall be maintained in written or electronic format and shall include the following information:
 - a. the type, date and time of arrival, hauler, and quantity (tonnes) of all waste and cover material received at the Site;
 - b. the area of the Site in which waste disposal operations are taking place;
 - c. a record of litter collection activities and the application of any dust suppressants;
 - d. a record of the daily inspections; and
 - e. a description of any out-of-service period of any control, treatment, disposal or monitoring facilities, the reasons for the loss of service, and action taken to restore and maintain service.
2. Any information requested, by the Director or a Provincial Officer, concerning the Site and its operation under this Approval, including but not limited to any records required to be kept by this Approval shall be provided to the Ministry, upon request.

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 Approval. 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 no later than June 30th of the year following the year 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; 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 weekly, maximum daily and total annual quantity (tonnes) of waste received at the Site;
 - g. a description of the waste diversion activities undertaken during that operating year, the amount of waste diverted, by type of waste and the destination of the diverted waste;
 - h. a summary of any complaints received and the responses made;
 - i. a discussion of any operational problems encountered at the Site and corrective action taken;

- j. any changes to the Design and Operations Report and the Closure Plan that have been approved by the Director since the last Annual Report;
- k. a report on the status of all monitoring wells and a statement as to compliance with Ontario Regulation 903; and
- l. any other information with respect to the Site which the Regional Director may require from time to time.

7. LANDFILL DESIGN AND DEVELOPMENT

Approved Waste Types

- 1. Only the following types of waste shall be accepted at the Site:
 - a. Municipal Waste;
 - b. Non-hazardous Solid Industrial Wastes;
 - c. Commercial Waste;
 - d. Leaf and Yard Waste;
 - e. MHSW;
 - f. WEEE;
 - g. Scrap Tires; and
 - h. Other waste that meets the requirements of condition 10.9.
- 2. The Owner shall develop and implement a program to inspect waste to ensure that the waste received at the Site is of a type approved for acceptance under this Approval.
- 3. The Owner shall ensure that all loads of waste are properly inspected by Trained personnel prior to acceptance at the Site and that the waste vehicles are directed to the appropriate areas for disposal or transfer of the waste. The Owner shall notify the District Manager, in writing, of load rejections at the Site within one (1) 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 125,000 cubic metres.
- 5. This approval is for receiving additional 22,500 cubic meters of waste for disposal to provide service to the residents in the service area for six (6) years. This approval is to allow the Owner to secure additional capacity through the waste management plan that is in progress, subject to the following conditions:
 - a. An update on the status of waste management planning process to secure future waste disposal capacity shall be included in the Annual Monitoring Report to the District Manager with a copy to the Director;

- b. In an event the Owner hasn't made any progress in a given year, this approval of additional capacity will be limited to what has been already filled and the Site shall stop receiving waste for disposal; and
 - c. The Owner shall submit a closure plan as required in condition 9, within six (6) months of ceasing to receive waste.
- 6. The Owner shall cease accepting and depositing waste at the Site after the total capacity reached 147,500 cubic meters or six (6) years from the date of this Approval whichever comes first.

Service Area

- 7. Only waste that is generated within the boundaries of the City of Kawartha Lake 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 Approval. The alternative material shall be non-hazardous according to Reg. 347 and will be expected to perform at least as well as soil in relation to the following functions:
 - a. Control of blowing litter, odours, dust, landfill gas, gulls, vectors, vermin and fires;
 - b. Provision for an aesthetic condition of the landfill during the active life of the Site;
 - c. Provision for vehicle access to the active tipping face; and
 - d. Compatibility with the design of the Site for groundwater protection, leachate management and landfill gas management.
- 9. Cover material shall be applied as follows:
 - a. **Weekly Cover** - Weather permitting, deposited waste shall be covered **weekly** in a manner acceptable to the District Manager so that no waste is exposed to the atmosphere;
 - b. **Intermediate Cover** - In areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 300 millimetre of soil cover or an approved thickness of alternative cover material shall be placed; and

- c. Final Cover - In areas where landfilling has been completed to final 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.

Geosynthetic Final Cover

- 10. If the Owner proposes Geosynthetic Clay Liner for the final cover, the following are the minimum requirements for the Geosynthetic Clay final cover for the Site:
 - a. three hundred (300) millimeter subgrade soil compacted to 85% Standard Proctor Density;
 - b. three hundred (300) millimeter drainage layer protecting the GCL; and
 - c. one hundred and fifty (150) millimeter top soil.

8. LANDFILL MONITORING

Landfill Gas

- 1.
 - a. The Owner shall ensure that any buildings or structures at the Site contain adequate ventilation systems to relieve any possible landfill gas accumulation to prevent methane concentration reaching the levels within its explosive range. Routine monitoring for explosive methane gas levels shall be conducted in all buildings or structures at the Site, especially enclosed structures which at times are occupied by people.
 - b. In addition to monitoring landfill gas as required by condition 8.1.a, the Owner shall monitor landfill gas in accordance with the Schedule 2.

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;
 - 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; and
 - c. Ontario Drinking Water Quality Standards

Surface Water and Groundwater

3. The Owner shall monitor surface water and groundwater in accordance with the monitoring programs outlined in Schedules 3 and 4.
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 is 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 Reg. 903, to 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 Item 10, Schedule 1.
 - b. Contingency plan in the event of a confirmed exceedance of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate shall be in accordance with Item 10, Schedule 1.
9. In the event of a confirmed exceedance 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.

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:
 - 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 exceedances;
 - 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 Director for approval; and
 - c. The contingency measures shall be implemented by the Owner upon approval by the Director.
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 Approval.

Changes to the Monitoring Programs, Trigger Mechanisms and Contingency Plans

12. The Owner may request to make changes to the monitoring program(s), trigger mechanisms and/or contingency plan to the District Manager in accordance with the recommendations of the annual report. The Owner shall make clear reference to the proposed changes in a 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, trigger mechanisms and/or contingency plans, 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 Director requesting the Approval be amended to approve the proposed changes to the environmental monitoring plan prior to implementation.

9. CLOSURE PLAN

1. At least two (2) years prior to closure or when ninety (90) percent of the landfill capacity has been reached, 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 as a minimum but are not limited to:
 - a. a plan showing Site appearance after closure;
 - b. a description of the proposed end use of the Site, that shall include a discussion on

- the Environmental Assessment commitments (if applicable) to dedicate portion of the lands within the Site that are not required for site post-closure operations and monitoring, to be used for community recreational purpose;
- c. a description of how pollinator friendly plants were considered in the final vegetative cover for the landfill and/or in the landscaping within the Site;
- d. a description of the procedures for closure of the Site:
 - i. advance notification of the public of the landfill closure;
 - ii. posting 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; and
 - vi. final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
- e. a schedule indicating the time-period for implementing sub-conditions i to vi above.
- f. 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;
- g. an assessment of the adequacy of and need to implement the contingency plans for leachate and methane gas; and
- h. 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 high wind events; and
 - c. if necessary to prevent litter, waste storage areas shall be covered during high winds events.
- 2. The Owner/Operator shall remove the refrigerant as defined in O. Reg. 463/10 in accordance with the following:

- a. all White Goods containing refrigerants which have not been tagged by a licensed technician to verify that the equipment no longer contains refrigerants, shall be stored in a separate area in an upright position; and
 - b. White Goods containing refrigerants received at the Site shall be shipped off-Site in order to have the refrigerants removed by a licensed technician in accordance with O. Reg. 463/10; or
 - c. the refrigerant shall be removed at the Site by a licensed technician, in accordance with O. Reg. 463/10, prior to shipping White Goods off-Site; and
 - d. a detailed log of all White Goods containing refrigerants received shall be maintained. The log shall include the following:
 - i. date of the record;
 - ii. types, quantities and source of White Goods containing refrigerants received;
 - iii. details on removal of refrigerants as required by O. Reg. 463/10; and
 - iv. the quantities and destination of the White Goods and/or refrigerants transferred from the Site.
3. 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.
4. 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.
5. The Owner may receive, temporarily store and transfer WEEE subject to the following:
 - a. prior to being accepted at the Site, all incoming WEEE shall be inspected by the Owner to ensure that it meets the Owner's acceptance criteria for the WEEE diversion program;

- b. WEEE shall only be stored in designated WEEE storage bins;
 - c. no processing / dismantling of WEEE shall take place at the Site;
 - d. WEEE shall be managed and disposed of in accordance with the EPA and Regulation 347; and
 - e. a daily record is kept of all WEEE that is accepted, stored and transferred (including destination) from the Site.
- 6.
- a. The total amount of WEEE that may be stored on the Site at any one time shall not exceed 50 tonnes; and
 - b. In the event that WEEE can not be removed from the Site and the total storage capacity as approved in condition 10.6.a has been reached, the Owner shall, forthwith upon reaching the approved storage capacity:
 - i. cease accepting additional WEEE to ensure that the total approved storage capacity is not exceeded; and
 - ii. notify the District Manager that the approved storage capacity has been reached, that the Site has ceased to accept additional WEEE and provide a contingency plan for the long term removal and disposal and/or diversion of WEEE from the Site.
7. The Owner may receive, temporarily store and transfer scrap tires subject to the following:
- a. the total amount of scrap tires stored on Site shall not exceed 5000 tire units;
 - b. a daily record is kept of the number of tire units accepted, stored and transferred from the Site; and
 - c. scrap tires shall be stockpiled as follows:
 - i. no individual stockpile shall exceed a volume of 300 m³;
 - ii. stockpiles shall be located a minimum of 15 metres from the property line, any buildings and the active landfilling area;
 - iii. stockpiles shall be separated from each other and from other waste piles by a minimum of 6 metres; and
 - iv. an area of no less than 4.5 metres around each stockpile shall be kept free of vegetation; or

- d. scrap tires shall be stockpiled in accordance with a plan approved by the local Fire Department.
- 8. In the event that scrap tires can not be removed from the Site and the total storage capacity as approved in condition 10.7.a has been reached, the Owner shall, forthwith upon reaching the approved storage capacity:
 - a. cease accepting additional scrap tires to ensure that the total approved storage capacity is not exceeded;
 - b. notify the District Manager that the approved storage capacity has been reached and that the Site has ceased to accept addition scrap tires and provide a contingency plan for the long term removal and disposal and/or diversion of scrap tires from the Site.
- 9. The Owner may implement other waste diversion programs subject to the following:
 - a. the waste diversion program is technically and economically viable; and
 - b. the implementation of the waste diversion program does not entail design changes to the Site, does not impact existing approved activities on Site nor impact existing monitoring and/or control programs;
 - c. the Owner has notified the District Manager of the proposed waste diversion program (type of waste to be diverted and maximum amount to be stored) and has obtained confirmation, in writing, from the District Manager that the implementation of the waste diversion program satisfies condition 10.9.b; and
 - d. the Owner maintains a record of all waste received, stored and transferred (including destination) from the Site, under the waste diversion program.
- 10. Waste diversion programs that would not meet the requirements of condition 10.9.b require Director's approval.

11. COMPOSTING

Approved Waste Types

- 1. Only leaf and yard waste shall be composted at this Site.

Operations

- 2. Composting operations at the Site shall be carried out in a manner as not to interfere with

normal waste disposal operations as approved in this Certificate.

3. Should the ensuing compost be destined for use by the general public, composting operations at the Site shall be carried out in accordance with the Standards Document.
4. Composting operations at the Site must be carried out in a manner that does not cause groundwater or surface water contamination, offensive odours or encourage the presence of vermin or any other adverse effect.

12. RE-USE PROGRAM

1. The operation of the Re-Use Facility shall be limited to the receipt, temporary storage and public pick-up of non-hazardous items and any other items as approved in advance in writing by the District Manager, after they have successfully undergone screening and found to have some residual value, subject to the following conditions:
 - a. Records of the quantities of re-use items (summarized by individual category) received and offered to the public for reuse, are kept and reported in the Annual Report;
 - b. A "Re-Use material Exchange Disclaimer and Release" form signed by the individual prior to release of the re-use item from the site; and
 - c. The item is not a commercially banned product.
2. The total amount of re-use items (non-hazardous items of some residual value) stored at the Re-Use Facility at any one time, shall not exceed 200 tonnes.
3. Prior to being accepted at the Re-Use Facility, all incoming re-use items shall be inspected by the Owner, and shall only be permitted to enter the Re-Use Facility if that type of item is approved to be accepted at the Re-Use Facility.
4. The Re-Use Facility shall be operated in a secure manner within an enclosed-type structure, such that unauthorized persons cannot enter the Re-Use Facility without supervision.
5. The Owner shall ensure that the Re-Use Facility is operated in a safe and secure manner, and that the re-use items are properly handled, packaged and stored so as not to pose any threat to the general public, site personnel and the natural environment.
6. All wastes generated at the Re-Use Facility shall be managed and disposed of in accordance with the EPA and Ontario Regulation 347.

13. MHSW DEPOT

1. The MHSW depot shall not receive more than 20 cubic metres of MHSW per day.
2. The MHSW depot shall not store in excess of 50 cubic metres of MHSW at any given time.
3. MHSW shall not be stored at the Site for longer than one hundred eighty (180) days, unless the consent of the District Manager has been obtained, with the exception of waste oil which shall be stored on Site in accordance with condition 13.2.
4. All household hazardous waste received and stored must be managed in accordance with Ontario Regulation 347, R.R.O. 1990, as amended, and with the Ministry of Environment document entitled "Household Hazardous Waste Collection and Facility Guidelines" dated May 1993.
5. All storage of liquid wastes shall be in accordance with the Ministry's publication "Guidelines of Environmental Protection Measures at Chemical Storage Facilities", dated May 2007 as amended.
6. All MHSW shall be stored in secondary containment that is adequate to contain any spills or leaks. Segregated secondary containment shall be provided for incompatible types of waste.
7. Incoming MHSW shall be inspected by Trained Personnel, prior to being accepted at the Site, to ensure that the Site is approved to accept that type of waste.
8. All containers shall be clearly labelled indicating the type and nature of the hazardous waste stored as required by regulation. All points of access to the Site shall be posted to warn that the area contains hazardous materials.
9. No radioactive wastes shall be accepted at this Site.
10. Oil and oil-based paints which have been manufactured prior to 1972; or whose manufacturing date cannot be determined, may contain PCBs and shall be handled as follows:
 - a. The oil and oil-based paints shall not be mixed (bulked) with other paints prior to testing. Paints which are lab-packed are not considered to be mixed under this Certificate;
 - b. The oil and oil-based paints shall be tested by a certified laboratory for PCB content and shall be handled in the manner outlined in condition 13.10.c if found to contain PCBs;

- c. If the oil and oil-based paints are found to have PCBs at or above levels identified in condition 13.10.d, it shall be forthwith reported to the District Manager and shall be managed in accordance with Regulation 362 and stored or removed from the Site to an approved PCB storage site, in accordance with written instructions from the District Manager; and
 - d. The oil and oil-based paints shall not be distributed for reuse if they have any measurable PCB content. The oil and oil-based paint is considered to be a PCB waste, if measured levels are equal to or greater than 50 parts per million.
- 11. Except for oil based paints that become classified as PCB Waste, paints may be offered for reuse to the public. Records shall be kept of the type, volume and recipient of paint returned to the public.
- 12. The Owner shall maintain, at the Site, a log book which records daily, the following information:
 - a. date of record;
 - b. types, quantities and source of MHSW received;
 - c. quantities of MHSW stored at the Site;
 - d. quantities and destination of MHSW shipped from the Site; and
 - e. quantities of waste returned to the public as noted in Condition 13.11.

Schedule 1
Supporting Documentation

1. Supporting information to an Application for Approval of a Landfill Disposal Site dated October 17, 1972.
2. Site development Plan and Survey submitted to the Waste Management Branch, June 21, 1973 by F.V. Lecraw.
3. Sketch map entitled "Township of Laxton" 321304, Lot 6, C9.
4. Instructions in the letter to Mr. F.V. LeCraw dated August 28, 1974.
5. Application for a Provisional Certificate of Approval for a Waste Disposal Site dated January 14, 2005 signed by Bill Pickard, Manager of Solid Waste Services.
6. Report entitled "Laxton Landfill Site Design/Operations & Closure Report" prepared by City of Kawartha Lakes, Environmental Services Division.
7. Report titled "Laxton Landfill Site, Status Report, January 1 to December 31, 2006" prepared by City of Kawartha Lakes and Hydroterra Limited" submitted with the cover letter from Bill Pickard addressed to Tesfaye Gebrezghi, Ministry of the Environment, dated July 30, 2007.
8. Report titled "Laxton Landfill Site, Status Report, January 1 to December 31, 2007" prepared by City of Kawartha Lakes and Cambium Environmental".
9. Environmental Compliance Approval Application dated January 30, 2024 and signed by Kayla Pantaleo, Regulatory Compliance Officer
The Corporation of the City of Kawartha Lakes, including the attached supporting documentation.
10. Letter report dated September 24, 2024 addressed to Ms. Ranjani Munasinghe, Senior Waste Engineer, Ministry of the Environment, Conservation and Parks, Environmental Permissions Branch Re: Lanxton Landfill Trigger Program and Contingency Plan, prepared by Cristina Olarte, P.Eng., EP, Waste Management Engineer, WSP.

Schedule 2
Landfill Gas Water Monitoring Program

Monitoring Station	Frequency	Parameters
GP-1 & GP-2	January, February, Spring, Summer, Fall.	Methane

Schedule 3
Surface Water Monitoring Program

Monitoring Station	Frequency	Parameters
SWA, SWC2, SWD, SWF	Semi-Annual (April / May & September / October)	BOD, phenols, DOC, TKN, fluoride, nitrate, nitrite, ammonia, alkalinity, hardness, chloride, phosphorous, sulphate, aluminum, antimony, arsenic, barium, boron, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, potassium, selenium, silver, sodium, strontium, thallium, vanadium, zinc, pH, conductivity, TSS, TDS, COD, turbidity

Schedule 4
Groundwater Monitoring Program

Monitoring Station	Frequency	Parameters
MW1, MW2, MW3*, MW4*, MW6, MW7, MW8, MW10, MW12, MW13, MW14, MW15 MW16, MW16-I*, MW17, MW18, MW19, MW20-I & MW20-II	Semi-Annual (April / May & September / October)	DOC, phenols, conductivity, hardness, TKN, fluoride, sulphate, chloride, phosphorous, nitrate, nitrite, ammonia, alkalinity, calcium, magnesium, potassium, sodium manganese, copper, lead, molybdenum, zinc, barium, boron, cadmium, chromium, iron, aluminum, arsenic, cobalt, nickel, silver, strontium, vanadium, pH, COD, TDS * VOCs – annual during Fall event Water Level Measurements

The reasons for the imposition of these terms and conditions are as follows:

GENERAL

- The reason for conditions 1.1, 1.2, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.17, 1.18 and 1.19 is to clarify the legal rights and responsibilities of the Owner and Operator under this Approval.
- The reasons for condition 1.3 are to ensure that the Site is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.
- 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.
- The reasons for condition 1.12 are to restrict potential transfer or encumbrance of the Site without the approval of the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Approval.
- The reason for condition 1.13 is to ensure that the successor is aware of its legal responsibilities.
- The reasons for conditions 1.14 and 1.15 are that the Part II.1 Director is an individual with authority pursuant to Section 197 of the Environmental Protection Act to require registration on title and provide any person with an interest in property before dealing with the property in any way to give a copy of the Approval to any person who will acquire an interest in the property as a result of the dealing.
- 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 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.
- Condition 1.20 has been included in order to clarify what information may be subject to the Freedom of Information Act.

SITE OPERATION

- The reasons for conditions 2.1, 2.5 and 6.3 are to ensure that the Site is operated, inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.
- The reason for conditions 2.2, 2.3 and 2.4 is to ensure that users of the Site are fully aware of important information and restrictions related to Site operations and access under this Approval.

- The reasons for condition 2.6.a and 2.6.b are open burning of municipal waste is unacceptable because of concerns with air emissions, smoke and other nuisance effects, and the potential fire hazard and to make sure burning of brush and wood are carried out in accordance with Ministry guidelines.
- The reasons for condition 2.7, 2.8 and 2.9 are to specify the hours of operation for the landfill site and a mechanism for amendment of the hours of operation, as required.
- The reasons for condition 2.10 and 2.11 are to ensure that the Site is supervised by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person and to ensure the controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site attendant is on duty.

EMPLOYEE TRAINING

- 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

- 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

- 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.
- 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.

INSPECTIONS, RECORD KEEPING AND REPORTING

- The reason for conditions 6.1 and 6.2 is to ensure that accurate waste records are maintained to ensure compliance with the conditions in this Approval (such as fill rate, site capacity, record keeping, annual reporting, and financial assurance requirements), the EPA and its regulations.
- 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.
- 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

- 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.
- Condition 7.5 is to approve the capacity needed to serve the landfill users of the approved service area until the Owner secure additional future capacity. This is to protect the health and safety of the people and the natural environment.
- Condition 7.8 is to provide the Owner the process for getting the approval for alternative daily and intermediate cover material.
- 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.
- Condition 7.10 is included to provide minimum requirements for the geosynthetic clay final cover if the Owner proposes to use geosynthetic clay for the final cover.

LANDFILL MONITORING

- Reasons for condition 8.1 are to ensure that 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.
- Condition 8.2 is included to provide the groundwater and surface water limits to prevent water pollution at the Site.
- 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.
- 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.
- 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.

- Conditions 8.12 and 8.13 are included to streamline the approval of the changes to the monitoring plans and trigger mechanisms and contingency plans.

CLOSURE PLAN

- 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

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

COMPOSTING

- 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.

RE-USE PROGRAM

- Condition 12 is included to ensure that the re-useable items are collected and stored in their temporary storage location and are picked up by residents, in a manner as to minimize a likelihood of an adverse effect or a hazard to the natural environment or any person.

MHSW DEPOT

- The reasons for the condition 13 are to approve collection of household hazardous waste and to ensure that the wastes are managed in a manner that protects the environment and the health and safety of the public.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A321304 issued on February 14, 1980 as amended.

In accordance with Section 139 of the *Environmental Protection Act*, you may by written notice served upon me and the Ontario Land 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 ("the Notice") shall state:

- a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the *Environmental Protection Act*, a hearing may not be required with respect

to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

and

The Director appointed for the purposes of Part II.1 of
the *Environmental Protection Act*
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

* **Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or www.oltt.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 10th day of October, 2024



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

RM/

c: District Manager, MECP Peterborough
Cristina Olarte P. Eng. and Ishrak Hasan, WSP Canada Inc.



Laxton Landfill Site
3225 MONCK RD, KAWARTHA LAKES, ON, K0M 2L0

Inspection Report

System Number:
Entity: CITY OF KAWARTHA LAKES
Inspection Start Date: 05/10/2022
Inspection End Date: 06/29/2022
Inspected By: Glenn Rutherford
Badge #: 472



(signature)

NON-COMPLIANCE/NON-CONFORMANCE ITEMS

The following item(s) have been identified as non-compliance/non-conformance, based on a "No" response captured for a legislative or best management practice (BMP) question (s), respectively.

Question Group: Operations

Question ID	NOL 9	Question Type	Legislative
Question: Does the holder of the landfill ECA own the property rights for the CAZ?			
Legislative Requirement	EPA 27 (1); EPA O. Reg. 232/98 4 (1);		
Observation/Corrective Action(s)			
Component Assessed: LANDFILL SITE			
No			
The 2021 AMR for the site indicates in an appended screening checklist form that Reasonable Use Concept (RUC) exceedances are noted at eastern monitoring locations, however, are more related to natural earth elements or organic sources associated with the peat soils. The City is looking to acquire additional CAZ lands to the east. The 2021 AMR for the site indicates in an appended 2018 letter from the City's consultant that for the past number of years, the City has been working towards reaching an agreement to purchase or establish an easement on the lands east of the landfill property for the purposes of potential expansion of the monitoring well network and/or expansion of the existing Contaminant Attenuation Zone (CAZ). The 2018 letter also discusses installing an additional monitoring well nest east of the waste mound will be beneficial to confirming leachate impact is not occurring east of the Site. Action: By July 28, 2022, please confirm if the additional monitoring well nest proposed to be installed east of the waste mound was installed or if additional discussion with the ministry is required.			

Question ID	NOL 10	Question Type	Legislative
Question: Do the property rights for the CAZ meet the requirements of Reg 232?			

Legislative Requirement	EPA 27 (1); EPA O. Reg. 232/98 4 (3);
Observation/Corrective Action(s)	
Component Assessed: LANDFILL SITE	
No The City has been working towards reaching an agreement to purchase or establish an easement on the lands east of the landfill property for the purposes of potential expansion of the monitoring well network and/or expansion of the existing Contaminant Attenuation Zone (CAZ). The City has or is considering an additional monitoring well nest proposed to be installed east of the waste mound. This well nest will be beneficial to confirming leachate impact is not occurring east of the Site.	

Question ID	NOL 42	Question Type	Legislative
Question: Is Daily cover applied to the waste at the end of each working day or as otherwise specified in the ECA?			
Legislative Requirement	EPA 27 (1); EPA O. Reg. 232/98 7;		
Observation/Corrective Action(s)			
Component Assessed: LANDFILL SITE			
No			
The ECA requires: Daily Cover - entire working face shall be covered weekly with a minimum thickness of 150 millimetre of soil cover or an approved thickness of alternative cover material.			
On the day of the inspection, the "daily cover" which is applied weeks had not been applied since the previous Thursday as per operating procedures. It was not possible to assess the adequacy of the "daily cover" on the day of the inspection.			

Question Group: Other Inspection Findings

Question ID	949100	Question Type	Legislative
Question: Were the inspection questions sufficient to address other identified non-compliance items?			
Legislative Requirement	Not Applicable		
Observation/Corrective Action(s)			
Component Assessed: LANDFILL SITE			
The following instances of non-compliance were also noted during the inspection: On the day of the inspection two concerns were noted at these site. Firstly, there were a significant number of large items placed on the waste mound but which were not covered, nor did they appear to placed in those locations for a reason. Second, there was a significant amount of litter at the site. Actions required: By July 28,, 2022, the City shall submit an action plan identifying steps to be taken to address these two issues and timelines for their completion.			

INSPECTION DETAILS

This section includes all questions that were assessed during the inspection.

Ministry Program: WASTE | **Regulated Activity:** Landfills

Component Assessed: LANDFILL SITE

Question ID	NOL 1	Question Type	Legislative
Question: Does the Open landfill site have an Environmental Compliance Approval (ECA)?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			
Environmental Compliance Approval (ECA) A321204 approves the use and operation of a 29 hectare site.			
ECA A321304 consists of Notices 1-4			
Notice No. 1 - issued May 7, 2007			
Notice No. 2 - issued July 17, 2007			
Notice No. 3 - issued June 11, 2009			
Notice No. 4 - issued October 29, 2012			
The Laxton Landfill is nearing capacity and may only have 2-3 years of capacity remaining. The City is planning to apply for vertical expansion of the landfill to gain additional capacity at the site.			

Question ID	NOL 3	Question Type	Legislative
Question: Does the holder of the landfill ECA own the entire site?			
Legislative Requirement	EPA 27 (1); EPA O. Reg. 232/98 3;		
Observation			
Yes			

Question ID	NOL 4	Question Type	Information
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Question:	
Does the landfill have a Contaminant Attenuation Zone (CAZ)?	
Legislative Requirement	Not Applicable
Observation	
Yes	

Question ID	NOL 9	Question Type	Legislative
Question:			
Does the holder of the landfill ECA own the property rights for the CAZ?			
Legislative Requirement	EPA 27 (1); EPA O. Reg. 232/98 4 (1);		
Observation			
No			
The 2021 AMR for the site indicates in an appended screening checklist form that Reasonable Use Concept (RUC) exceedances are noted at eastern monitoring locations, however, are more related to natural earth elements or organic sources associated with the peat soils. The City is looking to acquire additional CAZ lands to the east. The 2021 AMR for the site indicates in an appended 2018 letter from the City's consultant that for the past number of years, the City has been working towards reaching an agreement to purchase or establish an easement on the lands east of the landfill property for the purposes of potential expansion of the monitoring well network and/or expansion of the existing Contaminant Attenuation Zone (CAZ). The 2018 letter also discusses installing an additional monitoring well nest east of the waste mound will be beneficial to confirming leachate impact is not occurring east of the Site. Action: By July 28, 2022, please confirm if the additional monitoring well nest proposed to be installed east of the waste mound was installed or if additional discussion with the ministry is required.			

Question ID	NOL 10	Question Type	Legislative
Question:			
Do the property rights for the CAZ meet the requirements of Reg 232?			
Legislative Requirement	EPA 27 (1); EPA O. Reg. 232/98 4 (3);		
Observation			

No

The City has been working towards reaching an agreement to purchase or establish an easement on the lands east of the landfill property for the purposes of potential expansion of the monitoring well network and/or expansion of the existing Contaminant Attenuation Zone (CAZ).

The City has or is considering an additional monitoring well nest proposed to be installed east of the waste mound. This well nest will be beneficial to confirming leachate impact is not occurring east of the Site.

Question ID	NOL 12	Question Type	Legislative
Question: Does the landfill have a large enough Buffer Area as specified in the ECA or Regulation 232/98?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 13	Question Type	Information
Question: Are access roads and on-site roads provided so that vehicles hauling waste to and on the site may travel readily on any day under all normal weather conditions?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 14	Question Type	Legislative
Question: Is site access limited to times when an attendant is on duty?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

The site is open as follows:

Winter hours (Oct 16-Apr 30)

Thursday: 11am to 5pm

Sunday: 12pm to 4pm

Summer hours (May 1-Oct 15)

Thursday: 11am to 5pm

Sunday: 11am to 5pm

In the summer, open from 11am to 5pm on holiday Mondays.

Question ID	NOL 15	Question Type	Legislative
Question: Does the site only receive waste from within its approved service area?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 16	Question Type	Information
Question: Is the site required to have a ground water monitoring program by the ECA?			
Legislative Requirement	Not Applicable		
Observation			
Yes			

Question ID	NOL 17	Question Type	Legislative
Question: Is the site implementing the groundwater monitoring program as required by the ECA?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 18	Question Type	Legislative
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Question:	
Are monitoring well samples taken and tested to determine the quality of the ground water?	
Legislative Requirement	EPA 27 (1); EPA O. Reg. 232/98 25;
Observation	
Yes	

Question ID	NOL 19	Question Type	Information
Question:			
Is the ministry concerned with the results of the samples that have been tested?			
Legislative Requirement	Not Applicable		
Observation			
No The 2021 AMR does not identify any significant groundwater issues at the site.			

Question ID	NOL 20	Question Type	Information
Question:			
Is there ongoing abatement to address any concerns the ministry has with the ground water monitoring?			
Legislative Requirement	Not Applicable		
Observation			
No			

Question ID	NOL 28	Question Type	Legislative
Question:			
Is landfill gas managed and monitored at this site?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes There is no requirement for landfill gas to be managed at the site. There is limited landfill gas monitoring at this site.			

The ECA only requires landfill gas to be monitored as follows:

Condition 25.1

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.

In addition, the City monitors landfill gas at two gas monitoring wells, both located to the south of the active waste area. The AMR recommends that this aspect of the landfill gas monitoring could be eliminated at these locations as there are no landfill gas detections at the monitors and limited sensitive land uses surrounding the landfill.

Question ID	NOL 29	Question Type	Information
Question: Is the ministry concerned with landfill gas at this site?			
Legislative Requirement	Not Applicable		
Observation No			

Question ID	NOL 31	Question Type	Information
Question: Is the site required to have a surface water monitoring program by the ECA?			
Legislative Requirement	Not Applicable		
Observation			
Yes			

Question ID	NOL 32	Question Type	Legislative
Question: Is the site implementing the surface water monitoring program as required by the ECA?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 33	Question Type	Legislative
Question: Is the water quality being monitored/sampled for surface water features on-site and for any off-site surface water features that receive run-off from the site?			
Legislative Requirement	EPA 27 (1); EPA O. Reg. 232/98 24;		
Observation			
Yes			

Question ID	NOL 34	Question Type	Information
Question: Are there water quality concerns with the results of the samples that have been tested?			
Legislative Requirement	Not Applicable		
Observation			
No			

Question ID	NOL 36	Question Type	Legislative
Question: Is proper equipment available for the compaction of waste and applying cover material?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 37	Question Type	Legislative
Question: Is the landfill able to accurately determine the amount of waste received?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 38	Question Type	Legislative
Question: Are all disposal operations at the site adequately and continually supervised?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 39	Question Type	Information
Question: Does the landfill operator have a site inspection program as required by the ECA?			
Legislative Requirement	Not Applicable		
Observation			
Yes			

Question ID	NOL 40	Question Type	Legislative
Question: Does the landfill operator have a procedure in place to address issues identified by staff during the site inspection?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 41	Question Type	Legislative
Question: Is the waste being compacted adequately?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 42	Question Type	Legislative
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Question:	
Is Daily cover applied to the waste at the end of each working day or as otherwise specified in the ECA?	
Legislative Requirement	EPA 27 (1); EPA O. Reg. 232/98 7;
Observation	
No	
The ECA requires: Daily Cover - entire working face shall be covered weekly with a minimum thickness of 150 millimetre of soil cover or an approved thickness of alternative cover material. On the day of the inspection, the "daily cover" which is applied weeks had not been applied since the previous Thursday as per operating procedures. It was not possible to assess the adequacy of the "daily cover" on the day of the inspection.	

Question ID	NOL 43	Question Type	Legislative
Question:			
Are procedures implemented to control rodents or other animals and insects at the site?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 44	Question Type	Legislative
Question:			
Is site access restricted by use of a gate, fence, or physical barrier when the site is not operating?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 45	Question Type	Legislative
Question:			
Is the waste disposal area adequately screened from public view?			

Legislative Requirement	EPA 27 (1);
Observation	
Yes	

Question ID	NOL 46	Question Type	Legislative
Question: Are daily records of site operations available at the site for at least the past 2 years or as otherwise required by the ECA?			
Legislative Requirement	EPA 27 (1); EPA O. Reg. 232/98 21;		
Observation			
Yes			

Question ID	NOL 47	Question Type	Legislative
Question: Has the annual operations report been submitted to MECP or available on site as required by the ECA?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 48	Question Type	Legislative
Question: Is scavenging being prevented?			
Legislative Requirement	EPA 27 (1); EPA O. Reg. 232/98 23;		
Observation			
Yes			

Question ID	NOL 51	Question Type	Legislative
Question: Is the landfill only accepting the types of waste that they are approved to receive?			

Legislative Requirement	EPA 27 (1);
Observation	
Yes	

Question ID	NOL 52	Question Type	Information
Question: Does the landfill have a waste refusal procedure in place to manage waste that arrives at the site that the site is not approved the accept?			
Legislative Requirement	Not Applicable		
Observation			
Yes			

Question ID	NOL 53	Question Type	Legislative
Question: is the waste refusal procedure being followed?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 54	Question Type	Legislative
Question: Does the landfill have a procedure in place to address and document spills and fires?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 55	Question Type	Legislative
Question: Does the landfill have emergency contingency plan as required by the ECA?			
Legislative Requirement	EPA 27 (1);		

Observation
Yes

Question ID	NOL 59	Question Type	Legislative
Question: Does the landfill have a procedure in place to address complaints?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 61	Question Type	Information
Question: Has the landfill operator developed a Design and Operations Manual?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	NOL 62	Question Type	Information
Question: Is the Design and Operations Manual up to date?			
Legislative Requirement	Not Applicable		
Observation			
Yes			

Question ID	NOL 63	Question Type	Legislative
Question: Does the landfill operator have training procedures for site personnel?			
Legislative Requirement	EPA 27 (1);		
Observation			

Yes

Question ID	NOL 64	Question Type	Legislative
Question: Is the landfill operator following the established training procedures?			
Legislative Requirement	EPA 27 (1);		
Observation			
Yes			

Question ID	949100	Question Type	Legislative
Question: Were the inspection questions sufficient to address other identified non-compliance items?			
Legislative Requirement	Not Applicable		
Observation The following instances of non-compliance were also noted during the inspection: On the day of the inspection two concerns were noted at these site. Firstly, there were a significant number of large items placed on the waste mound but which were not covered, nor did they appear to placed in those locations for a reason. Second, there was a significant amount of litter at the site. Actions required: By July 28,, 2022, the City shall submit an action plan identifying steps to be taken to address these two issues and timelines for their completion.			



APPENDIX B

Borehole Logs

TABLE 1: OBSERVATION WELL
CONSTRUCTION DETAILS

<u>MW 1-02</u>	<u>Depth Interval (metres)</u>
Screen Set	3.05 – 6.10
Filter Pack	2.59 – 6.10
Bentonite Seal	1.82 – 2.59
Sand Pack	0.62 – 1.83
Surface Seal (Cement)	0.00 – 0.62

<u>MW 2-02</u>	<u>Depth Interval (metres)</u>
Screen Set	2.45 – 6.10
Filter Pack	1.83 – 6.10
Bentonite Seal	1.22 – 1.83
Sand Pack	0.62 – 1.83
Surface Seal (Cement)	0.00 – 0.62

<u>MW 3-02</u>	<u>Depth Interval (metres)</u>
Screen Set	2.45 – 5.49
Filter Pack	1.83 – 5.49
Bentonite Seal	1.22 – 1.83
Sand Pack	0.46 – 1.22
Surface Seal (Cement)	0.00 – 0.46

<u>MW 4-02</u>	<u>Depth Interval (metres)</u>
Screen Set	4.57 – 7.63
Filter Pack	4.27 – 7.63
Bentonite Seal	3.81 – 4.27
Sand Pack	0.62 – 3.81
Surface Seal (Cement)	0.0 – 0.62

TABLE 1: OBSERVATION WELL
CONSTRUCTION DETAILS

MW 5-02 Depth Interval (metres)

Screen Set	6.10 – 9.14
Filter Pack	5.44 – 9.14
Bentonite Seal	4.57 – 5.44
Sand Pack	0.62 – 4.57
Surface Seal (Cement)	0.00 – 0.62

MW 6-02 Depth Interval (metres)

Screen Set	3.05 – 6.10
Filter Pack	2.60 – 6.10
Bentonite Seal	2.00 – 2.60
Sand Pack	0.91 – 2.00
Surface Seal (Cement)	0.00 – 0.91

MW 7-02 Depth Interval (metres)

Screen Set	4.57 – 6.10
Filter Pack	2.44 – 6.10
Bentonite Seal	1.83 – 2.44
Sand Pack	0.91 – 1.83
Surface Seal (Cement)	0.00 – 0.91

MW 8-02 Depth Interval (metres)

Screen Set	4.57 – 6.10
Filter Pack	3.96 – 6.10
Bentonite Seal	3.35 – 3.96
Sand Pack	0.62 – 3.35
Surface Seal (Cement)	0.00 – 0.62

TABLE 1: OBSERVATION WELL
CONSTRUCTION DETAILS

<u>MW 9-02</u>	<u>Depth Interval (metres)</u>
Screen Set	4.27 – 5.79
Sand Pack	0.62 – 5.79
Bentonite Seal	0.0 – 24.08

<u>MW 10-02</u>	<u>Depth Interval (metres)</u>
Screen Set	24.69 – 25.60
Sand Pack	24.08 – 25.60
Steel Casing	0.0 – 24.08

NOTES:

1. Excepting MW 9-02, a steel protective casing was installed at each of the other monitor wells.
2. Auger hole 11-02 was extended to refusal at a depth of 21.6 metres near MW 6-02.

ENGINEER LB[illegible]



HYDROTERRA LIMITED

15 Gloria Place, Thornhill, Ontario L3T 3G7

BOREHOLE NO. 3-02

PROJECT NAME Laxton-Digby-Longford Landfill

PROJECT NO. 1593

CLIENT City of Kawartha Lakes

DATE July 8, 2002

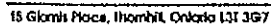
BOREHOLE TYPE 108 mm ID Hollow Stem

FIELD SUPERVISOR LB

GROUND ELEVATION 97.95 m (98.97 m/TOC)

ENGINEER LB

ENGINEER															
DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE					CORE PENETRATION		WATER CONTENT %		REMARKS		
				TYPE	N VALUE	% WATER	% RECOVERY	RCD (m)	SPT 'N' VALUE	SHEAR STRENGTH	W P W L				
1	Greyish brown COARSE SAND to GRAVELLY COARSE SAND, wet, compact			1	18										
2															
3															
4															
5				MEDIUM-COARSE SAND, loose											
6				COARSE SAND, loose											
6.7															
7															
8															
9															
10															

BOREHOLE NO. 4-02

PROJECT NAME Laxton-Digby Longford Landfill

PROJECT NO. 1593

CLIENT City of Kawartha Lakes

DATE July 8, 2002

BOREHOLE TYPE 108 mm ID Hollow Stem

FIELD SUPERVISOR LB

GROUND ELEVATION 101.57 m (102.57 m/TOC)

ENGINEER _____ **L8**

[illegible]



BOREHOLE NO. 5-02

PROJECT NAME Laxton-Digby-Longford Landfill

CLIENT City of Kawartha Lakes

BOREHOLE TYPE 108 mm ID Hollow Stem

GROUND ELEVATION 101.57 m (102.21 m/TOC)

PROJECT NO. 1593

DATE July 9, 2002

FIELD SUPERVISOR LB

ENGINEER _____ LB

[illegible]



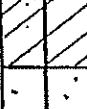
15 Glenlynn Place, Thornhill, Ontario L3T 3G7

BOREHOLE NO. 6-02

PROJECT NO. 1593

DATE July 9, 2002

FIELD SUPERVISOR LBENGINEER LB

DEPTH (m)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE					CORE PENETRATION	WATER CONTENT %		REMARKS	
				SS TYPE	% VALUE	% WATER	% RECOVERY	ROD (m)		SPT "H" VALUE	W P		W L
1	Reddish brown SILTY FINE SAND, loose, wet												
2													
3													
4													
5	Greyish brown FINE-MEDIUM SAND, laminated, wet, loose to compact												
6													
7													
8													
9	MEDIUM-COARSE SAND, loose												
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
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46													
47													
48													
49													
50													
51													



ENGINEER _____ LB

[illegible]



8-02

PROJECT NO. 1593

DATE July 9, 2002

FIELD SUPERVISOR LB

ENGINEER _____ LB

[illegible]



15 Glen's Place, Thornhill, Ontario L3T 3G7

BOREHOLE NO. 9-02

PROJECT NAME Laxton-Digby-Longford Landfill

PROJECT NO. 1593.

CLIENT City of Kawartha Lakes

DATE July 9, 2002

BOREHOLE TYPE 75 mm OD Solid Augers

FIELD SUPERVISOR LB

GROUND ELEVATION 101.02 m (101.30 m/TDC)

ENGINEER LB

[illegible]



Ministry
of the
Environment

WATER WELL RECORD

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

County or District City of Kawartha Lakes (Victoria)	Township/Borough/City/Town/Village Laketon Twp.	On block tract survey, etc. Con, 9	Lot 6
Owner's address City of Kawartha Lakes	First Name 300 Water St., Whitby, ON L1M 9J2	Date completed 11 09 02	Day month year

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)					
General colour	Most common material	Other materials	General description	Depth - feet	
				From	To
Black	Topsoil			0	.5
Brown	Gravel			.5	12
Brown	Gravel		wet	12	77
Gray	Gravel		wet	77	79
Gray	Granite			79	84

WATER RECORD Water found at - feet 79		CASING & OPEN HOLE RECORD Depth - feet From To 61 188 +21 79 2 81 +21 81		SCREENING & SEALING RECORD Screen depth - feet From To 0 20 Material and type (Concrete, gravel, bentonite, etc.) Bentonite	
---	--	---	--	---	--

Pumping test method ☒ Pump ☐ Bailer	Pumping rate Water level Water level during 15 minutes 30 minutes 45 minutes 60 minutes	Duration of pumping Hours Minutes
Water level at start of test at end of test	Pumping rate at start of test at end of test	Water level at start of test at end of test

FINAL STATUS OF WELL ☒ Water supply ☐ Abandoned, installation nearly ☐ Abandoned, poor quality ☐ Abandoned (Other) ☐ Dewatering	☐ Undersized ☐ Reinstallation ☐ Reinstallation
WATER LINE ☐ Domestic ☐ Stock ☐ Irrigation ☐ Industrial	☐ Commercial ☐ Municipal ☐ Public supply ☐ Cooling & air conditioning
METHOD OF CONSTRUCTION ☒ Cable tool ☐ Rotary (conventional) ☐ Rotary (hydraulic) ☐ Rotary (jet)	☐ Air pressure ☐ Boring ☐ Drilling ☐ Jetting

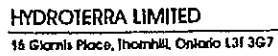
LOCATION OF WELL In diagram below show distances of well from road and lot line. Indicate north by arrow.
Top of Casing: 98.56 m Ground Level: 97.85 m

Name of Contractor G. Hart & Sons Well Drilling Ltd., 2662	Well Driller's License No. T-0546
Address Box 850, Fensholt Falls, ON	Signature of Technician Jim Leach
Name of Well Technician Jim Leach	Signature of Contractor G. Hart & Sons

1 - CONTRACTOR'S COPY

0008 (07/00) Form 10-02

MW 10-02



PROJECT NO. 1593A

DATE February 28, 2003

FIELD SUPERVISOR _____

ENGINEER _____ LB

ENGINEER _____ LB

[illegible]



BOREHOLE NO. 13-03

PROJECT NAME Laxton-Oigby-Longford Landfill

PROJECT NO. 1593A

CLIENT City of Kawartha Lakes

DATE February 28, 2003

BOREHOLE TYPE 108 mm ID Hollow Stem

FIELD SUPERVISOR : _____

GROUND ELEVATION 22

ENGINEER _____ LB

[illegible]

BOREHOLE NO. 14-03

PROJECT NAME Laxton-Digby-Longford Landfill

PROJECT NO. 1593A

CLIENT .. City of Kawartha Lakes

DATE February 28, 2003

BOREHOLE TYPE 108 mm ID Hollow Stem

FIELD SUPERVISOR

GROUND ELEVATION --

ENGINEER 18

[illegible]

BOREHOLE NO.:

Project: City of Kawartha Lakes - Laxton Landfill
 Date Drilled/Installed: Dec. 11, 2006
 Drilling Contractor: All-Terrain Drilling Ltd.
 Drilling Method: 4 1/2 H.S.H
 Supervisor: Don Grant

Geologic Interpretation

Depth
(ft) (m)

Elev.
(m)

Sampling

Blow
Count
Interval
Recovery
Number

Well Installation Details

Refuse 0.0m → 4.87m

4.87m

Bentonite
0.0m to
1.52m

Sandpack
1.52m to
4.87m

2" PVC Sch 40
 5.1 I.D Riser
 6.1 O.D Screen

End of borehole
4.87m.

1

5

2

10

3

4

15

5

20

6

7

25

8

9

30

10

35

11

12

40

DRILL HOLE # MW 1

Page 1 of 1

Date Drilled: Dec. 17, 2007
Rig: CME 55N
Contractor: Aardvark Drilling Inc.
Hammer Type: cathead

Location: Laxton Landfill
Elevation:
Co-ord: 671317 E, 4954659 N

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

Depth (m)	Sample Type	Recovery Number	Blows/0.15 m	Symbols	SOIL DESCRIPTION	Well Installation	Moisture Content % 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 PEAT black, saturated > organics	Concrete		
1						Bentonite		
2					SILTY SAND brown, saturated	Raised Steel Casing, padlocked		
3					SAND very fine, grey, saturated	#2 Silica Sand		
4						2" Slot 10 Screen		
5								
6								
7								

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

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



Ontario

Ministry of
the Environment

Well Tag No. (Pla

A081554

A 081554

Well Record
Regulation 903 Ontario Water Resources Act

Page 1 of 1

Measurements recorded in: ☒ Metric ☐ Imperial

Well Owner's Information

First Name Last Name / Organization E-mail Address
City of Kawartha Lakes
Mailing Address (Street Number/Name) Municipality Province Postal Code Telephone No. (inc. area code)
26 Francis St. W. P.O. Box 9000 Lindsay ON K9V 5R3 705 324 9411

Well Location

Address of Well Location (Street Number/Name) Township Lot Concession
Laxton Landfill (operating) - 3225 Honda Rd. Laxton
County/District/Municipality City/Town/Village Province Postal Code
along SE property boundary Kawartha Lakes Ontario
UTM Coordinates Zone Easting Northing
NAD 83 17 67 11 12 07 49 15 46 47
Municipal Plan and Sublot Number Other

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m)
				From To
	Drilled fill in sump - situated at surface			
Brown	Silty Sand (fine to coarse)			0.00 13.87
	Angry refusal at 13.87m -> presumed bedrock			

Depth Set at (m)	Annular Space	Type of Sealant Used (Material and Type)	Volume Placed (m ³ /m ²)
From To			
0.00 10.21	Bentonite		
10.21 13.87	Sand		

Method of Construction	Well Use
☐ Cable Tool ☐ Diamond ☐ Public ☐ Commercial ☐ Not used	☐ Municipal ☐ Dewatering
☐ Rotary (Conventional) ☐ Jetting ☐ Domestic ☐ Test Hole ☐ Monitoring	
☐ Rotary (Reverse) ☐ Driving ☐ Livestock ☐ Cooling & Air Conditioning	
☐ Boring ☐ Digging ☐ Irrigation ☐ Industrial	
☐ Air percussion ☐ Other, specify <u>HS Auger - 4.25"</u>	☐ Other, specify

Construction Record - Casing	Status of Well
Inside Diameter (cm/in) Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel) Wall Thickness (cm/in) Depth (m) From To	☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☒ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify
10.0 Steel 70 0.91 0.91	
5.0 Plastic 40 0.91 10.82	

Construction Record - Screen	Status of Well
Outside Diameter (cm/in) Material (Plastic, Galvanized, Steel) Slot No. Depth (m) From To	☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☒ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify
6.1 Plastic 010 10.82 13.87	

Water Details	Hole Diameter
Water found at Depth (m) Kind of Water: ☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify	Depth (m) From To Diameter (cm/in)
Water found at Depth (m) Kind of Water: ☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify	0.00 13.87 20.0
Water found at Depth (m) Kind of Water: ☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify	

Well Contractor and Well Technician Information
Business Name of Well Contractor Well Contractor's Licence No.
All-Terrain Drilling Ltd. 7141213
Business Address (Street Number/Name) Municipality
3-601 Colby Ave. Waterloo
Province Postal Code Business E-mail Address
ON N1A1V1C1 all-terrain@golden.net
Bus. Telephone No. (inc. area code) Name of Well Technician (Last Name, First Name)
519 881 8181 Grant Don
Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted
33111 210109101010

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

Map of Well Location

Please provide a map below following instructions on the back.
Please see attached map
Comments:
Tagged well is located along SE property boundary of Laxton Landfill (operating along SE property boundary)
Well owner's information package delivered ☐ Yes ☒ No
Date Package Delivered Y Y Y Y M M D D
Date Work Completed Y Y Y Y M M D D
Ministry Use Only
Audit No. Z099099
Received



Cambium Environmental Inc.
PO Box 325 • Unit 2 • 2085 Whittington Drive
Peterborough • Ontario • K9J 6X4

Project No.: 1584-001

Project Name: Laxton Waste Disposal Site Well Installation

Client: City of Kawartha Lakes

Location: Laxton Waste Disposal Site

Log of Borehole: MW 17-09

UTM: 17T: N 4954726 E 671223

Logged By: D.Snowball

Project Manager: D. Bucholtz

SUBSURFACE PROFILE			Well Installation	Remarks
Depth	Symbol	Description		
-5 ft m				Well stick up = 1.37m Galvanized steel well riser equipped with lockable J-Plug and weather proof lock. Well equipped with sample tubing and footvalve
-3				0.05m galvanized steel well riser pipe
-1		Ground Surface		Water level October 14, 2009 at ground surface (0.0 m)
1		Peat Dark brown peat material, high in organics and roots, wet throughout		Bentonite chips 0.05m galvanized coupling
3		Drive Point Well - No Samples		0.05m galvanized steel well riser pipe
5				Native soil material
7				0.05m galvanized coupling
9				Well Screen: Stainless Steel - 0.76m x 0.05m
11		End of Borehole		Solid iron well point

Drilled By: D. Snowball

Drill Method: Drive Point

Drill Date: October 14, 2009

Input By: D. Snowball

Checked By: D. Bucholtz

Sheet: 1 of 1



Cambium Environmental Inc.
PO Box 325 • Unit 2 • 2085 Whittington Drive
Peterborough • Ontario • K9J 6X4

Project No.: 1584-001

Project Name: Laxton Waste Disposal Site Well Installation

Client: City of Kawartha Lakes

Location: Laxton Waste Disposal Site

Log of Borehole: MW 18-09

UTM: 17T: N 4954640 E 671059

Logged By: D. Snowball

Project Manager: D. Bucholtz

SUBSURFACE PROFILE			Well Installation	Remarks
Depth	Symbol	Description		
-5 m				Well stick up = 1.42m Galvanized steel well riser equipped with lockable J-Plug and weather proof lock. Well equipped with sample tubing and footvalve
-3				
-1				
1		Ground Surface		0.05m galvanized steel well riser pipe
1		Peat Dark brown peat material, high in organics and roots, wet throughout		Water level October 14, 2009 at ground surface (0.0m) Bentonite chips 0.05m galvanized coupling
3		Drive Point Well – No Samples		0.05m galvanized steel well riser pipe
5				Native soil material
7				0.05m galvanized coupling
9				Well Screen: Stainless Steel – 0.76m x 0.05m
11				Solid Iron well point
3		End of Borehole		

Drilled By: D. Snowball

Drill Method: Drive Point

Drill Date: October 14, 2009

Input By: D. Snowball

Checked By: D. Bucholtz

Sheet: 1 of 1



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

Project No.: 2071-001

Project Name: Laxton Waste Diposal Site

Client: City of Kawartha Lakes

Location: Laxton Waste Disposal Site

Log of Borehole: MW19

UTM: 0671281 4954596

Logged By: C. MacDougall

Project Manager: Kevin Warner

SUBSURFACE PROFILE			SAMPLE				Well Installation	Remarks
Depth	Symbol	Description	Number	Type	% Recovery	SPT (n)		
ft m -3 -1 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59		Ground Surface						Locking J-Plug, stick-up of 0.83 m 1.52m x 0.1m Square Casing Bentonite Chips (No concrete was added due to likelihood of heaving in winter) Natural Fill Bentinite Pellets Silica Sand 1.52m x 0.05m Screen 0.05 Diameter slip on cap
		<i>Sand</i> Grey medium to coarse sand, wet	1	SS	100%	4		
			2	SS	100%	1		
		<i>Sand</i> Grey medium to coarse sand, trace clay, wet	3	SS	100%	1		
		<i>Sand and Gravel</i> Greyish brown coarse sand with some gravel, wet	4	SS	100%	1		
		<i>Bedrock</i>						
		End of Borehole						

Drilled By: Pontil Drilling

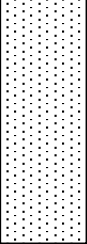
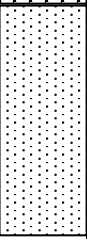
Drill Method: Auger

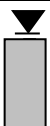
Drill Date: February 27, 2012

Input By: C. MacDougall

Checked By: K. Warner

Sheet: 1 of 1

Project: Laxton Landfill Drilling				Project Number: 23-116		Client: City of Kawartha Lakes		Borehole ID: BH 20-1	
Project Location: Laxton Landfill, Kawartha Lake, Ontario						Drilling Contractor: Walker Drilling		Drilling Method: Hollow Stem Augers	
Logged By: A. Turner				Date: 31-Mar-2023		Stickup (m): Stick-up Casing		Well Depth (mbgs): 9.1	
UTM: (NAD 83, Zone 17T) Easting: 671309 Northing: 4954722				Ground Elevation (masl):		Water Level (mbgs):		Well Diameter (mm) 50.8	
				Well Screen Type: 10-Slot PVC, Schedule 40		Riser Pipe Type: Schedule 40 PVC		Well Screen Length (m): 1.5	
Depth Below Ground Surface (mbgs)	Sample Type / No.	N - Value	Sample Recovery (%)	Lithology	Monitoring Well Construction	Lithology Description			
2	SS 1	1	17			Soil Group Name: grain size, density/consistency, colour, moisture, stratification, other descriptors			
	SS 2	17	58			Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.			
	SS 3	13	42			PEAT: Brown to dark brown, amorphous peat, some sand, organics, trace gravel, very moist to wet (0.0 - 0.6m)			
	SS 4	11	17			SILTY SAND: Compact, brown to dark brown, silty sand, trace organics, trace gravel, very moist (0.6 - 1.5m) First ground water strike at 1.4m			
	SS 5	10	17			SAND: Very loose to compact, brown to dark grey, coarse sand, trace gravel, wet (1.5 - 4.6m)			
	SS 6	4	-			SAND AND GRAVEL: Very loose, brown, coarse sand and gravel, with cobbles and boulders, wet (4.6 - 6.1m) No recovery in spoon, grab sample			
	SS 7	11	50			SAND: Compact to dense, brown to dark grey, coarse sand, trace gravel, wet (6.1 - 9.1m)			
	SS 8	50+	17			Cobbles and boulders at 8.5 m			
10						Borehole terminated at 9.1 mbgs due to auger refusal, assumed Bedrock Upon completion of augering Water at 1.0 m No cave, borehole flushed out with drilling mud and water before monitoring well install			
12									



Ground Water Level Upon Well Completion (mbgs)

Seal (grout / hole plug)



Silica Sand Pack



Well Screen

Project: Laxton Landfill Drilling			Project Number: 23-116		Client: City of Kawartha Lakes		Borehole ID: BH 20-2		
Project Location: Laxton Landfill, Kawartha Lake, Ontario						Drilling Contractor: Walker Drilling		Drilling Method: Hollow Stem Augers	
Logged By: A. Turner			Date: 31-Mar-2023		Stickup (m): Stick-up Casing		Well Depth (mbgs): 4.6		
UTM: (NAD 83, Zone 17T) Easting: 671309 Northing: 4954722			Ground Elevation (masl):		Water Level (mbgs):		Well Diameter (mm) 50.8		
			Well Screen Type: 10-Slot PVC, Schedule 40		Riser Pipe Type: Schedule 40 PVC		Well Screen Length (m): 1.5		
Depth Below Ground Surface (mbgs)	Sample Type / No.	N - Value	Sample Recovery (%)	Lithology	Monitoring Well Construction	Lithology Description			
						Soil Group Name: grain size, density/consistency, colour, moisture, stratification, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.			
2						PEAT: Brown to dark brown, amorphous peat, some sand, organics, trace gravel, very moist to wet (0.0 - 0.6m)			
						SILTY SAND: Compact, brown to dark brown, silty sand, trace organics, trace gravel, very moist (0.6 - 1.5m) First ground water strike at 1.4m			
4						SAND: Very loose to compact, brown to dark grey, coarse sand, trace gravel, wet (1.5 - 4.6m)			
6									
8									
10						Borehole terminated at 9.1 mbgs due to auger refusal, assumed Bedrock			
12									



Ground Water Level Upon Well Completion (mbgs)

Seal (grout / hole plug)



Silica Sand Pack



Well Screen



APPENDIX C

Ground Water Elevation and Gas Monitoring Summary Tables

Summary of Water Level Elevations

Laxton Waste Disposal Site

The Corporation of the City of Kawartha Lakes

[illegible][illegible]

[illegible]

Gas Monitoring Data Summary (2015-2025)
Laxton Waste Disposal Site

Date	GP-1		GP-2	
	%Volume	%LEL	%Volume	%LEL
16-Jan-15	0	0	0	0
18-Feb-15	0	0	0	0
17-Mar-15	0	0	0	0
09-Jun-15	0	0	0	0
29-Jul-15	0	0	0	0
11-Sep-15	0	0	0	0
27-Jan-16	0	0	0	0
22-Feb-16	0	0	0	0
29-Mar-16	0	0	0	0
31-May-16	0	0	0	0
18-Aug-16	0	0	0	0
17-Oct-16	0	0	0	0
13-Dec-16	0	0	0	0
26-Jan-17	0	0	0	0
08-Feb-17	0	0	0	0
01-Mar-17	0	0	0	0
29-Mar-17	0	0	0	0
19-Apr-17	0	0	0	0
17-Jul-17	0	0	0	0
17-Oct-17	0	0	0	0
08-Dec-17	0	0	0	0
17-Jan-18	0	0	0	0
28-Feb-18	0	0	0	0
19-Mar-18	0	0	0	0
24-Apr-18	0	0	0	0
18-Jul-18	0	0	0	0
26-Sep-18	0	0	<0.1	0
10-Dec-18	0	0	0	0
15-Jan-19	0	0	0	0
11-Feb-19	0	0	0	0
12-Mar-19	0	0	0	0
17-Apr-19	0	0	0	0
26-Jul-19	0	0	0	0
18-Oct-19	0	0	0	0
03-Dec-19	0	0	0	0
14-Jan-20	0	0	0	0
27-Feb-20	0	0	0	0
21-Apr-20	0	0	0	0
20-Jul-20	0	0	0	0
13-Oct-20	0	0	0	0
22-Jan-21	0	0	0	0
19-Feb-21	0	0	0	0
10-Mar-21	0	0	0	0
15-Apr-21	0	0	0	0
16-Aug-21	0	0	0	0
13-Oct-21	0	0	0	0

Gas Monitoring Data Summary (2015-2025)
Laxton Waste Disposal Site

Date	GP-1		GP-2	
	%Volume	%LEL	%Volume	%LEL
16-Dec-21	0	0	0	0
12-Apr-22	0	0	0	0
20-Jul-22	0	0	0	0
16-Oct-22	0	0	0	0
02-Dec-22	0	0	0	0
06-Jan-23	0	0	0	0
15-Feb-23	0	0	0	0
26-Apr-23	0	0	0	0
31-Aug-23	0	0	0	0
11-Oct-23	0	0	0	0
11-Jan-24	0	0	-	-
13-Feb-24	0	0	0	0
07-Mar-24	0	0	0	0
28-Apr-24	10	0	0	0
08-Oct-24	<0.1	0	0	0
26-Nov-24	0	0	0	0
22-Jan-25	0	0	0	0
25-Feb-25	0	0	0	0
26-Mar-25	0	0	0	0
28-Apr-25	<0.1	0	<0.1	0
02-Oct-25	0	0	0	0



APPENDIX D

Laboratory Certificates of Analysis

C.O.C.: -

REPORT No: 25-011125 - 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-28
 DATE REPORTED: 2025-May-23
 SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Laxton Landfill
 P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	18	OTTAWA	PCURIEL	2025-May-02	A-IC-01	SM 4110B
COD (Liquid)	18	KINGSTON	MWILSON	2025-May-12	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	18	OTTAWA	SBOUDREAU	2025-May-01	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
DOC (Liquid)	18	OTTAWA	SLOZO	2025-May-16	C-OC-01	EPA 415.2
Ion Balance (Calc.)	18	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	18	OTTAWA	STAILLON	2025-May-06	D-CRVI-01	MECP E3056
ICP/MS (Liquid)	18	OTTAWA	TPRICE	2025-May-05	D-ICPMS-01	EPA 200.8
ICP/OES (Liquid)	18	OTTAWA	GFENTON	2025-May-01	D-ICP-01	SM 3120B
Mercury (Liquid)	18	OTTAWA	TBENNETT	2025-May-02	D-HG-02	SM 3112B
Ammonia (Liquid)	18	KINGSTON	VHAMMOND	2025-May-08	NH3-001	SM 4500NH3
Phenols (Liquid)	18	KINGSTON	EHINCH	2025-May-06	PHEN-01	MECP E3179
TP & TKN (Liquid)	18	KINGSTON	YLIEN	2025-May-09	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 *



Michelle Dubien
Data Specialist

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Client I.D.			MW1	MW2	MW3	MW4	MW6
Sample I.D.			25-011125-1	25-011125-2	25-011125-3	25-011125-4	25-011125-5
Date Collected			2025-04-28	2025-04-28	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	158	201	294	607	226
TDS (Calc. from Cond.)	mg/L	3	258	246	356	612	251
Conductivity @25°C	uS/cm	1	498	475	685	1140	486
pH @25°C	pH units	-	7.07	7.00	7.00	6.77	7.18
Fluoride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	9.9	9.8	15.2	1.3	1.0
Nitrate (N)	mg/L	0.05	0.49	<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	79	31	50	21	27
Phosphorus (Total)	mg/L	0.01	<0.01	0.04	0.05	0.51	0.02
Total Kjeldahl Nitrogen	mg/L	0.1	0.5	0.6	3.4	10.7	0.6
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.15	0.35	3.26	7.46	0.22
Dissolved Organic Carbon	mg/L	0.8	7.4	6.2	11.0	25.2	15.1
Phenolics	mg/L	0.001	0.003	0.003	0.003	0.004	0.003
COD	mg/L	5	15	15	33	127	29
Hardness (as CaCO3)	mg/L	0.02	195	180	251	452	206
Aluminum	mg/L	0.01	0.02	0.02	0.03	0.13	0.03
Barium	mg/L	0.001	0.202	0.184	0.264	0.231	0.039
Boron	mg/L	0.005	0.953	0.526	0.539	0.295	0.113
Calcium	mg/L	0.02	56.1	52.9	72.1	165	67.0
Iron	mg/L	0.005	<0.005	0.014	13.2	89.1	2.21



Michelle Dubien
Data Specialist

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Client I.D.			MW1	MW2	MW3	MW4	MW6
Sample I.D.			25-011125-1	25-011125-2	25-011125-3	25-011125-4	25-011125-5
Date Collected			2025-04-28	2025-04-28	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.	-	-	-	-	-
Magnesium	mg/L	0.02	13.2	11.6	17.3	9.97	9.49
Manganese	mg/L	0.001	1.90	1.86	2.76	7.51	0.138
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	3.8	4.1	8.4	13.2	2.9
Sodium	mg/L	0.2	17.5	11.9	14.4	4.9	3.3
Strontium	mg/L	0.001	0.364	0.327	0.464	0.751	0.344
Tin	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002
Arsenic	mg/L	0.0001	0.0002	0.0002	0.0004	0.0063	0.0003
Beryllium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.00001 5	0.000134	0.000098	<0.000015	<0.000015	0.000099
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	0.002	<0.001
Cobalt	mg/L	0.0001	0.0025	0.0052	0.0038	0.0151	0.0013
Copper	mg/L	0.0001	0.0057	0.0037	0.0006	0.0002	0.0016
Lead	mg/L	0.00002	<0.00002	0.00003	0.00002	0.00002	0.00002
Molybdenum	mg/L	0.0001	0.0005	0.0005	0.0004	0.0012	0.0006
Nickel	mg/L	0.0002	0.0038	0.0043	0.0020	0.0009	0.0016
Selenium	mg/L	0.001	<0.001	<0.001	<0.001	0.001	<0.001
Silver	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001



**Michelle Dubien
Data Specialist**

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Client I.D.			MW1	MW2	MW3	MW4	MW6
Sample I.D.			25-011125-1	25-011125-2	25-011125-3	25-011125-4	25-011125-5
Date Collected			2025-04-28	2025-04-28	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.	-	-	-	-	-
Thallium	mg/L	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005	0.00166	0.00253	0.00517	0.00125	0.00109
Vanadium	mg/L	0.0001	0.0001	0.0001	0.0014	0.0089	0.0019
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	-	5.12	4.94	7.34	12.6	5.12
Cation Sum	meq/L	-	4.82	4.29	6.69	14.7	4.47
% Difference	%	-	2.98	7.08	4.68	7.55	6.68
Ion Ratio	-	-	1.06	1.15	1.10	0.860	1.14
Sodium Adsorption Ratio	-	-	0.546	0.385	0.396	0.101	0.101
TDS (Ion Sum Calc)	mg/L	1	278	244	370	676	249
TDS(calc.)/EC(actual)	-	-	0.559	0.513	0.540	0.594	0.513
Conductivity Calc	µmho/cm	-	486	434	604	895	439
Conductivity Calc / Conductivity	-	-	0.976	0.913	0.882	0.786	0.904
Langelier Index(25°C)	-	-	-0.425	-0.406	-0.126	0.287	-0.0726
Saturation pH (25°C)	-	-	7.50	7.41	7.13	6.48	7.25
pH (Client Data)	pH units	-	7.12	7.46	6.72	6.49	7.01
Temperature (Client Data)	°C	-	8.9	10.9	9.0	10.1	8.9



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Client I.D.			MW7	MW8	MW10	MW12	MW13
Sample I.D.			25-011125-6	25-011125-7	25-011125-8	25-011125-9	25-011125-10
Date Collected			2025-04-28	2025-04-28	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	304	149	195	134	139
TDS (Calc. from Cond.)	mg/L	3	433	202	517	174	187
Conductivity @25°C	uS/cm	1	822	392	970	339	363
pH @25°C	pH units	-	7.16	7.07	7.20	7.00	7.04
Fluoride	mg/L	0.1	<0.1	<0.1	0.2	<0.1	<0.1
Chloride	mg/L	0.5	33.9	10.5	15.1	6.8	9.8
Nitrate (N)	mg/L	0.05	<0.05	0.39	<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	69	7	317	30	33
Phosphorus (Total)	mg/L	0.01	4.21	0.13	0.02	0.41	0.15
Total Kjeldahl Nitrogen	mg/L	0.1	11.9	0.6	0.3	0.3	0.2
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	7.08	0.09	0.08	0.05	0.05
Dissolved Organic Carbon	mg/L	0.8	19.4	22.9	8.4	4.3	2.9
Phenolics	mg/L	0.001	0.005	0.003	0.002	0.002	0.002
COD	mg/L	5	147	51	15	25	6
Hardness (as CaCO3)	mg/L	0.02	269	126	445	125	139
Aluminum	mg/L	0.01	0.04	0.02	0.06	<0.01	<0.01
Barium	mg/L	0.001	0.304	0.348	0.118	0.141	0.136
Boron	mg/L	0.005	1.86	0.110	0.275	0.486	0.464
Calcium	mg/L	0.02	81.4	34.7	148	28.8	32.4
Iron	mg/L	0.005	4.84	0.011	4.65	1.32	0.151



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Data Specialist

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Client I.D.			MW7	MW8	MW10	MW12	MW13
Sample I.D.			25-011125-6	25-011125-7	25-011125-8	25-011125-9	25-011125-10
Date Collected			2025-04-28	2025-04-28	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.	-	-	-	-	-
Magnesium	mg/L	0.02	15.9	9.63	17.9	12.9	14.0
Manganese	mg/L	0.001	1.44	0.782	0.343	0.181	0.027
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	15.8	42.9	3.1	2.7	2.9
Sodium	mg/L	0.2	37.2	2.4	11.6	12.1	13.6
Strontium	mg/L	0.001	0.453	0.300	3.82	0.230	0.263
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	0.0009	0.0030	<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	0.000077	<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	0.0036	0.0046	0.0003	0.0038	0.0016
Copper	mg/L	0.0001	0.0007	0.0112	0.0004	0.0005	0.0005
Lead	mg/L	0.00002	0.00014	<0.00002	0.00005	0.00002	<0.00002
Molybdenum	mg/L	0.0001	0.0007	0.0010	0.0023	0.0004	0.0003
Nickel	mg/L	0.0002	0.0021	0.0028	0.0010	0.0015	0.0012
Selenium	mg/L	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



**Michelle Dubien
Data Specialist**

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REPORT No: 25-011125 - Rev. 0

Client I.D.			MW7	MW8	MW10	MW12	MW13
Sample I.D.			25-011125-6	25-011125-7	25-011125-8	25-011125-9	25-011125-10
Date Collected			2025-04-28	2025-04-28	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.	-	-	-	-	-
Thallium	mg/L	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005	0.00202	0.00302	0.00337	0.00017	0.00099
Vanadium	mg/L	0.0001	0.0013	<0.0001	0.0003	<0.0001	<0.0001
Chromium (VI)	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-	8.47	3.45	11.7	3.49	3.74
Cation Sum	meq/L	-	7.71	3.76	9.81	3.18	3.45
% Difference	%	-	4.73	4.27	8.63	4.66	4.05
Ion Ratio	-	-	1.10	0.918	1.19	1.10	1.08
Sodium Adsorption Ratio	-	-	0.986	0.0912	0.239	0.472	0.502
TDS (Ion Sum Calc)	mg/L	1	442	199	670	175	189
TDS(calc.)/EC(actual)	-	-	0.538	0.508	0.691	0.516	0.521
Conductivity Calc	µmho/cm	-	742	365	1020	319	349
Conductivity Calc / Conductivity	-	-	0.903	0.930	1.05	0.941	0.963
Langelier Index(25°C)	-	-	0.0910	-0.639	0.179	-0.826	-0.729
Saturation pH (25°C)	-	-	7.07	7.71	7.02	7.83	7.77
pH (Client Data)	pH units	-	6.78	6.80	7.24	7.27	7.28
Temperature (Client Data)	°C	-	14.2	7.7	13.5	8.6	8.0



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REPORT No: 25-011125 - Rev. 0

Client I.D.			MW14	MW16-I	MW16	MW19	MW20-I
Sample I.D.			25-011125-11	25-011125-12	25-011125-13	25-011125-14	25-011125-15
Date Collected			2025-04-28	2025-04-28	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	108	140	213	124	320
TDS (Calc. from Cond.)	mg/L	3	126	189	250	158	407
Conductivity @25°C	uS/cm	1	246	367	484	307	777
pH @25°C	pH units	-	6.83	6.88	7.00	6.88	7.12
Fluoride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	3.9	11.3	11.3	6.0	29.0
Nitrate (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1	14	33	30	25	54
Phosphorus (Total)	mg/L	0.01	0.24	0.01	49.9	<0.01	0.14
Total Kjeldahl Nitrogen	mg/L	0.1	0.2	0.2	1.0	0.2	0.6
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.06	0.11	0.21	0.06	0.20
Dissolved Organic Carbon	mg/L	0.8	2.7	4.6	5.7	4.1	10.7
Phenolics	mg/L	0.001	0.002	0.001	<0.001	0.001	<0.001
COD	mg/L	5	12	8	379	6	38
Hardness (as CaCO3)	mg/L	0.02	108	144	194	120	310
Aluminum	mg/L	0.01	<0.01	0.01	0.02	<0.01	0.03
Barium	mg/L	0.001	0.097	0.168	0.139	0.131	0.256
Boron	mg/L	0.005	0.047	0.282	0.646	0.310	1.24
Calcium	mg/L	0.02	25.5	36.4	48.1	29.0	80.2
Iron	mg/L	0.005	0.376	0.046	0.110	<0.005	1.01



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REPORT No: 25-011125 - Rev. 0

Client I.D.			MW14	MW16-I	MW16	MW19	MW20-I
Sample I.D.			25-011125-11	25-011125-12	25-011125-13	25-011125-14	25-011125-15
Date Collected			2025-04-28	2025-04-28	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.	-	-	-	-	-
Magnesium	mg/L	0.02	10.9	13.0	18.0	11.7	26.6
Manganese	mg/L	0.001	0.010	0.173	0.823	0.066	1.38
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	2.1	3.3	3.7	2.6	5.6
Sodium	mg/L	0.2	1.9	8.9	14.2	8.3	25.5
Strontium	mg/L	0.001	0.201	0.290	0.396	0.242	0.867
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	0.0002	<0.0001	0.0002
Beryllium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015	<0.000015	0.000073	0.000090	0.000025	<0.000015
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0003	0.0007	0.0053	0.0004	0.0036
Copper	mg/L	0.0001	0.0003	0.0025	0.0030	0.0026	0.0009
Lead	mg/L	0.00002	<0.00002	0.00003	0.00002	<0.00002	0.00010
Molybdenum	mg/L	0.0001	0.0004	0.0003	0.0003	0.0003	0.0006
Nickel	mg/L	0.0002	0.0004	0.0016	0.0052	0.0009	0.0041
Selenium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001



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Client I.D.			MW14	MW16-I	MW16	MW19	MW20-I
Sample I.D.			25-011125-11	25-011125-12	25-011125-13	25-011125-14	25-011125-15
Date Collected			2025-04-28	2025-04-28	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.	-	-	-	-	-
Thallium	mg/L	0.00005	<0.00005	<0.00005	0.00013	<0.00005	<0.00005
Uranium	mg/L	0.00005	0.00108	0.00094	0.00922	0.00054	0.0106
Vanadium	mg/L	0.0001	<0.0001	<0.0001	0.0003	0.0001	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	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-	2.56	3.81	5.20	3.18	8.34
Cation Sum	meq/L	-	2.33	3.37	4.64	2.84	7.57
% Difference	%	-	4.71	6.13	5.66	5.64	4.86
Ion Ratio	-	-	1.10	1.13	1.12	1.12	1.10
Sodium Adsorption Ratio	-	-	0.0796	0.322	0.445	0.330	0.631
TDS (Ion Sum Calc)	mg/L	1	123	190	254	158	415
TDS(calc.)/EC(actual)	-	-	0.502	0.519	0.526	0.513	0.535
Conductivity Calc	µmho/cm	-	236	351	459	293	724
Conductivity Calc / Conductivity	-	-	0.960	0.957	0.949	0.955	0.931
Langelier Index(25°C)	-	-	-1.11	-0.836	-0.423	-0.966	0.0669
Saturation pH (25°C)	-	-	7.94	7.72	7.42	7.85	7.05
pH (Client Data)	pH units	-	7.35	6.92	6.82	7.42	6.65
Temperature (Client Data)	°C	-	8.5	9.7	9.1	9.5	10.3



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			Client I.D.	MW20-II	Dup	Dup-I
			Sample I.D.	25-011125-16	25-011125-17	25-011125-18
			Date Collected	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.		-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		136	164	207
TDS (Calc. from Cond.)	mg/L	3		152	202	237
Conductivity @25°C	uS/cm	1		297	392	458
pH @25°C	pH units	-		6.98	7.00	7.10
Fluoride	mg/L	0.1		<0.1	<0.1	<0.1
Chloride	mg/L	0.5		3.1	11.0	1.0
Nitrate (N)	mg/L	0.05		<0.05	0.40	<0.05
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05
Sulphate	mg/L	1		13	7	30
Phosphorus (Total)	mg/L	0.01		0.19	0.08	0.03
Total Kjeldahl Nitrogen	mg/L	0.1		0.4	0.7	0.5
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		0.17	0.06	0.11
Dissolved Organic Carbon	mg/L	0.8		8.0	22.7	15.0
Phenolics	mg/L	0.001		0.001	0.002	0.003
COD	mg/L	5		42	51	25
Hardness (as CaCO3)	mg/L	0.02		115	125	205
Aluminum	mg/L	0.01		0.07	0.01	0.03
Barium	mg/L	0.001		0.031	0.345	0.038
Boron	mg/L	0.005		0.034	0.108	0.111
Calcium	mg/L	0.02		28.7	34.4	66.6
Iron	mg/L	0.005		1.71	0.009	2.17



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Client I.D.			MW20-II	Dup	Dup-I
Sample I.D.			25-011125-16	25-011125-17	25-011125-18
Date Collected			2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.	-	-	-
Magnesium	mg/L	0.02	10.4	9.46	9.35
Manganese	mg/L	0.001	0.550	0.776	0.137
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	1.5	42.5	2.9
Sodium	mg/L	0.2	2.6	2.3	3.3
Strontium	mg/L	0.001	0.277	0.296	0.338
Tin	mg/L	0.05	<0.05	<0.05	<0.05
Titanium	mg/L	0.005	0.006	<0.005	<0.005
Zinc	mg/L	0.005	<0.005	<0.005	<0.005
Antimony	mg/L	0.0001	<0.0001	<0.0001	0.0001
Arsenic	mg/L	0.0001	0.0004	0.0030	0.0003
Beryllium	mg/L	0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015	<0.000015	0.000074	0.000096
Chromium	mg/L	0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001	0.0004	0.0046	0.0012
Copper	mg/L	0.0001	0.0015	0.0111	0.0016
Lead	mg/L	0.00002	0.00040	<0.00002	0.00002
Molybdenum	mg/L	0.0001	0.0009	0.0009	0.0006
Nickel	mg/L	0.0002	0.0007	0.0028	0.0016
Selenium	mg/L	0.001	<0.001	0.002	<0.001
Silver	mg/L	0.0001	<0.0001	<0.0001	<0.0001



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Final Report
REPORT No: 25-011125 - Rev. 0

Client I.D.			MW20-II	Dup	Dup-I
Sample I.D.			25-011125-16	25-011125-17	25-011125-18
Date Collected			2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.	-	-	-
Thallium	mg/L	0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005	0.00059	0.00302	0.00109
Vanadium	mg/L	0.0001	0.0041	<0.0001	0.0019
Chromium (VI)	mg/L	0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-	3.09	3.75	4.80
Cation Sum	meq/L	-	2.56	3.72	4.44
% Difference	%	-	9.37	0.449	3.88
Ion Ratio	-	-	1.21	1.01	1.08
Sodium Adsorption Ratio	-	-	0.105	0.0905	0.100
TDS (Ion Sum Calc)	mg/L	1	144	207	240
TDS(calc.)/EC(actual)	-	-	0.484	0.529	0.524
Conductivity Calc	µmho/cm	-	262	374	427
Conductivity Calc / Conductivity	-	-	0.881	0.955	0.932
Langelier Index(25°C)	-	-	-0.821	-0.681	-0.193
Saturation pH (25°C)	-	-	7.80	7.68	7.29
pH (Client Data)	pH units	-	7.23	6.80	7.01
Temperature (Client Data)	°C	-	8.1	7.7	8.9



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C.O.C.: -

REPORT No: 25-030143 - 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-03
 DATE REPORTED: 2025-Oct-10
 SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Laxton Landfill
 P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	18	OTTAWA	PCURIEL	2025-Oct-06	A-IC-01	SM 4110B
COD (Liquid)	18	KINGSTON	MWILSON	2025-Oct-09	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	18	OTTAWA	SBOUDREAU	2025-Oct-06	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
DOC (Liquid)	18	OTTAWA	SLOZO	2025-Oct-07	C-OC-01	EPA 415.2
Ion Balance (Calc.)	18	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	18	OTTAWA	STAILLON	2025-Oct-08	D-CRVI-01	MECP E3056
ICP/MS (Liquid)	18	OTTAWA	GFENTON	2025-Oct-07	D-ICPMS-01	EPA 200.8
ICP/OES (Liquid)	18	OTTAWA	NSAUNDERS	2025-Oct-09	D-ICP-01	SM 3120B
Mercury (Liquid)	18	OTTAWA	TBENNETT	2025-Oct-07	D-HG-02	SM 3112B
Ammonia (Liquid)	18	KINGSTON	DCASSIDY	2025-Oct-09	NH3-001	SM 4500NH3
Phenols (Liquid)	18	KINGSTON	EHINCH	2025-Oct-09	PHEN-01	MECP E3179
TP & TKN (Liquid)	18	KINGSTON	YLIEN	2025-Oct-08	TPTKN-001	MECP E3516.2
VOC-Volatiles Full (Water)	3	RICHMOND_HILL	CBURKE	2025-Oct-08	C-VOC-02	EPA 8260

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an *



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Data Specialist

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Client I.D.			MW1	MW2	MW3	MW4	MW6
Sample I.D.			25-030143-1	25-030143-2	25-030143-3	25-030143-4	25-030143-5
Date Collected			2025-10-02	2025-10-02	2025-10-02	2025-10-02	2025-10-02
Parameter	Units	R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	172	175	275	617	274
TDS (Calc. from Cond.) (Calculated)	mg/L	3	238	241	353	630	287
Conductivity @25°C	uS/cm	1	460	467	680	1170	553
pH @25°C	pH units	-	7.25	7.29	7.22	6.91	7.40
Fluoride	mg/L	0.1	<0.1	<0.1	0.1	0.2	0.2
Chloride	mg/L	0.5	10.4	10.0	23.6	2.7	2.3
Nitrate (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1	56	51	40	31	19
Phosphorus (Total)	mg/L	0.01	0.02	0.14	0.05	0.19	0.29
Total Kjeldahl Nitrogen	mg/L	0.1	0.4	0.7	5.1	8.8	6.8
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.16	0.47	5.56	8.89	0.18
Dissolved Organic Carbon	mg/L	0.8	6.4	6.6	13.5	28.8	16.9
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5	10	17	38	87	44
Hardness (as CaCO3)	mg/L	0.02	184	194	264	558	278
Aluminum	mg/L	0.01	0.02	0.03	0.03	0.13	0.04
Barium	mg/L	0.001	0.193	0.198	0.363	0.280	0.047
Boron	mg/L	0.005	1.06	0.880	0.972	0.420	0.100
Calcium	mg/L	0.02	54.8	59.3	83.8	209	90.8
Iron	mg/L	0.005	<0.005	0.006	20.4	101	4.27



Michelle Dubien
Data Specialist

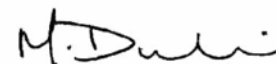
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Client I.D.			MW1	MW2	MW3	MW4	MW6
Sample I.D.			25-030143-1	25-030143-2	25-030143-3	25-030143-4	25-030143-5
Date Collected			2025-10-02	2025-10-02	2025-10-02	2025-10-02	2025-10-02
Parameter	Units	R.L.	-	-	-	-	-
Magnesium	mg/L	0.02	11.5	11.2	13.2	8.92	12.3
Manganese	mg/L	0.001	2.05	2.06	3.14	5.41	0.204
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	4.2	4.6	13.0	15.0	3.6
Sodium	mg/L	0.2	17.9	15.1	22.7	5.4	3.2
Strontium	mg/L	0.001	0.338	0.347	0.438	0.841	0.442
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	0.0002	0.0006	0.0068	0.0004
Beryllium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.00001 5	0.000140	0.000120	<0.000015	<0.000015	0.000069
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	0.002	0.002
Cobalt	mg/L	0.0001	0.0033	0.0059	0.0076	0.0187	0.0029
Copper	mg/L	0.0001	0.0066	0.0050	0.0005	0.0002	0.0022
Lead	mg/L	0.00002	<0.00002	0.00002	<0.00002	0.00003	0.00003
Molybdenum	mg/L	0.0001	0.0006	0.0006	0.0005	0.0014	0.0007
Nickel	mg/L	0.0002	0.0048	0.0059	0.0028	0.0020	0.0018
Selenium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001



Michelle Dubien
Data Specialist

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Final Report

REPORT No: 25-030143 - Rev. 0

Client I.D.			MW1	MW2	MW3	MW4	MW6
Sample I.D.			25-030143-1	25-030143-2	25-030143-3	25-030143-4	25-030143-5
Date Collected			2025-10-02	2025-10-02	2025-10-02	2025-10-02	2025-10-02
Parameter	Units	R.L.	-	-	-	-	-
Thallium	mg/L	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005	0.00154	0.00265	0.00298	0.00185	0.00173
Vanadium	mg/L	0.0001	0.0002	0.0002	0.0026	0.0130	0.0037
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	-	4.90	4.85	7.00	13.1	5.95
Cation Sum (Calculated)	meq/L	-	4.65	4.74	7.81	17.4	6.02
% Difference (Calculated)	%	-	2.55	1.11	5.49	14.2	0.615
Ion Ratio (Calculated)	-	-	1.05	1.02	0.896	0.751	0.988
Sodium Adsorption Ratio (Calculated)	-	-	0.574	0.472	0.607	0.100	0.0847
TDS (Ion Sum Calc) (Calculated)	mg/L	1	260	259	385	748	301
TDS(calc.)/EC(actual) (Calculated)	-	-	0.566	0.554	0.566	0.640	0.544
Conductivity Calc	µmho/cm	-	460	460	629	1000	535
Conductivity Calc / Conductivity (Calculated)	-	-	1.00	0.986	0.925	0.855	0.968
Langelier Index(25°C) (Calculated)	-	-	-0.208	-0.127	0.130	0.537	0.354
Saturation pH (25°C) (Calculated)	-	-	7.46	7.42	7.09	6.37	7.05
pH (Client Data)	pH units	-	6.92	6.52	6.32	6.05	6.75
Temperature (Client Data)	°C	-	13.0	12.2	12.6	11.7	11.5



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REPORT No: 25-030143 - Rev. 0

Client I.D.			MW7	MW8	MW10	MW12	MW13
Sample I.D.			25-030143-6	25-030143-7	25-030143-8	25-030143-9	25-030143-10
Date Collected			2025-10-02	2025-10-02	2025-10-02	2025-10-02	2025-10-02
Parameter	Units	R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	235	167	238	135	141
TDS (Calc. from Cond.) (Calculated)	mg/L	3	286	190	504	176	187
Conductivity @25°C	uS/cm	1	551	369	948	342	364
pH @25°C	pH units	-	7.29	7.41	7.58	7.49	7.44
Fluoride	mg/L	0.1	<0.1	<0.1	0.1	<0.1	<0.1
Chloride	mg/L	0.5	17.7	3.4	19.7	7.5	9.6
Nitrate (N)	mg/L	0.05	<0.05	0.09	<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	22	7	254	29	32
Phosphorus (Total)	mg/L	0.01	2.17	0.93	0.03	0.23	0.06
Total Kjeldahl Nitrogen	mg/L	0.1	3.9	9.7	0.6	0.5	0.2
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	4.46	0.25	0.12	0.28	0.09
Dissolved Organic Carbon	mg/L	0.8	10.2	27.9	10.7	4.5	3.9
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5	131	69	24	14	14
Hardness (as CaCO3)	mg/L	0.02	217	120	479	143	154
Aluminum	mg/L	0.01	0.05	0.02	0.05	0.01	0.02
Barium	mg/L	0.001	0.233	0.336	0.140	0.154	0.145
Boron	mg/L	0.005	0.591	0.103	0.443	0.542	0.548
Calcium	mg/L	0.02	65.9	34.9	161	34.6	37.5
Iron	mg/L	0.005	8.31	0.013	5.69	1.52	0.335



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REPORT No: 25-030143 - Rev. 0

Client I.D.			MW7	MW8	MW10	MW12	MW13
Sample I.D.			25-030143-6	25-030143-7	25-030143-8	25-030143-9	25-030143-10
Date Collected			2025-10-02	2025-10-02	2025-10-02	2025-10-02	2025-10-02
Parameter	Units	R.L.	-	-	-	-	-
Magnesium	mg/L	0.02	12.8	8.00	18.8	13.8	14.8
Manganese	mg/L	0.001	1.02	0.734	0.404	0.087	0.017
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	10.8	45.7	3.3	2.8	3.0
Sodium	mg/L	0.2	19.1	1.5	17.6	13.6	13.8
Strontium	mg/L	0.001	0.357	0.255	3.79	0.253	0.286
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	0.0040	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	0.000064	<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	0.0048	0.0143	0.0003	0.0019	0.0011
Copper	mg/L	0.0001	0.0010	0.0360	0.0002	0.0078	0.0003
Lead	mg/L	0.00002	0.00018	<0.00002	<0.00002	<0.00002	<0.00002
Molybdenum	mg/L	0.0001	0.0004	0.0018	0.0019	0.0004	0.0003
Nickel	mg/L	0.0002	0.0019	0.0074	0.0019	0.0014	0.0014
Selenium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001



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REPORT No: 25-030143 - Rev. 0

Client I.D.			MW7	MW8	MW10	MW12	MW13
Sample I.D.			25-030143-6	25-030143-7	25-030143-8	25-030143-9	25-030143-10
Date Collected			2025-10-02	2025-10-02	2025-10-02	2025-10-02	2025-10-02
Parameter	Units	R.L.	-	-	-	-	-
Thallium	mg/L	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005	0.00071	0.00307	0.00316	0.00018	0.00102
Vanadium	mg/L	0.0001	0.0014	0.0002	0.0005	<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	-	5.66	3.60	10.6	3.51	3.75
Cation Sum (Calculated)	meq/L	-	5.94	3.67	10.8	3.62	3.79
% Difference (Calculated)	%	-	2.46	0.935	1.07	1.43	0.464
Ion Ratio (Calculated)	-	-	0.952	0.981	0.979	0.972	0.991
Sodium Adsorption Ratio (Calculated)	-	-	0.564	0.0600	0.350	0.494	0.484
TDS (Ion Sum Calc) (Calculated)	mg/L	1	299	202	623	184	196
TDS(calc.)/EC(actual) (Calculated)	-	-	0.542	0.548	0.657	0.538	0.537
Conductivity Calc	µmho/cm	-	521	361	987	341	365
Conductivity Calc / Conductivity (Calculated)	-	-	0.946	0.979	1.04	0.998	1.00
Langelier Index(25°C) (Calculated)	-	-	0.0382	-0.256	0.690	-0.255	-0.260
Saturation pH (25°C) (Calculated)	-	-	7.25	7.67	6.89	7.74	7.70
pH (Client Data)	pH units	-	6.29	6.51	6.22	6.76	6.33
Temperature (Client Data)	°C	-	13	11.1	12.4	10.8	10.5



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REPORT No: 25-030143 - Rev. 0

Client I.D.			MW14	MW16-I	MW16	MW19	MW20-I
Sample I.D.			25-030143-11	25-030143-12	25-030143-13	25-030143-14	25-030143-15
Date Collected			2025-10-02	2025-10-02	2025-10-02	2025-10-02	2025-10-02
Parameter	Units	R.L.	-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	109	142	179	110	230
TDS (Calc. from Cond.) (Calculated)	mg/L	3	127	181	222	132	297
Conductivity @25°C	uS/cm	1	249	352	431	258	572
pH @25°C	pH units	-	7.36	7.32	7.35	7.28	7.50
Fluoride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	5.6	8.5	10.5	4.2	21.4
Nitrate (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1	15	26	31	17	39
Phosphorus (Total)	mg/L	0.01	0.10	0.02	54.6	0.07	0.22
Total Kjeldahl Nitrogen	mg/L	0.1	0.5	0.3	2.6	0.3	0.6
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.45	0.12	0.18	0.10	0.25
Dissolved Organic Carbon	mg/L	0.8	3.2	4.7	6.0	3.8	8.0
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.003
COD	mg/L	5	<5	11	671	22	41
Hardness (as CaCO3)	mg/L	0.02	123	156	188	114	261
Aluminum	mg/L	0.01	0.01	0.01	0.04	0.01	0.03
Barium	mg/L	0.001	0.107	0.178	0.124	0.119	0.195
Boron	mg/L	0.005	0.060	0.381	0.602	0.225	0.706
Calcium	mg/L	0.02	29.9	41.0	48.1	28.8	69.7
Iron	mg/L	0.005	0.509	0.043	0.113	<0.005	1.01



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Final Report

REPORT No: 25-030143 - Rev. 0

Client I.D.			MW14	MW16-I	MW16	MW19	MW20-I
Sample I.D.			25-030143-11	25-030143-12	25-030143-13	25-030143-14	25-030143-15
Date Collected			2025-10-02	2025-10-02	2025-10-02	2025-10-02	2025-10-02
Parameter	Units	R.L.	-	-	-	-	-
Magnesium	mg/L	0.02	11.8	13.2	16.4	10.3	21.1
Manganese	mg/L	0.001	0.011	0.179	0.791	0.063	0.842
Phosphorus	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	2.3	3.2	3.8	2.5	4.7
Sodium	mg/L	0.2	2.2	10.2	15.0	7.2	15.3
Strontium	mg/L	0.001	0.226	0.302	0.378	0.223	0.691
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	0.0003	<0.0001	0.0002
Beryllium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015	<0.000015	0.000044	0.000112	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	0.0008	0.0068	0.0005	0.0035
Copper	mg/L	0.0001	0.0003	0.0028	0.0039	0.0026	0.0004
Lead	mg/L	0.00002	<0.00002	0.00002	0.00003	<0.00002	<0.00002
Molybdenum	mg/L	0.0001	0.0004	0.0003	0.0004	0.0003	0.0006
Nickel	mg/L	0.0002	0.0004	0.0016	0.0065	0.0009	0.0027
Selenium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001



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REPORT No: 25-030143 - Rev. 0

Client I.D.			MW14	MW16-I	MW16	MW19	MW20-I
Sample I.D.			25-030143-11	25-030143-12	25-030143-13	25-030143-14	25-030143-15
Date Collected			2025-10-02	2025-10-02	2025-10-02	2025-10-02	2025-10-02
Parameter	Units	R.L.	-	-	-	-	-
Thallium	mg/L	0.00005	<0.00005	<0.00005	0.00018	<0.00005	<0.00005
Uranium	mg/L	0.00005	0.00116	0.00095	0.00946	0.00045	0.00631
Vanadium	mg/L	0.0001	0.0001	<0.0001	0.0005	0.0001	0.0005
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	-	2.65	3.63	4.51	2.67	6.01
Cation Sum (Calculated)	meq/L	-	2.65	3.67	4.54	2.67	6.10
% Difference (Calculated)	%	-	0.0432	0.564	0.356	0.00438	0.764
Ion Ratio (Calculated)	-	-	0.999	0.989	0.993	1.00	0.985
Sodium Adsorption Ratio (Calculated)	-	-	0.0865	0.353	0.477	0.295	0.412
TDS (Ion Sum Calc) (Calculated)	mg/L	1	133	188	233	136	311
TDS(calc.)/EC(actual) (Calculated)	-	-	0.533	0.534	0.540	0.528	0.544
Conductivity Calc	µmho/cm	-	257	353	429	260	566
Conductivity Calc / Conductivity (Calculated)	-	-	1.03	1.00	0.995	1.01	0.990
Langelier Index(25°C) (Calculated)	-	-	-0.511	-0.338	-0.148	-0.612	0.262
Saturation pH (25°C) (Calculated)	-	-	7.87	7.66	7.50	7.89	7.24
pH (Client Data)	pH units	-	6.94	6.54	6.48	6.83	6.39
Temperature (Client Data)	°C	-	10.3	11.0	12.7	10.4	12.7



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Final Report
REPORT No: 25-030143 - Rev. 0

Parameter	Client I.D.		MW20-II	DUP	DUP-1
	Sample I.D.		25-030143-16	25-030143-17	25-030143-18
	Date Collected		2025-10-02	2025-10-02	2025-10-02
	Units	R.L.	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	196	230	609
TDS (Calc. from Cond.) (Calculated)	mg/L	3	221	296	622
Conductivity @25°C	uS/cm	1	428	570	1160
pH @25°C	pH units	-	7.46	7.52	6.90
Fluoride	mg/L	0.1	<0.1	<0.1	0.1
Chloride	mg/L	0.5	8.3	21.4	2.4
Nitrate (N)	mg/L	0.05	<0.05	<0.05	<0.05
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1	15	39	31
Phosphorus (Total)	mg/L	0.01	0.27	0.22	0.20
Total Kjeldahl Nitrogen	mg/L	0.1	0.8	0.6	9.2
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.40	0.36	9.02
Dissolved Organic Carbon	mg/L	0.8	13.5	8.4	28.6
Phenolics	mg/L	0.001	<0.001	0.003	0.001
COD	mg/L	5	75	39	96
Hardness (as CaCO3)	mg/L	0.02	213	262	560
Aluminum	mg/L	0.01	0.04	0.03	0.12
Barium	mg/L	0.001	0.058	0.195	0.282
Boron	mg/L	0.005	0.311	0.708	0.420
Calcium	mg/L	0.02	54.2	69.8	209
Iron	mg/L	0.005	3.89	1.02	102



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Final Report
REPORT No: 25-030143 - Rev. 0

			Client I.D.	MW20-II	DUP	DUP-1
			Sample I.D.	25-030143-16	25-030143-17	25-030143-18
			Date Collected	2025-10-02	2025-10-02	2025-10-02
Parameter	Units	R.L.		-	-	-
Magnesium	mg/L	0.02		18.9	21.2	8.97
Manganese	mg/L	0.001		0.764	0.842	5.42
Phosphorus	mg/L	0.1		<0.1	<0.1	<0.1
Potassium	mg/L	0.1		2.1	4.7	15.2
Sodium	mg/L	0.2		9.0	15.4	5.5
Strontium	mg/L	0.001		0.516	0.697	0.850
Tin	mg/L	0.05		<0.05	<0.05	<0.05
Titanium	mg/L	0.005		<0.005	<0.005	<0.005
Zinc	mg/L	0.005		<0.005	<0.005	<0.005
Antimony	mg/L	0.0001		<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.0001		0.0007	0.0002	0.0066
Beryllium	mg/L	0.0001		<0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		0.002	<0.001	0.002
Cobalt	mg/L	0.0001		0.0003	0.0034	0.0176
Copper	mg/L	0.0001		0.0004	0.0004	0.0002
Lead	mg/L	0.00002		0.00006	<0.00002	0.00003
Molybdenum	mg/L	0.0001		0.0006	0.0006	0.0013
Nickel	mg/L	0.0002		0.0009	0.0030	0.0019
Selenium	mg/L	0.001		<0.001	<0.001	<0.001
Silver	mg/L	0.0001		<0.0001	<0.0001	<0.0001



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REPORT No: 25-030143 - Rev. 0

Client I.D.			MW20-II	DUP	DUP-1
Sample I.D.			25-030143-16	25-030143-17	25-030143-18
Date Collected			2025-10-02	2025-10-02	2025-10-02
Parameter	Units	R.L.	-	-	-
Thallium	mg/L	0.00005	<0.00005	<0.00005	<0.00005
Uranium	mg/L	0.00005	0.00090	0.00632	0.00183
Vanadium	mg/L	0.0001	0.0088	0.0005	0.0123
Chromium (VI)	mg/L	0.01	<0.01 (25)	<0.01 (25)	<0.01 (25)
Mercury	mg/L	0.00002	<0.00002	<0.00002	<0.00002
Anion Sum (Calculated)	meq/L	-	4.47	6.00	12.9
Cation Sum (Calculated)	meq/L	-	4.95	6.12	12.7
% Difference (Calculated)	%	-	5.14	0.962	0.867
Ion Ratio (Calculated)	-	-	0.902	0.981	1.02
Sodium Adsorption Ratio (Calculated)	-	-	0.267	0.414	0.101
TDS (Ion Sum Calc) (Calculated)	mg/L	1	230	311	655
TDS(calc.)/EC(actual) (Calculated)	-	-	0.537	0.545	0.567
Conductivity Calc	µmho/cm	-	427	567	1100
Conductivity Calc / Conductivity (Calculated)	-	-	0.998	0.994	0.949
Langelier Index(25°C) (Calculated)	-	-	0.0534	0.282	0.533
Saturation pH (25°C) (Calculated)	-	-	7.41	7.24	6.37
pH (Client Data)	pH units	-	6.44	6.39	6.05
Temperature (Client Data)	°C	-	13.4	12.7	11.7



Michelle Dubien
Data Specialist

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Final Report
REPORT No: 25-030143 - Rev. 0

Client I.D.			MW3	MW4	DUP-1
Sample I.D.			25-030143-3	25-030143-4	25-030143-18
Date Collected			2025-10-02	2025-10-02	2025-10-02
Parameter	Units	R.L.	-	-	-
Acetone	µg/L	30	<30	<30	<30
Benzene	µg/L	0.5	<0.5	0.7	0.7
Bromodichloromethane	µg/L	2	<2	<2	<2
Bromoform	µg/L	5	<5	<5	<5
Bromomethane	µg/L	0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	µg/L	0.2	<0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5	1.0	<0.5	<0.5
Chloroform	µg/L	1	<1	<1	<1
Chloromethane (Methyl Chloride)	µg/L	2	<2	<2	<2
Dibromochloromethane	µg/L	2	<2	<2	<2
Ethylene Dibromide	µg/L	0.2	<0.2	<0.2	<0.2
Dichlorobenzene,1,2-	µg/L	0.5	<0.5	<0.5	<0.5
Dichlorobenzene,1,3-	µg/L	0.5	<0.5	<0.5	<0.5
Dichlorobenzene,1,4-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloroethane,1,1-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloroethane,1,2-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,1-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,2-cis-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloroethylene,1,2-trans-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloropropane,1,2-	µg/L	0.5	<0.5	<0.5	<0.5
Dichloropropene,1,3-cis-	µg/L	0.5	<0.5	<0.5	<0.5



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Final Report
REPORT No: 25-030143 - Rev. 0

Client I.D.			MW3	MW4	DUP-1
Sample I.D.			25-030143-3	25-030143-4	25-030143-18
Date Collected			2025-10-02	2025-10-02	2025-10-02
Parameter	Units	R.L.	-	-	-
Dichloropropene, 1,3-trans-	µg/L	0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5
Dichloromethane (Methylene Chloride)	µg/L	5	<5	<5	<5
Methyl Ethyl Ketone	µg/L	2	<2	<2	<2
Methyl Isobutyl Ketone	µg/L	20	<20	<20	<20
Methyl tert-Butyl Ether (MTBE)	µg/L	2	<2	<2	<2
Styrene	µg/L	0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,1,2-	µg/L	0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,2,2-	µg/L	0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	µg/L	0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5	<0.5
Trichlorobenzene, 1,2,4-	µg/L	0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,1-	µg/L	0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,2-	µg/L	0.5	<0.5	<0.5	<0.5
Trichloroethylene	µg/L	0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane (Freon 11)	µg/L	5	<5	<5	<5
Vinyl Chloride	µg/L	0.2	<0.2	<0.2	<0.2
Xylene, m,p-	µg/L	1	<1	<1	<1
Xylene, o-	µg/L	0.5	<0.5	<0.5	<0.5

Comments:

25. Chromium (VI) result is based on Total Chromium
TKN and ammonia are within acceptable analytical limits



Michelle Dubien
Data Specialist

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C.O.C.: G134495

REPORT No: 25-033017 - 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-24
 DATE REPORTED: 2025-Oct-29
 SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Laxton Landfill
 P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	FLENA	2025-Oct-28	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 *

		Client I.D.	MW16-I
		Sample I.D.	25-033017-1
		Date Collected	2025-10-22
Parameter	Units	R.L.	-
pH (Client Data)	pH units	-	5.87
Temperature (Client Data)	°C	-	11.2



Michelle Dubien
Data Specialist

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Final Report
REPORT No: 25-033017 - Rev. 0

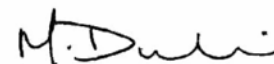
		Client I.D.	MW16-I
		Sample I.D.	25-033017-1
		Date Collected	2025-10-22
Parameter	Units	R.L.	-
Acetone	µg/L	30	<30
Benzene	µg/L	0.5	<0.5
Bromodichloromethane	µg/L	2	<2
Bromoform	µg/L	5	<5
Bromomethane	µg/L	0.5	<0.5
Carbon Tetrachloride	µg/L	0.2	<0.2
Chlorobenzene	µg/L	0.5	<0.5
Chloroform	µg/L	1	<1
Chloromethane (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



Michelle Dubien
Data Specialist

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		Client I.D.	MW16-I
		Sample I.D.	25-033017-1
		Date Collected	2025-10-22
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



Michelle Dubien
Data Specialist

C.O.C.: -

REPORT No: 25-011121 - 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-28
DATE REPORTED: 2025-May-23
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Laxton Landfill
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	4	OTTAWA	PCURIEL	2025-Apr-30	A-IC-01	SM 4110B
BOD5 (Liquid)	4	KINGSTON	DCASSIDY	2025-May-07	BOD-001	SM 5210B
COD (Liquid)	4	KINGSTON	MWILSON	2025-May-12	COD-001	SM 5220D
Colour (Liquid)	4	OTTAWA	STAILLON	2025-May-02	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	4	OTTAWA	SBOUDREAU	2025-May-01	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
Cyanide WAD (Liquid)	4	KINGSTON	EHINCH	2025-May-01	CN-001	SM 4500-CN-E
DOC (Liquid)	4	OTTAWA	SLOZO	2025-May-15	C-OC-01	EPA 415.2
Ion Balance (Calc.)	4	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	4	OTTAWA	STAILLON	2025-May-05	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	4	OTTAWA	AOZKAYMAK	2025-May-02	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	4	OTTAWA	SGORMAN	2025-May-02	D-ICP-01	SM 3120B
ICP/OES (Liquid)	4	OTTAWA	GFENTON	2025-May-01	D-ICP-01	SM 3120B
Mercury (Liquid)	4	OTTAWA	TBENNETT	2025-May-02	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	4	KINGSTON	VHAMMOND	2025-May-08	NH3-001	SM 4500NH3
Phenols (Liquid)	4	KINGSTON	EHINCH	2025-May-06	PHEN-01	MECP E3179
TP & TKN (Liquid)	4	KINGSTON	YLIEN	2025-May-12	TPTKN-001	MECP E3516.2
TSS (Liquid)	4	KINGSTON	MCLOSS	2025-May-06	TSS-001	SM 2540D
Turbidity (Liquid)	4	OTTAWA	MMIRELLA	2025-Apr-30	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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REPORT No: 25-011121 - Rev. 0

Client I.D.			SWA	SWD	SWF	SWC2
Sample I.D.			25-011121-1	25-011121-2	25-011121-3	25-011121-4
Date Collected			2025-04-28	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	106	133	121	128
Conductivity @25°C	uS/cm	1	220	263	254	266
pH @25°C	pH units	-	7.62	7.99	7.97	7.99
Colour	TCU	2	36	58	39	32
Turbidity	NTU	0.1	1.1	1.2	1.3	0.8
Fluoride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	0.5	1.8	2.0	1.7	2.7
Nitrate (N)	mg/L	0.05	0.05	<0.05	<0.05	0.05
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1	6	5	9	10
BOD5	mg/L	3	<3	<3	<3	<3
Total Suspended Solids	mg/L	3	9	<3	4	<3
Phosphorus (Total)	mg/L	0.01	0.05	0.06	0.02	0.02
Total Kjeldahl Nitrogen	mg/L	0.1	0.8	0.9	0.6	0.4
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.07	0.19	0.06	0.08
Ammonia (N)-unionized	mg/L	0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	15.1	12.6	10.2	9.0
Cyanide (WAD)	mg/L	0.005	<0.005	<0.005	<0.005	<0.005
Phenolics	mg/L	0.001	0.003	0.003	0.002	0.003
COD	mg/L	5	42	37	24	30
Aluminum	mg/L	0.01	0.03	0.01	<0.01	0.01



Michelle Dubien
Data Specialist

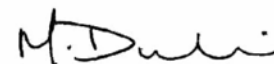
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REPORT No: 25-011121 - Rev. 0

			Client I.D.	SWA	SWD	SWF	SWC2
			Sample I.D.	25-011121-1	25-011121-2	25-011121-3	25-011121-4
			Date Collected	2025-04-28	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.		-	-	-	-
Hardness (as CaCO ₃)	mg/L	0.02		111	152	139	144
Aluminum (Total)	mg/L	0.01		0.03	0.04	0.02	0.03
Barium (Total)	mg/L	0.001		0.038	0.049	0.031	0.035
Boron (Total)	mg/L	0.005		0.007	0.008	0.009	0.043
Calcium (Total)	mg/L	0.02		27.1	36.8	33.2	34.9
Iron (Total)	mg/L	0.005		0.118	0.140	0.303	0.369
Magnesium (Total)	mg/L	0.02		10.6	14.7	13.7	13.8
Manganese (Total)	mg/L	0.001		0.035	0.021	0.017	0.025
Phosphorus (Total)	mg/L	0.1		<0.1	<0.1	<0.1	<0.1
Potassium (Total)	mg/L	0.1		1.1	0.9	0.9	1.2
Sodium (Total)	mg/L	0.2		1.4	1.5	1.6	2.7
Strontium (Total)	mg/L	0.001		0.197	0.224	0.229	0.270
Tin (Total)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05
Titanium (Total)	mg/L	0.005		<0.005	<0.005	<0.005	<0.005
Zinc (Total)	mg/L	0.005		0.006	<0.005	<0.005	0.005
Antimony (Total)	mg/L	0.0001		0.0004	0.0004	0.0002	0.0004
Arsenic (Total)	mg/L	0.0001		0.0002	0.0002	0.0002	0.0001
Beryllium (Total)	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001
Cadmium (Total)	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015
Chromium (Total)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001
Cobalt (Total)	mg/L	0.0001		0.0002	0.0002	0.0001	0.0002



**Michelle Dubien
Data Specialist**

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Final Report

REPORT No: 25-011121 - Rev. 0

Client I.D.			SWA	SWD	SWF	SWC2
Sample I.D.			25-011121-1	25-011121-2	25-011121-3	25-011121-4
Date Collected			2025-04-28	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.	-	-	-	-
Copper (Total)	mg/L	0.0001	0.0003	0.0002	0.0002	0.0003
Lead (Total)	mg/L	0.00002	0.00007	0.00005	0.00005	0.00002
Molybdenum (Total)	mg/L	0.0001	0.0002	0.0002	0.0003	0.0003
Nickel (Total)	mg/L	0.0002	<0.0002	<0.0002	<0.0002	0.0003
Selenium (Total)	mg/L	0.001	<0.001	<0.001	<0.001	<0.001
Silver (Total)	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium (Total)	mg/L	0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium (Total)	mg/L	0.00005	0.00007	0.00022	0.00036	0.00035
Vanadium (Total)	mg/L	0.0001	0.0002	0.0003	0.0003	0.0002
Chromium (VI)	mg/L	0.001	<0.001	<0.001	<0.001	<0.001
Mercury	mg/L	0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum	meq/L	-	2.29	2.80	2.65	2.83
Cation Sum	meq/L	-	2.33	3.15	2.90	3.05
% Difference	%	-	0.802	5.80	4.54	3.81
Ion Ratio	-	-	0.984	0.890	0.913	0.927
Sodium Adsorption Ratio	-	-	0.0598	0.0522	0.0590	0.0986
TDS (Ion Sum Calc)	mg/L	1	112	140	133	142
TDS(calc.)/EC(actual)	-	-	0.508	0.533	0.523	0.534
Conductivity Calc	µmho/cm	-	220	281	263	279
Conductivity Calc / Conductivity	-	-	1.00	1.07	1.04	1.05
Langelier Index(25°C)	-	-	-0.295	0.286	0.191	0.246



Michelle Dubien
Data Specialist

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Final Report

REPORT No: 25-011121 - Rev. 0

			Client I.D.	SWA	SWD	SWF	SWC2
			Sample I.D.	25-011121-1	25-011121-2	25-011121-3	25-011121-4
			Date Collected	2025-04-28	2025-04-28	2025-04-28	2025-04-28
Parameter	Units	R.L.		-	-	-	-
Saturation pH (25°C)	-	-		7.91	7.70	7.78	7.74
pH (Client Data)	pH units	-		6.99	7.17	7.26	7.24
Temperature (Client Data)	°C	-		5.5	6.1	10.1	8.9



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.

C.O.C.: -

REPORT No: 25-030137 - 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-03
DATE REPORTED: 2025-Oct-14
SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Laxton Landfill
P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	2	OTTAWA	PCURIEL	2025-Oct-07	A-IC-01	SM 4110B
BOD5 (Liquid)	2	KINGSTON	JWOLFE2	2025-Oct-06	BOD-001	SM 5210B
COD (Liquid)	2	KINGSTON	MWILSON	2025-Oct-09	COD-001	SM 5220D
Colour (Liquid)	2	OTTAWA	AGRAF	2025-Oct-06	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	2	OTTAWA	SBOUDREAU	2025-Oct-07	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
Cyanide WAD (Liquid)	2	KINGSTON	EHINCH	2025-Oct-06	CN-001	SM 4500-CN-E
DOC (Liquid)	2	OTTAWA	LMACGREGOR	2025-Oct-08	C-OC-01	EPA 415.2
Ion Balance (Calc.)	2	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
Chromium VI (Liquid)	2	OTTAWA	AGRAF	2025-Oct-09	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	2	OTTAWA	GFENTON	2025-Oct-14	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	2	OTTAWA	NSAUNDERS	2025-Oct-08	D-ICP-01	SM 3120B
ICP/OES (Liquid)	2	OTTAWA	SGORMAN	2025-Oct-08	D-ICP-01	SM 3120B
Mercury (Liquid)	2	OTTAWA	TBENNETT	2025-Oct-07	D-HG-02	SM 3112B
Ammonia (Liquid)	2	KINGSTON	DCASSIDY	2025-Oct-09	NH3-001	SM 4500NH3
Phenols (Liquid)	2	KINGSTON	EHINCH	2025-Oct-08	PHEN-01	MECP E3179
TP & TKN (Liquid)	2	KINGSTON	YLIEN	2025-Oct-08	TPTKN-001	MECP E3516.2
TSS (Liquid)	2	KINGSTON	DCHAUDHARI	2025-Oct-06	TSS-001	SM 2540D
Turbidity (Liquid)	2	OTTAWA	ABAILEY	2025-Oct-06	A-TURB-01	SM 2130B

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an *



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Data Specialist

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REPORT No: 25-030137 - Rev. 0

Parameter	Client I.D.		SWF	SWC2
	Sample I.D.		25-030137-1	25-030137-2
	Date Collected		2025-10-02	2025-10-02
	Units	R.L.	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	215	268
Conductivity @25°C	uS/cm	1	416	522
pH @25°C	pH units	-	7.92	7.72
Colour	TCU	2	50	15
Turbidity	NTU	0.1	22.6 (17)	196 (17)
Fluoride	mg/L	0.1	<0.1	<0.1
Chloride	mg/L	0.5	1.4	8.0
Nitrate (N)	mg/L	0.05	0.10	0.17
Nitrite (N)	mg/L	0.05	<0.05	<0.05
Sulphate	mg/L	1	5	3
BOD5	mg/L	3	4	<3
Total Suspended Solids	mg/L	3	36	55
Phosphorus (Total)	mg/L	0.01	0.18	0.37
Total Kjeldahl Nitrogen	mg/L	0.1	3.2	1.4
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	1.51	0.54
Ammonia (N)-unionized (Calculated)	mg/L	0.01	<0.01	<0.01
Dissolved Organic Carbon	mg/L	0.8	18.3	10.3
Cyanide (WAD)	mg/L	0.005	<0.005	<0.005
Phenolics	mg/L	0.001	<0.001	0.001
COD	mg/L	5	81	53
Aluminum	mg/L	0.01	0.04	0.04



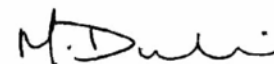
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			Client I.D.	SWF	SWC2
			Sample I.D.	25-030137-1	25-030137-2
			Date Collected	2025-10-02	2025-10-02
Parameter	Units	R.L.		-	-
Hardness (as CaCO3)	mg/L	0.02		222	273
Aluminum (Total)	mg/L	0.01		0.11	0.08
Barium (Total)	mg/L	0.001		0.073	0.132
Boron (Total)	mg/L	0.005		0.022	0.318
Calcium (Total)	mg/L	0.02		54.3	72.8
Iron (Total)	mg/L	0.005		4.11	26.4
Magnesium (Total)	mg/L	0.02		20.9	22.3
Manganese (Total)	mg/L	0.001		0.308	0.475
Phosphorus (Total)	mg/L	0.1		0.1	0.4
Potassium (Total)	mg/L	0.1		1.1	1.9
Sodium (Total)	mg/L	0.2		1.8	11.5
Strontium (Total)	mg/L	0.001		0.568	0.689
Tin (Total)	mg/L	0.05		<0.05	<0.05
Titanium (Total)	mg/L	0.005		0.007	<0.005
Zinc (Total)	mg/L	0.005		<0.005	<0.005
Antimony (Total)	mg/L	0.0001		0.0004	0.0005
Arsenic (Total)	mg/L	0.0001		0.0006	0.0007
Beryllium (Total)	mg/L	0.0001		<0.0001	<0.0001
Cadmium (Total)	mg/L	0.000015		0.000019	<0.000015
Chromium (Total)	mg/L	0.001		<0.001	<0.001
Cobalt (Total)	mg/L	0.0001		0.0004	0.0003



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Parameter	Units	R.L.	Client I.D.	SWF	SWC2
			Sample I.D.	25-030137-1	25-030137-2
			Date Collected	2025-10-02	2025-10-02
				-	-
Copper (Total)	mg/L	0.0001		0.0004	0.0003
Lead (Total)	mg/L	0.00002		0.00038	0.00046
Molybdenum (Total)	mg/L	0.0001		0.0007	<0.0001
Nickel (Total)	mg/L	0.0002		0.0005	0.0008
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		0.00109	0.00020
Vanadium (Total)	mg/L	0.0001		0.0012	0.0019
Chromium (VI)	mg/L	0.001		<0.001	<0.001
Mercury	mg/L	0.00002		<0.00002	<0.00002
Anion Sum (Calculated)	meq/L	-		4.45	5.64
Cation Sum (Calculated)	meq/L	-		4.78	7.46
% Difference (Calculated)	%	-		3.61	13.9
Ion Ratio (Calculated)	-	-		0.930	0.756
Sodium Adsorption Ratio (Calculated)	-	-		0.0540	0.303
TDS (Ion Sum Calc) (Calculated)	mg/L	1		218	308
TDS(calc.)/EC(actual) (Calculated)	-	-		0.525	0.589
Conductivity Calc	µmho/cm	-		409	520
Conductivity Calc / Conductivity (Calculated)	-	-		0.984	0.997
Langelier Index(25°C) (Calculated)	-	-		0.554	0.567



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			Client I.D.	SWF	SWC2
			Sample I.D.	25-030137-1	25-030137-2
			Date Collected	2025-10-02	2025-10-02
Parameter	Units	R.L.		-	-
Saturation pH (25°C) (Calculated)	-	-		7.37	7.15
pH (Client Data)	pH units	-		5.95	6.63
Temperature (Client Data)	°C	-		9.7	8.0

Comments:

17. Analyzed past holding time



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Data Specialist



APPENDIX E

Chemistry Summary Tables

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW1 09-Jun-15	MW1 10-Sep-15	MW1 31-May-16	MW1 17-Oct-16	MW1 19-Apr-17	MW1 17-Oct-17	MW1 24-Apr-18	MW1 26-Sep-18	MW1 17-Apr-19	MW1 18-Oct-19	MW1 21-Apr-20	MW1 13-Oct-20	MW1 15-Apr-21	MW1 13-Oct-21	MW1 12-Apr-22	MW1 16-Oct-22	MW1 26-Apr-23	MW1 11-Oct-23	MW1 29-Apr-24	MW1 08-Oct-24
Alkalinity	mg/L	500	-	304	-	224	186	232	214	187	228	201	192	150	146	168	158	133	163	168	162	154	190	157	165
Calcium	mg/L	NV	-	-	-	66.8	69.7	119	75.6	78.5	62.9	69.7	49.9	47.5	41.9	80.6	55	50.1	59.8	53.6	47.4	61.3	58	51.1	60.2
Chloride	mg/L	250	128	-	120	15.7	45.3	120	88.3	53.5	39.4	32.5	20.6	16.2	12.8	28.1	19.6	13.4	19.6	14.5	12.1	16.5	15	11.6	11.1
COD	mg/L	NV	-	127	-	21	6	24	15	20	18	25	17	17	15	29		11	24	31	15	5	22	15	23
Conductivity	µS/cm	NV	-	-	-	591	600	1010	797	800	683	613	545	458	404	635	495	418	475	462	461	479	501	484	480
DOC	mg/L	5	-	3.6	-	8	3.2	5.5	5.2	7.6	7.8	8.9	8	6.2	7.2	9.1	7.5	7.5	6.4	6.1	7	6.7	6.5	4.7	5.7
Fluoride	mg/L	1.5	-	0.45	-	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	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	-	311	-	263	266	452	277	292	227	249	179	164	150	271	174	168	203	184	162	203	195	179	205
Iron	mg/L	0.3	-	0.36	0.3	< 0.005	0.01	0.009	0.005	< 0.005	0.007	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	0.005	< 0.005	< 0.005	0.012	< 0.005	0.009
Magnesium	mg/L	NV	-	-	-	23.3	22.3	37.3	21.5	23.2	16.9	18.3	13.1	11.1	10.9	17	8.84	10.5	13.1	12.2	10.7	12	12.1	12.5	13.3
Manganese	mg/L	0.05	-	0.03	-	0.112	0.172	0.334	0.272	0.437	0.495	0.705	0.499	0.585	0.575	1.48	0.933	1	1.16	1.2	1.09	1.6	1.56	1.57	1.76
Mercury	mg/L	0.001	-	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	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	mg/L	10	-	2.5	13	< 0.1	< 0.1	0.3	< 0.1	1.5	< 0.05	0.81	< 0.05	0.12	< 0.05	1.07	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.26	< 0.05	0.12	< 0.05
Nitrite	mg/L	1	-	0.29	0.06	0.1	0.1	< 0.1	< 0.1	0.3	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
pH	pH Units	6.5 - 8.5	-	-	-	7.31	7.28	7.03	7.39	7.26	7.14	7.32	7.43	7.15	7.48	7.21	7.38	7.39	6.84	7.41	7.2	7.1	6.77	6.98	7.65
Phenols	mg/L	NV	-	-	0.001	< 0.001	< 0.001	< 0.001	0.005	< 0.001	0.002	< 0.001	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
Phosphorus	mg/L	NV	-	-	0.03	< 0.01	< 0.01	0.03	0.04	< 0.1	< 0.1	< 0.1	< 0.1	0.23	0.04	< 0.1	0.02	< 0.01	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	NV	-	-	-	2.8	3.5	4.6	3.9	3.4	4	3.8	3.8	2.8	3.5	4	3.7	3.2	3.9	3.3	3.6	3.7	4	3.8	4.8
Sodium	mg/L	200	-	101	-	19.2	20.6	59.5	52.2	55.6	57.1	53	47.6	26.2	28.4	31.4	31.8	26	28.4	24.8	24	22.8	26.5	20.8	22.4
Sulphate	mg/L	500	-	258	-	60	51	124	60	133	49	90	58	52	35	112	57	49	56	51	49	72	60	71	59
TDS	mg/L	500	340	314	-	323	324	606	430	468	367	389	308	246	221	376	271	233	279	262	245	282	259	250	248
TKN	mg/L	NV	-	-	-	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.4	0.4	1	0.5	0.4	0.3	0.4	0.7	0.4	0.4	0.9	0.4	0.6
Ammonia	mg/L	NV	-	-	-	0.02	0.02	0.04	0.07	0.04	0.09	0.1	0.08	0.1	0.07	0.04	0.07	0.03	0.08	0.22	0.09	0.12	0.7	0.12	0.28
Aluminum	mg/L	0.1	-	0.06	0.075	0.02	0.02	0.03	0.02	0.02	0.04	0.05	0.03	0.03	0.04	0.05	0.04	0.03	0.03	0.01	< 0.01	0.02	0.04	0.02	0.03
Antimony	mg/L	0.006	-	0.0016	0.02	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	-	0.006	0.005	< 0.0001	0.0003	0.0004	0.0002	0.0003	0.0003	0.0004	0.0002	0.0002	< 0.0001	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001
Barium	mg/L	1	-	0.33	-	0.228	0.255	0.468	0.276	0.294	0.295	0.264	0.195	0.16	0.151	0.278	0.191	0.173	0.214	0.188	0.168	0.21	0.207	0.174	0.218
Beryllium	mg/L	NV	-	-	0.011	< 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	< 0.002	< 0.001	< 0.0001	< 0.0001	< 0.0001
Boron	mg/L	5	1.3	1.3	1.3	0.603	0.543	0.927	0.597	0.508	1	0.94	1.18	0.775	1.2	1.89	1.73	1.14	1.6	1.35	1.24	1.12	1.42	1.09	1.25
Cadmium	mg/L	0.005	-	0.001	0.0001	0.00005	0.00009	0.00015	0.00007	0.000133	0.000098	0.000116	0.00009	0.000103	0.000097	0.000152	0.000114	0.000104	0.000096	0.00012	0.000136	0.000129	0.00011	0.000106	0.000096
Chromium	mg/L	0.05	-	0.013	0.001	0.0034	0.0094	< 0.0002	0.0028	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
Cobalt	mg/L	NV	-	-	0.0009	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	0.0031	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0058	0.0031	0.0038
Copper	mg/L	1	-	0.5	0.005	0.0079	0.0081	0.0123	0.0071	0.0086	0.0099	0.0125	0.0097	0.0088	0.0099	0.0126	0.014	0.0113	0.01	0.0095	0.0097	0.0084	0.0093	0.0078	0.0066
Lead	mg/L	0.01	-	0.0025	0.003	< 0.00002	0.00002	< 0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	0.00002	0.00003	0.00013	< 0.00002	0.00005	0.00007	0.00005	0.00004	< 0.00002	0.00002	0.00003	< 0.00002
Molybdenum	mg/L	NV	-	-	0.04	< 0.0001	0.0005	0.0004	0.0003	0.0003	0.0004	0.0004	0.0004	0.0004	0.0005	0.0004	0.0006	0.0005	0.0004	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006
Nickel	mg/L	NV	-	-	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	< 0.01	0.0051	0.005	0.004	
Selenium	mg/L	0.01	-	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	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	NV	-	-	0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	NV	-	-	-	0.478	0.478	0.839	0.508	0.496	0.381	0.436	0.329	0.289	0.277	0.445	0.302	0.283	0.363	0.308	0.278	0.348	0.339	0.358	0.401
Thallium	mg/L	NV	-	-	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	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	NV	-	-	0.006	0.0022	0.0033	0.002	0.0011	0.0018	0.0007	0.0012	0.0002	0.0001	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0001	0.0001
Zinc	mg/L	5	-	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	< 0.005	< 0.005	< 0.005	< 0.005
Field Conductivity	µs/cm	NV	-	-	-	476	507	895	690	643	585	710	485	500	350	670	415	510	545	395	380	395	375	443	451
Field pH	-	6.5 - 8.5	-	-	-	6.75	6.69	6.49	7.04	7.3	7.59	7.06	7.01	7.35	6.9	7.06	7.03	7.58	6.84	7.02	6.87	7.02	6.9	7.18	7.11
Field Temperature	°C	NV	-	-	-	11.33	13.01	10.15	12.5	9	12.4	7.9	13.2	9.3	12.3	6.6	12.2	8.1	13.1	10.6	11.2	10.3	13.1	8.3	12.5

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value)

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW1 28-Apr-25	MW1 02-Oct-25	MW2 09-Jun-15	MW2 11-Sep-15	MW2 31-May-16	MW2 17-Oct-16	MW2 19-Apr-17	MW2 17-Oct-17	MW2 24-Apr-18	MW2 26-Sep-18	MW2 17-Apr-19	MW2 18-Oct-19	MW2 21-Apr-20	MW2 13-Oct-20	MW2 15-Apr-21	MW2 13-Oct-21	MW2 12-Apr-22	MW2 16-Oct-22	MW2 26-Apr-23	MW2 11-Oct-23
Alkalinity	mg/L	500	-	304	-	158	172	160	139	200	143	212	197	220	191	156	201	194	121	172	179	213	154	207	194
Calcium	mg/L	NV	-	-	-	56.1	54.8	59.1	51.9	86.2	63.4	83.4	71.5	69.9	59	43.9	59.3	67.6	37.7	61.4	57.6	65.1	46	61.2	60.6
Chloride	mg/L	250	128	-	120	9.9	10.4	11	8.9	25	30.5	39.8	25.4	19.7	21.7	11.3	19.4	19.6	15.4	14.8	19.2	12.7	16.9	15.3	17.1
COD	mg/L	NV	-	127	-	15	10	17	109	11	7	14	18	14	12	14	16	18		<5	17	17	8	<5	23
Conductivity	µS/cm	NV	-	-	-	498	460	404	403	549	464	612	568	491	524	392	542	514	359	460	469	500	445	507	509
DOC	mg/L	5	-	3.6	-	7.4	6.4	4.6	49.5	4.4	3.8	5.4	5.5	5.3	6.8	4.4	6.6	6.6	3.9	7.3	5.8	6.1	4.7	5.6	6
Fluoride	mg/L	1.5	-	0.45	-	<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	<0.1	<0.1	<0.1	<0.1
Hardness	mg/L	500	-	311	-	195	184	197	167	179	210	277	241	233	207	147	205	224	121	204	192	218	156	204	202
Iron	mg/L	0.3	-	0.36	0.3	<0.005	<0.005	<0.005	0.006	0.006	0.026	<0.005	0.011	0.005	<0.005	<0.005	0.007	<0.005	0.759	0.03	0.025	<0.005	<0.005	<0.005	0.008
Magnesium	mg/L	NV	-	-	-	13.2	11.5	11.9	9	15.6	12.5	16.7	15.1	14.1	14.4	9.1	13.7	13.3	6.51	12.2	11.7	13.4	10.1	12.3	12.4
Manganese	mg/L	0.05	-	0.03	-	1.9	2.05	1.49	15.8	2.41	1.72	2.48	2.16	2.15	1.87	1.24	1.96	2.27	1.25	1.82	1.9	2.2	1.63	1.83	2.11
Mercury	mg/L	0.001	-	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	<0.00002	<0.00002	<0.00002	<0.00002
Nitrate	mg/L	10	-	2.5	13	0.49	<0.05	<0.1	6.3	<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	0.006
Nitrite	mg/L	1	-	0.29	0.06	<0.05	<0.05	<0.1	<0.1	<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	<0.05	<0.05
pH	pH Units	6.5 - 8.5	-	-	-	7.07	7.25	7.39	7.04	7.09	7.43	7.23	7.15	7.35	7.36	7.13	7.48	7.21	7.43	7.34	6.85	7.36	7.15	7.17	6.83
Phenols	mg/L	NV	-	-	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	0.001	<0.001	<0.001	<0.001
Phosphorus	mg/L	NV	-	-	0.03	<0.1	<0.1	0.66	0.01	<0.1	0.39	<0.1	<0.1	<0.1	<0.1	0.47	0.18	<0.1	<0.1	0.19	0.13	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	NV	-	-	-	3.8	4.2	3.5	4.5	5.3	4.3	4.5	4.7	4.5	4.8	3.3	5.3	4.8	3.6	4.5	4.8	4.5	4.2	4.3	4.7
Sodium	mg/L	200	-	101	-	17.5	17.9	5	8.5	16.8	8.8	15.9	22.6	25.9	24.5	20.3	34.1	24.9	17.2	22.5	26.8	20.9	19.3	20.5	24.3
Sulphate	mg/L	500	-	258	-	79	56	32	17	45	46	43	44	28	43	24	43	37	31	31	40	31	43	37	53
TDS	mg/L	500	340	314	-	258	238	220	228	317	254	334	304	297	284	207	298	286	186	252	270	279	235	277	263
TKN	mg/L	NV	-	-	-	0.5	0.4	0.6	3.5	0.6	1.2	0.8	0.5	0.5	0.5	0.5	0.8	0.7	0.4	0.5	0.6	1	1.2	0.6	0.6
Ammonia	mg/L	NV	-	-	-	0.15	0.16	0.16	0.38	0.38	0.28	0.28	0.26	0.32	0.23	0.24	0.38	0.4	0.27	0.29	0.32	0.8	0.97	0.43	0.43
Aluminum	mg/L	0.1	-	0.06	0.075	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.05	0.05	0.03	0.06	0.05	0.22	0.05	0.03	0.02	<0.01	0.02	0.03
Antimony	mg/L	0.006	-	0.0016	0.02	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.025	-	0.006	0.005	0.0002	0.0001	<0.0001	0.0007	0.0002	<0.0001	0.0002	0.0002	0.0002	0.0002	<0.0001	0.0002	<0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002
Barium	mg/L	1	-	0.33	-	0.202	0.193	0.18	0.159	0.296	0.205	0.274	0.297	0.234	0.206	0.137	0.215	0.228	0.137	0.208	0.207	0.23	0.166	0.211	0.219
Beryllium	mg/L	NV	-	-	0.011	<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	<0.002	<0.001	<0.001
Boron	mg/L	5	1.3	1.3	1.3	0.953	1.06	0.182	0.08	0.376	0.227	0.355	0.562	0.444	0.597	0.415	1.21	0.969	0.553	1.04	1.13	1.12	0.788	1.01	1.2
Cadmium	mg/L	0.005	-	0.001	0.0001	0.000134	0.00014	0.00006	0.00021	0.0001	0.00009	0.000128	0.000088	0.0001	0.000093	0.000077	0.000116	0.000115	0.000078	0.000098	0.000104	0.000106	0.000095	0.000096	0.000127
Chromium	mg/L	0.05	-	0.013	0.001	<0.001	<0.001	0.0026	<0.0002	<0.0002	0.0016	<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
Cobalt	mg/L	NV	-	-	0.0009	0.0025	0.0033	<0.005	0.041	<0.005	0.006	0.006	<0.005	0.0028	0.007	<0.005	<0.005	0.006	<0.005	0.005	<0.005	0.005	0.005	<0.005	0.0078
Copper	mg/L	1	-	0.5	0.005	0.0057	0.0066	0.0032	0.0272	0.0051	0.0025	0.0059	0.0053	0.0059	0.0061	0.0053	0.0087	0.0078	0.0105	0.0087	0.0089	0.0076	0.0065	0.007	0.0086
Lead	mg/L	0.01	-	0.0025	0.003	<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	0.00089	0.00007	0.00008	0.00014	0.00003	<0.00002	<0.00002
Molybdenum	mg/L	NV	-	-	0.04	0.0005	0.0006	<0.0001	0.0003	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0006	0.0006	0.0005	0.0006	0.0005	0.0006	0.0006	0.0006	0.0005	0.0006
Nickel	mg/L	NV	-	-	0.025	0.0038	0.0048	<0.01	0.03	<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	0.0081
Selenium	mg/L	0.01	-	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	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	NV	-	-	0.0001	<0.0001	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium	mg/L	NV	-	-	-	0.364	0.338	0.361	-	0.503	0.371	0.454	0.381	0.387	0.38	0.248	0.386	0.375	0.216	0.353	0.352	0.374	0.281	0.364	0.359
Thallium	mg/L	NV	-	-	0.0003	<0.00005	<0.00005	<0.00005	0.00011	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	NV	-	-	0.006	0.0001	0.0002	0.0017	0.0031	0.0015	0.0008	0.0017	0.0005	0.0013	0.0002	0.0001	0.0002	0.0001	0.0022	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002
Zinc	mg/L	5	-	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	<0.005	<0.005	<0.005	<0.005
Field Conductivity	µs/cm	NV	-	-	-	467	609	337	-	494	425	475	503	590	440	440	470	555	275	560	500	420	360	395	380
Field pH	-	6.5 - 8.5	-	-	-	7.12	6.72	6.83	-	6.73	7.15	7.25	7.64	7.07	6.92	7.33	6.81	7.03	7.12	7.5	6.82	7.16	6.92	6.85	7
Field Temperature	°C	NV	-	-	-	8.9	13	11.61	-	9.61	11.8	8.7	12.9	8.3	13.2	8.4	12.1	7.5	12	7.1	13.5	9.4	11.6	10	13.3

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP - Reasonable Use Policy Criteria

Bold / Grey Highlighting - ODWQS Exceedance

Bold / Underlined - PWQO / CWQG Exceedance

Red Bold / Italics - RUP Exceedance

Green Bold / italics - Trigger Exceedance

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW2 29-Apr-24	MW2 08-Oct-24	MW2 28-Apr-25	MW2 02-Oct-25	MW3 09-Jun-15	MW3 10-Sep-15	MW3 31-May-16	MW3 17-Oct-16	MW3 19-Apr-17	MW3 17-Oct-17	MW3 24-Apr-18	MW3 26-Sep-18	MW3 17-Apr-19	MW3 18-Oct-19	MW3 21-Apr-20	MW3 13-Oct-20	MW3 15-Apr-21	MW3 13-Oct-21	MW3 12-Apr-22	MW3 16-Oct-22
Alkalinity	mg/L	500	-	304	-	188	167	201	175	249	205	237	219	257	258	187	207	192	221	320	185	232	231	276	210
Calcium	mg/L	NV	-	-	-	44.5	61.4	52.9	59.3	81.3	67.4	88.6	70.1	82.1	83	55.9	63.2	50.1	59.7	94.2	53.6	75.4	73.9	70.5	55.3
Chloride	mg/L	250	128	-	120	12.3	10.8	9.8	10	8.6	10.8	15.1	13.4	16.6	17.4	9.7	16.9	10.4	12.1	13.5	9.7	12.8	19	8.2	11.7
COD	mg/L	NV	-	127	-	14	16	15	17	54	84	26	13	26	35	33	70	27	25	35		42	37	35	24
Conductivity	µS/cm	NV	-	-	-	462	457	475	467	595	509	580	546	632	606	391	529	451	508	716	449	558	563	582	520
DOC	mg/L	5	-	3.6	-	3.8	5.5	6.2	6.6	7.3	6.3	6.7	6	8.9	9.8	9.7	8.6	9.8	9.8	12.1	7.9	12.7	9.8	10.4	7.6
Fluoride	mg/L	1.5	-	0.45	-	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.2	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hardness	mg/L	500	-	311	-	154	204	180	194	260	210	285	228	286	269	194	215	176	202	311	168	252	233	243	180
Iron	mg/L	0.3	-	0.36	0.3	<0.005	<0.005	0.014	0.006	28.1	23.2	20	10.7	16	13.7	12.1	7.16	11.3	9.05	18.7	9.87	21.2	21	16.7	12.4
Magnesium	mg/L	NV	-	-	-	10.5	12.4	11.6	11.2	13.7	10.1	15.5	12.9	19.6	14.9	13.3	13.9	12.3	12.8	18.3	8.21	15.4	11.7	16.3	10.2
Manganese	mg/L	0.05	-	0.03	-	1.36	2.13	1.86	2.06	4.02	3.35	4	3.2	3.37	4.13	2.25	2.94	1.89	2.7	3.98	2.19	2.9	2.65	2.69	2.24
Mercury	mg/L	0.001	-	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	<0.00002	<0.00002	<0.00002	<0.00002
Nitrate	mg/L	10	-	2.5	13	<0.05	0.06	<0.05	<0.05	<0.1	<0.1	0.1	<0.1	<0.1	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05
Nitrite	mg/L	1	-	0.29	0.06	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH	pH Units	6.5 - 8.5	-	-	-	7.07	7.53	7	7.29	7.16	7.29	6.91	7.33	7.08	6.93	7.04	7.29	6.78	7.34	7.07	7.22	6.92	6.79	7.21	7.11
Phenols	mg/L	NV	-	-	0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005	<0.001	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001
Phosphorus	mg/L	NV	-	-	0.03	<0.1	<0.1	<0.1	<0.1	0.47	0.07	0.31	0.09	<0.1	<0.1	<0.1	<0.1	0.27	0.06	<0.1	<0.1	0.07	0.08	<0.1	<0.1
Potassium	mg/L	NV	-	-	-	4.1	5.6	4.1	4.6	11	11.5	11.1	10	7.2	13.1	5.4	9.7	4.6	10.2	10.6	9.4	8.4	12.6	7.2	10.4
Sodium	mg/L	200	-	101	-	15.3	22.2	11.9	15.1	7.7	13.6	17.8	16.3	14.8	20.5	11.5	14.8	10.8	18.3	20.9	16.2	20.1	25.7	15.3	16.7
Sulphate	mg/L	500	-	258	-	33	46	31	51	48	38	42	32	45	21	17	36	19	16	27	22	25	34	23	28
TDS	mg/L	500	340	314	-	239	236	246	241	356	305	340	304	361	333	228	289	237	276	403	245	303	324	328	277
TKN	mg/L	NV	-	-	-	0.5	0.7	0.6	0.7	3.9	3.4	3.3	2.9	2.1	3.3	1.2	1.3	1.2	2.5	3.8	2.3	3.1	5.6	2.6	4
Ammonia	mg/L	NV	-	-	-	0.38	0.54	0.35	0.47	3.04	2.66	2.84	2.64	1.66	2.76	0.79	0.99	0.95	2.13	3.54	2.08	2.94	4.82	2.17	3.41
Aluminum	mg/L	0.1	-	0.06	0.075	0.01	0.02	0.02	0.03	0.03	0.02	0.03	0.03	0.03	0.04	0.04	0.05	0.04	0.06	0.05	0.04	0.06	0.04	0.05	0.01
Antimony	mg/L	0.006	-	0.0016	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	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.025	-	0.006	0.005	0.0002	0.0002	0.0002	0.0002	0.0004	0.0006	0.0004	0.0002	0.0003	0.0004	0.0002	0.0004	0.0004	<0.0001	0.0005	0.0005	0.0004	0.0006	0.0005	0.0004
Barium	mg/L	1	-	0.33	-	0.15	0.225	0.184	0.198	0.304	0.287	0.323	0.239	0.28	0.408	0.214	0.227	0.167	0.232	0.356	0.211	0.296	0.333	0.259	0.244
Beryllium	mg/L	NV	-	-	0.011	<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	<0.002	<0.002	<0.002	<0.002
Boron	mg/L	5	1.3	1.3	1.3	0.653	1.08	0.526	0.88	0.333	0.327	0.43	0.323	0.347	0.419	0.234	0.336	0.276	0.519	0.64	0.5	0.685	0.918	0.541	0.583
Cadmium	mg/L	0.005	-	0.001	0.0001	0.000073	0.000097	0.000098	0.00012	<0.00002	<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	<0.000015	<0.000015
Chromium	mg/L	0.05	-	0.013	0.001	<0.001	<0.001	<0.001	<0.001	0.005	0.0111	<0.0002	0.0024	<0.001	<0.001	0.001	0.001	0.001	0.002	0.001	0.001	<0.001	0.001	<0.001	<0.001
Cobalt	mg/L	NV	-	-	0.0009	0.0055	0.0068	0.0052	0.0059	0.009	0.006	<0.005	0.007	0.01	<0.005	0.004	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	0.006	<0.005	<0.005
Copper	mg/L	1	-	0.5	0.005	0.0058	0.0059	0.0037	0.005	<0.0001	0.0003	0.0003	<0.0001	0.0013	0.0007	0.0006	0.0009	0.0007	0.0005	0.0009	0.0006	0.002	0.0009	0.0008	0.0017
Lead	mg/L	0.01	-	0.0025	0.003	0.00006	<0.00002	0.00003	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	0.00007	0.0001	0.00005	0.00003
Molybdenum	mg/L	NV	-	-	0.04	0.0006	0.0006	0.0005	0.0006	0.0002	0.0006	0.0006	0.0005	0.0004	0.0004	0.0002	0.0004	0.0002	0.0005	0.0004	0.0004	0.0004	0.0006	0.0004	0.0006
Nickel	mg/L	NV	-	-	0.025	0.0051	0.0059	0.0043	0.0059	<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	<0.01
Selenium	mg/L	0.01	-	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	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	NV	-	-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium	mg/L	NV	-	-	-	0.306	0.402	0.327	0.347	0.448	0.35	0.526	0.418	0.542	0.453	0.364	0.417	0.332	0.393	0.528	0.304	0.45	0.365	0.445	0.305
Thallium	mg/L	NV	-	-	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	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	NV	-	-	0.006	0.0001	0.0001	0.0001	0.0002	0.0046	0.0057	0.0038	0.0019	0.0041	0.0028	0.0039	0.0011	0.003	0.0018	0.0023	0.0021	0.0031	0.0027	0.0035	0.0022
Zinc	mg/L	5	-	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	<0.005	<0.005	<0.005	<0.005
Field Conductivity	µs/cm	NV	-	-	-	380	214	408	505	543	454	590	505	503	570	510	475	500	460	745	405	700	680	480	435
Field pH	-	6.5 - 8.5	-	-	-	7.35	6.97	7.46	6.52	6.46	6.58	6.2	6.84	6.84	7.59	6.66	6.75	6.8	6.71	6.75	6.76	7.14	6.75	6.52	6.79
Field Temperature	°C	NV	-	-	-	9.7	12.4	10.9	12.2	10.56	13.68	10.22	11.4	8.6	12	8.7	12	8.4	10.8	5.9	11.7	7	12.9	10.5	11.4

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP - Reasonable Use Policy Criteria

Bold / Grey Highlighting - ODWQS Exceedance

Bold / Underlined - PWQO / CWQG Exceedance

Red Bold / Italics - RUP Exceedance

Green Bold / italics - Trigger Exceedance

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW3 26-Apr-23	MW3 11-Oct-23	MW3 29-Apr-24	MW3 08-Oct-24	MW3 28-Apr-25	MW3 02-Oct-25	MW4 09-Jun-15	MW4 10-Sep-15	MW4 30-May-16	MW4 17-Oct-16	MW4 19-Apr-17	MW4 17-Oct-17	MW4 24-Apr-18	MW4 26-Sep-18	MW4 17-Apr-19	MW4 18-Oct-19	MW4 21-Apr-20	MW4 13-Oct-20	MW4 15-Apr-21	MW4 13-Oct-21
Alkalinity	mg/L	500	-	304	-	251	319	282	301	294	275	1130	1160	753	873	679	672	702	594	594	582	574	580	530	550
Calcium	mg/L	NV	-	-	-	71	88.9	62.9	98.6	72.1	83.8	268	249	158	241	221	218	215	178	204	203	204	189	205	207
Chloride	mg/L	250	128	-	120	13.3	23.8	16.1	23	15.2	23.6	111	117	10.5	2.7	10.8	7.7	25.5	5.3	5.6	3.3	2.1	3.6	1.8	2.8
COD	mg/L	NV	-	127	-	17	18	31	35	33	38	242	337	164	115	127	113	144	91	106	94	108	111	103	
Conductivity	µS/cm	NV	-	-	-	579	706	649	730	685	680	2370	2470	1410	1720	1280	1290	1310	1130	1180	1160	1090	1150	1060	1040
DOC	mg/L	5	-	3.6	-	5.6	11.5	8	11.5	11	13.5	88.1	2800	18.7	28.2	15.9	22	18.9	22	21.1	29.9	20.7	14.7	21.6	14.3
Fluoride	mg/L	1.5	-	0.45	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.1	0.1	0.2	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	-	311	-	235	286	225	326	251	264	862	818	458	712	614	603	646	507	562	563	550	530	551	556
Iron	mg/L	0.3	-	0.36	0.3	18	19.9	11.6	12.8	13.2	20.4	125	124	95	108	105	97.4	119	97.1	91.4	96.3	96.9	86.7	106	96.3
Magnesium	mg/L	NV	-	-	-	14	15.6	16.4	19.3	17.3	13.2	46.7	47.4	15	26.4	15.1	14	26.5	15.2	12.7	13.5	9.65	13.9	9.32	9.3
Manganese	mg/L	0.05	-	0.03	-	2.73	3.61	2.35	3.82	2.76	3.14	16.8	22.1	5.33	10.5	9.08	9.65	16	10.3	6.44	9.36	6.24	12.5	6.38	6.23
Mercury	mg/L	0.001	-	0.0003	0.0002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	mg/L	10	-	2.5	13	0.07	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	0.1	< 0.1	< 0.1	1.56	< 0.05	< 0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	-	0.29	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.1	0.1	< 0.1	< 0.1	0.8	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
pH	pH Units	6.5 - 8.5	-	-	-	7.01	6.79	7.01	7.41	7	7.22	7	6.93	6.85	< 0.1	7.08	6.72	7.03	7.07	6.63	7.1	6.81	6.96	6.73	6.63
Phenols	mg/L	NV	-	-	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.003	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	0.005	< 0.001	0.014	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001
Phosphorus	mg/L	NV	-	-	0.03	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1.57	0.16	0.36	0.41	< 0.1	< 0.1	1.63	0.84	< 0.1	1.63	0.84	< 0.1	0.63	1.04	
Potassium	mg/L	NV	-	-	-	8.8	12.9	7.6	12.4	8.4	13	63.6	64.2	22.9	40	25.8	27	32.9	23.2	20	23.7	16.1	20.9	16.9	16.2
Sodium	mg/L	200	-	101	-	16.6	30.8	19.4	30.4	14.4	22.7	134	156	22	60.7	17.8	15	49.1	16.4	13.3	11.1	6.5	18.3	5.9	6.2
Sulphate	mg/L	500	-	258	-	26	34	32	37	50	40	19	17	12	27	18	14	19	19	21	33	8	27	12	12
TDS	mg/L	500	340	314	-	321	367	337	381	356	353	1520	1550	824	973	845	730	826	639	655	661	609	646	587	602
TKN	mg/L	NV	-	-	-	3.2	4.5	2.7	3.2	3.4	5.1	51	51.1	27.2	31.2	22.6	18.7	18.1	13.7	14	13.8	11.1	11.7	10.2	11.8
Ammonia	mg/L	NV	-	-	-	2.99	5.35	2.41	3.06	3.26	5.56	43.8	42.8	23.9	31.2	17	16.2	16.5	11.4	12.1	11.3	9.02	9.66	9.05	9.29
Aluminum	mg/L	0.1	-	0.06	0.075	0.02	0.06	0.04	0.06	0.03	0.03	0.17	0.17	0.09	0.15	0.13	0.12	0.14	0.12	0.12	0.14	0.29	0.1	0.13	0.13
Antimony	mg/L	0.006	-	0.0016	0.02	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0002	< 0.0001	0.0003	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0061	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	-	0.006	0.005	0.0004	0.0006	0.0005	0.0004	0.0004	0.0006	0.0145	0.024	0.0051	0.0092	0.0099	0.0058	0.0115	0.0056	0.0055	< 0.0001	0.0048	0.0064	0.0055	0.0051
Barium	mg/L	1	-	0.33	-	0.284	0.393	0.233	0.38	0.264	0.363	0.974	1.19	0.313	0.65	0.436	0.52	0.554	0.344	0.33	0.361	0.3	0.355	0.288	0.287
Beryllium	mg/L	NV	-	-	0.011	< 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	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	1.3	1.3	1.3	0.656	1.18	0.729	1.23	0.539	0.972	0.982	0.969	0.657	0.971	0.65	0.677	0.728	0.57	0.66	0.577	0.524	0.677	0.43	0.462
Cadmium	mg/L	0.005	-	0.001	0.0001	< 0.000010	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.00002	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
Chromium	mg/L	0.05	-	0.013	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0286	0.067	< 0.0002	0.0131	< 0.001	< 0.001	0.005	0.004	0.003	0.004	0.004	0.008	0.002	0.003
Cobalt	mg/L	NV	-	-	0.0009	0.005	0.0091	0.0047	0.0062	0.0038	0.0076	0.048	0.059	0.018	0.031	0.025	0.02	0.0127	0.024	0.01	0.018	0.019	0.022	0.021	0.015
Copper	mg/L	1	-	0.5	0.005	0.0006	0.001	0.001	0.0005	0.0006	0.0005	0.0006	0.0021	< 0.0001	< 0.0001	0.0001	0.0002	0.0016	0.0004	0.0006	0.0004	0.0007	0.0003	0.0012	0.0003
Lead	mg/L	0.01	-	0.0025	0.003	< 0.00002	0.00003	0.00005	0.00004	0.00002	< 0.00002	< 0.00002	0.00013	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00006	< 0.00002	0.00003	< 0.00004	0.00009	< 0.00004	0.00006	0.00006
Molybdenum	mg/L	NV	-	-	0.04	0.0005	0.0006	0.0004	0.0006	0.0004	0.0005	0.0013	0.0029	0.0015	0.0017	0.0016	0.0015	0.0015	0.0012	0.0007	0.0014	0.0009	0.0018	0.0009	0.0008
Nickel	mg/L	NV	-	-	0.025	< 0.01	0.0027	0.0029	0.0028	0.002	0.0028	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	-	0.003	0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.005	0.005	< 0.001	0.003	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001
Silver	mg/L	NV	-	-	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.00002	0.00004	< 0.00002	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	NV	-	-	-	0.424	0.479	0.473	0.603	0.464	0.438	1.57	1.64	0.726	1.31	1.06	0.994	1.18	0.95	0.94	1.02	0.77	0.919	0.813	0.859
Thallium	mg/L	NV	-	-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025	< 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	NV	-	-	0.006	0.0024	0.0031	0.0026	0.0024	0.0014	0.0026	0.0373	0.0529	0.0179	0.0179	0.0183	0.0135	0.0214	0.0119	0.0116	0.0137	0.0115	0.0141	0.0132	0.0121
Zinc	mg/L	5	-	2.5	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.011	0.01	0.006	0.006	0.008	< 0.005	0.006	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005
Field Conductivity	µs/cm	NV	-	-	-	470	535	659	200	650	751	3350	3430	1330	1670	1180	1205	1410	1170	1490	1095	1270	680	1220	1285
Field pH	-	6.5 - 8.5	-	-	-	6.73	6.75	7.14	6.91	6.72	6.32	6.43	6.43	8.3	6.65	6.64	7.42	6.52	6.45						

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW4 12-Apr-22	MW4 16-Oct-22	MW4 26-Apr-23	MW4 11-Oct-23	MW4 29-Apr-24	MW4 08-Oct-24	MW4 28-Apr-25	MW4 02-Oct-25	MW4 (Dup) 02-Oct-25	MW6 15-Jun-15	MW6 11-Sep-15	MW6 30-May-16	MW6 17-Oct-16	MW6 19-Apr-17	MW6 17-Oct-17	MW6 24-Apr-18	MW6 26-Sep-18	MW6 17-Apr-19	MW6 18-Oct-19
Alkalinity	mg/L	500	-	304	-	634	605	586	554	624	557	607	617	609	256	297	238	271	214	155	248	238	248	270
Calcium	mg/L	NV	-	-	-	218	183	179	192	160	202	165	209	209	143	191	123	143	106	126	96.6	68	81.8	86.3
Chloride	mg/L	250	128	-	120	3	2.4	1.5	1.4	2	2.4	1.3	2.7	2.4	6.1	5.3	3.6	5.7	2.8	2.5	1.7	3	2.4	2.7
COD	mg/L	NV	-	127	-	97	96	77	85	119	186	127	87	96	35	20	18	267	16	27	23	41	38	47
Conductivity	µS/cm	NV	-	-	-	1160	1160	1120	1020	1200	1080	1140	1170	1160	965	1040	646	913	596	749	513	487	528	536
DOC	mg/L	5	-	3.6	-	13.2	6	8.1	12.9	17.9	19.9	25.2	28.8	28.6	3.6	8.6	5.4	7	5.2	9.4	8.7	15.8	14.7	19.6
Fluoride	mg/L	1.5	-	0.45	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.1	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1
Hardness	mg/L	500	-	311	-	591	510	543	514	445	542	452	558	560	415	553	355	419	302	359	289	223	269	301
Iron	mg/L	0.3	-	0.36	0.3	87.3	99.2	7.97	94.6	88.5	2.05	89.1	101	102	2.43	15.1	1.06	5.43	0.416	2.39	0.822	5.75	6.04	10.5
Magnesium	mg/L	NV	-	-	-	11.2	12.9	14.4	8.26	11.1	8.75	9.97	8.92	8.97	14.2	18.5	11.8	14.9	8.87	10.7	11.6	12.8	15.7	20.8
Manganese	mg/L	0.05	-	0.03	-	4.66	9.31	8.82	6.11	6.73	6.15	7.51	5.41	5.42	1.32	1.67	0.258	1.34	0.132	0.797	0.127	0.47	0.495	0.644
Mercury	mg/L	0.001	-	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	< 0.00002	< 0.00002	
Nitrate	mg/L	10	-	2.5	13	< 0.05	< 0.05	0.17	0.08	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.1	< 0.1	1.2	0.3	1.5	< 0.05	0.52	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	-	0.29	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	0.1	0.1	0.1	0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
pH	pH Units	6.5 - 8.5	-	-	-	7.19	6.86	6.79	6.73	6.74	6.94	6.77	6.91	6.9	7.14	7.21	7.07	7.28	7.46	6.8	7.33	7.26	7.06	7.47
Phenols	mg/L	NV	-	-	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.004	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.007	< 0.001	0.002	< 0.002	< 0.002
Phosphorus	mg/L	NV	-	-	0.03	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.02	0.01	< 0.01	0.05	< 0.1	< 0.1	< 0.1	< 0.1	0.31	0.01
Potassium	mg/L	NV	-	-	-	16.9	17.2	16.3	14.6	14.3	14.3	13.2	15	15.2	10.9	13.4	9	11.1	6.8	8.7	5.7	4.5	3.8	4.5
Sodium	mg/L	200	-	101	-	8.1	10	10.9	5	5.9	4.7	4.9	5.4	5.5	7.9	9.7	7.2	9.8	6.5	10.1	5.1	3.4	2.2	2.5
Sulphate	mg/L	500	-	258	-	17	26	17	14	34	21	21	31	31	224	278	98	215	87	195	37	27	17	7
TDS	mg/L	500	340	314	-	675	636	608	543	647	576	612	630	622	564	713	403	572	355	451	308	268	279	298
TKN	mg/L	NV	-	-	-	14.3	12.2	9.6	10	8.8	11.5	10.7	8.8	9.2	1.7	2.2	0.6	4.3	0.3	0.9	0.3	0.8	0.6	0.4
Ammonia	mg/L	NV	-	-	-	12.3	9.62	7.79	9.15	7.37	10.2	7.46	8.89	9.02	1.53	1.81	0.31	1.14	0.09	0.62	0.11	0.21	0.16	0.35
Aluminum	mg/L	0.1	-	0.06	0.075	0.13	0.1	0.06	0.12	0.13	0.08	0.13	0.13	0.12	0.03	0.05	0.03	0.04	0.03	0.06	0.05	0.05	0.05	0.06
Antimony	mg/L	0.006	-	0.0016	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	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0004
Arsenic	mg/L	0.025	-	0.006	0.005	0.0045	0.0067	0.007	0.0054	0.0071	0.0048	0.0063	0.0068	0.0066	< 0.002	0.0003	0.0001	0.0002	< 0.0001	0.0001	0.0002	0.0003	0.0003	0.0001
Barium	mg/L	1	-	0.33	-	0.315	0.287	0.109	0.26	0.227	0	0.231	0.28	0.282	0.106	0.18	0.06	0.109	0.046	0.128	0.047	0.057	0.052	0.058
Beryllium	mg/L	NV	-	-	0.011	< 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	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	1.3	1.3	1.3	0.671	0.388	0.367	0.421	0.325	0.336	0.295	0.42	0.42	0.61	0.656	0.237	0.491	0.28	0.308	0.141	0.112	0.093	0.09
Cadmium	mg/L	0.005	-	0.001	0.0001	< 0.000015	< 0.000012	< 0.000012	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.00007	0.00007	< 0.00002	0.00005	0.000025	0.000065	0.000061	0.000073	0.000053	0.000075
Chromium	mg/L	0.05	-	0.013	0.001	< 0.001	0.002	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.0033	0.0107	< 0.0002	0.0039	< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.003
Cobalt	mg/L	NV	-	-	0.0009	0.009	0.019	0.045	0.0197	0.0209	0.0204	0.0151	0.0187	0.0176	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	0.0006	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	-	0.5	0.005	0.0004	0.0003	0.0002	0.0004	0.0004	0.0001	0.0002	0.0002	0.0002	0.0018	0.0025	0.001	0.0008	0.0009	0.0015	0.0022	0.0032	0.0024	0.0034
Lead	mg/L	0.01	-	0.0025	0.003	< 0.00004	< 0.00004	< 0.00004	< 0.00002	< 0.00002	0.00007	0.00002	0.00003	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00003
Molybdenum	mg/L	NV	-	-	0.04	0.0008	0.0014	0.0015	0.0009	0.0013	0.0011	0.0012	0.0014	0.0013	0.0005	0.0006	0.0006	0.0004	0.0006	0.0002	0.0003	0.0004	0.0004	0.0006
Nickel	mg/L	NV	-	-	0.025	< 0.01	< 0.01	< 0.01	0.0011	0.0023	0.0014	0.0009	0.002	0.0019	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	-	0.003	0.1	< 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	< 0.001	< 0.001
Silver	mg/L	NV	-	-	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	< 0.00002	< 0.0001	< 0.0001	< 0.0001	
Strontium	mg/L	NV	-	-	-	0.946	0.848	0.827	0.78	0.813	0.773	0.751	0.841	0.85	0.797	0.978	0.547	0.779	0.362	0.615	0.44	0.299	0.305	0.339
Thallium	mg/L	NV	-	-	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	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	NV	-	-	0.006	0.0104	0.0139	0.0128	0.012	0.0108	0.0097	0.0089	0.013	0.0123	0.003	0.0059	0.0021	0.002	0.0022	0.0012	0.0019	0.002	0.0021	0.0033
Zinc	mg/L	5	-	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	0.013	0.01	0.006	< 0.005
Field Conductivity	µs/cm	NV	-	-	-	1085	965	890	785	1263	1244	1252	1242	1242	595	848	568	760	480	560	620	425	610	495
Field pH	-	6.5 - 8.5	-	-	-	6.32	6.4	6.65	6.4	6.97	6.56	6.49	6.05	6.05	5.68	6.43	7.32	6.72	7.15	7.4	6.87	6.67	7.03	

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP - Reasonable Use Policy Criteria

Bold / Grey Highlighting - ODWQS Exceedance

Bold / Underlined - PWQO / CWQG Exceedance

Red Bold / Italics - RUP Exceedance

Green Bold / italics - Trigger Exceedance

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW6 21-Apr-20	MW6 21-Apr-20	MW6 13-Oct-20	MW6 15-Apr-21	MW6 13-Oct-21	MW6 12-Apr-22	MW6 16-Oct-22	MW6 26-Apr-23	MW6 11-Oct-23	MW6 29-Apr-24	MW6 08-Oct-24	MW6 28-Apr-25	MW6 (DUP) 28-Apr-25	MW6 02-Oct-25	MW7 15-Jun-15	MW7 10-Sep-15	MW7 30-May-16	MW7 17-Oct-16	MW7 19-Apr-17	MW7 17-Oct-17
Alkalinity	mg/L	500	-	304	-	241	234	312	282	334	265	329	227	377	198	Dry	226	207	274	179	232	ent Water to	Dry	Well Broker	Well Broker
Calcium	mg/L	NV	-	-	-	86.1	87.8	105	112	124	88.5	96.6	77.3	116	60.5		67	66.6	90.8	56.1	75.3				
Chloride	mg/L	250	128	-	120	1.8	1.8	2.4	1.6	2.7	1.1	1.3	1.1	1.4	1.3		1	1	2.3	22	31.1				
COD	mg/L	NV	-	127	-	38	41		42	49	47	49	20	44	18		29	25	44	39	25				
Conductivity	µS/cm	NV	-	-	-	529	522	623	621	651	524	640	507	686	438		486	458	553	452	602				
DOC	mg/L	5	-	3.6	-	16	15.8	17.5	15.6	15.6	15.9	14.2	9.4	17	5.4		15.1	15	16.9	7.2	7.7				
Fluoride	mg/L	1.5	-	0.45	-	< 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	0.1				
Hardness	mg/L	500	-	311	-	281	286	326	346	379	272	307	231	367	181		206	205	278	183	245				
Iron	mg/L	0.3	-	0.36	0.3	4.12	4.2	7.71	3.01	3.9	5.58	3.45	1.38	3.43	0.266		2.21	2.17	4.27	0.36	1.23				
Magnesium	mg/L	NV	-	-	-	16	16.1	15.5	16	16.9	12.3	15.9	9.1	18.8	7.36		9.49	9.35	12.3	10.5	13.8				
Manganese	mg/L	0.05	-	0.03	-	0.52	0.53	0.723	0.625	0.732	0.313	0.419	0.166	0.502	0.078		0.138	0.137	0.204	6.36	7.32				
Mercury	mg/L	0.001	-	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				
Nitrate	mg/L	10	-	2.5	13	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.15	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	0.1	< 0.1				
Nitrite	mg/L	1	-	0.29	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	< 0.1	0.1				
pH	pH Units	6.5 - 8.5	-	-	-	7.16	7.18	7.27	7.16	7.01	7.38	7.25	7.38	6.96	7.14		7.18	7.1	7.4	7.26	7.14				
Phenols	mg/L	NV	-	-	0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		0.003	0.003	< 0.001	< 0.001	< 0.001				
Phosphorus	mg/L	NV	-	-	0.03	< 0.1	< 0.1	< 0.1	0.04	0.04	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	0.39	0.2				
Potassium	mg/L	NV	-	-	-	3.4	3.4	3.6	3.2	3	2.9	2.7	2.3	3.1	2.7		2.9	2.9	3.6	4.6	5.7				
Sodium	mg/L	200	-	101	-	3.3	3.3	2.5	3.4	2.7	2.9	2.2	5.1	2	4.1		3.3	3.3	3.2	16.7	24.9				
Sulphate	mg/L	500	-	258	-	33	34	10	30	11	19	5	42	10	30		27	30	19	14	26				
TDS	mg/L	500	340	314	-	293	292	335	339	365	293	325	274	356	226		251	237	287	238	326				
TKN	mg/L	NV	-	-	-	0.6	0.6	0.8	0.6	0.9	1.2	0.8	0.7	0.8	0.9		0.6	0.5	6.8	0.8	1.2				
Ammonia	mg/L	NV	-	-	-	0.14	0.13	0.28	0.15	0.23	0.42	0.23	0.13	0.37	0.56		0.22	0.11	0.18	0.57	0.72				
Aluminum	mg/L	0.1	-	0.06	0.075	0.05	0.05	0.07	0.08	0.07	0.03	0.03	0.03	0.08	0.02		0.03	0.03	0.04	0.03	0.04				
Antimony	mg/L	0.006	-	0.0016	0.02	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0002	0.0001	< 0.0001	0.0002	0.0002	0.0001		0.0002	0.0001	0.0001	0.0002	0.0001				
Arsenic	mg/L	0.025	-	0.006	0.005	0.0002	0.0003	0.0004	0.0003	0.0004	0.0003	0.0004	0.0002	0.0003	0.0002		0.0003	0.0003	0.0004	0.0004	0.0011				
Barium	mg/L	1	-	0.33	-	0.046	0.047	0.058	0.058	0.061	0.049	0.049	0.034	0.063	0.027		0.039	0.038	0.047	0.204	0.294				
Beryllium	mg/L	NV	-	-	0.011	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001		< 0.0001	< 0.0001	< 0.0001	< 0.002	< 0.002				
Boron	mg/L	5	1.3	1.3	1.3	0.108	0.109	0.106	0.1	0.086	0.094	0.082	0.144	0.08	0.116		0.113	0.111	0.1	0.162	0.334				
Cadmium	mg/L	0.005	-	0.001	0.0001	0.000164	0.00016	0.000069	0.000117	0.000076	0.000089	0.000068	0.00008	0.000099	0.000116		0.000099	0.000096	0.000069	0.00015	0.00021				
Chromium	mg/L	0.05	-	0.013	0.001	0.001	0.001	0.002	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	0.002	0.0026	0.0105				
Cobalt	mg/L	NV	-	-	0.0009	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0034	0.0008		0.0013	0.0012	0.0029	0.032	0.034				
Copper	mg/L	1	-	0.5	0.005	0.0024	0.0023	0.0031	0.0042	0.004	0.0024	0.0032	0.0022	0.0036	0.0024		0.0016	0.0016	0.0022	0.0047	0.0077				
Lead	mg/L	0.01	-	0.0025	0.003	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00004	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002		0.00002	0.00002	0.00003	< 0.00002	0.00004				
Molybdenum	mg/L	NV	-	-	0.04	0.0004	0.0004	0.0005	0.0004	0.0005	0.0006	0.0006	0.0006	0.0005	0.0004		0.0006	0.0006	0.0007	0.0011	0.001				
Nickel	mg/L	NV	-	-	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0028	0.0022		0.0016	0.0016	0.0018	0.01	< 0.01			
Selenium	mg/L	0.01	-	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	0.002				
Silver	mg/L	NV	-	-	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				
Strontium	mg/L	NV	-	-	-	0.321	0.324	0.331	0.416	0.591	0.502	0.615	0.392	0.767	0.38		0.344	0.338	0.442	0.362	0.439				
Thallium	mg/L	NV	-	-	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	0.00007				
Vanadium	mg/L	NV	-	-	0.006	0.0018	0.0017	0.0033	0.0019	0.0032	0.0028	0.0035	0.0018	0.0029	0.0009		0.0019	0.0019	0.0037	0.0026	0.0042				
Zinc	mg/L	5	-	2.5	0.02	0.01	0.008	< 0.005	0.008	0.005	0.005	< 0.005	0.008	0.007	0.011		< 0.005	< 0.005	< 0.005	0.008	0.01				
Field Conductivity	µs/cm	NV	-	-	-	550	550	540	710	675	420	500	380	430	306		454	454	605	357	513				
Field pH	-	6.5 - 8.5	-	-	-	6.96	6.96	6.66	7.37	6.71	6.71	6.72	7.35	6.74	7.59		7.01	7.01	6.75	6.59	6.46				
Field Temperature	°C	NV	-	-	-	6.3	6.3	9.3	7.6	10.2	10	9	7.7	9.4	7.7		8.9	8.9	11.5	15.46	12.33				

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP - Reasonable Use Policy Criteria

Bold / Grey Highlighting - ODWQS Exceedance

Bold / Underlined - PWQO / CWQG Exceedance

Red Bold / Italics - RUP Exceedance

Green Bold / italics - Trigger Exceedance

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW7 24-Apr-18	MW7 26-Sep-18	MW7 17-Apr-19	MW7 18-Oct-19	MW7 22-Apr-20	MW7 13-Oct-20	MW7 15-Apr-21	MW7 13-Oct-21	MW7 12-Apr-22	MW7 16-Oct-22	MW7 26-Apr-23	MW7 26-Apr-23	MW7 11-Oct-23	MW7 11-Oct-23	MW7 29-Apr-24	MW7 08-Oct-24	MW7 28-Apr-25	MW7 02-Oct-25	MW8 09-Jun-15	MW8 10-Sep-15
Alkalinity	mg/L	500	-	304	-	150	ive Casing	144	201	150	212	181	180	200	227	225	227	286	295	Destroyed	258	304	235	159	175
Calcium	mg/L	NV	-	-	-	45.8		39.4	60.5	44.7	62.9	58.9	61.8	51.3	69.2	67.7	71.1	83.2	84.5		81.3	81.4	65.9	40.3	53.6
Chloride	mg/L	250	128	-	120	16.1		13.8	43.5	21.5	35.8	26.7	43.2	17.2	38.3	26	26.1	34.2	34.7		29.6	33.9	17.7	6.1	6.4
COD	mg/L	NV	-	127	-	42		41	38	33		69	29	48	36	29	22	53	55		369	147	131	92	95
Conductivity	µS/cm	NV	-	-	-	381		403	580	446	604	549	561	506	678	618	624	724	745		696	822	551	392	493
DOC	mg/L	5	-	3.6	-	9		10.6	13.5	12.3	12.9	17	7.7	11.9	7.1	7.8	10.1	11.8	10.8		13.5	19.4	10.2	28.4	46.7
Fluoride	mg/L	1.5	-	0.45	-	< 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	0.1	< 0.1
Hardness	mg/L	500	-	311	-	147		129	198	145	196	192	200	171	229	220	229	270	275		273	269	217	167	217
Iron	mg/L	0.3	-	0.36	0.3	2.28		2.05	4.31	2.48	4.63	3.3	3.75	3.12	5.34	4.96	5.25	7.91	8.18		5.16	4.84	8.31	< 0.005	0.007
Magnesium	mg/L	NV	-	-	-	7.88		7.3	11.3	8.14	9.52	10.8	11.1	10.4	13.6	12.4	12.4	15.2	15.4		16.8	15.9	12.8	16.2	20.3
Manganese	mg/L	0.05	-	0.03	-	2.54		2.04	3.24	1.87	2.64	2.33	2.16	1.54	1.95	1.7	1.79	2.05	2.07		1.44	1.44	1.02	19.1	21.6
Mercury	mg/L	0.001	-	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	< 0.00002	< 0.00002
Nitrate	mg/L	10	-	2.5	13	< 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		< 0.05	< 0.05	< 0.05	3	10.6
Nitrite	mg/L	1	-	0.29	0.06	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	0.2	< 0.1
pH	pH Units	6.5 - 8.5	-	-	-	7.25		7.05	7.26	7.48	7.21	7.07	6.88	7.35	7.13	7.12	7.15	6.84	6.88		7.45	7.16	7.29	7.08	7.15
Phenols	mg/L	NV	-	-	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	< 0.001		< 0.001	0.005	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	NV	-	-	0.03	< 0.1		0.44	0.41	0.13	< 0.1	0.09	0.19	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	0.06	0.09
Potassium	mg/L	NV	-	-	-	7.7		7.2	10.7	10.3	12.1	10.7	11.8	10.1	12.7	12.2	12.3	14.9	15.2		18.6	15.8	10.8	4.7	6.3
Sodium	mg/L	200	-	101	-	22.9		24	36.8	37.5	38.8	41.3	33.5	28.9	29	34.6	34.5	34.6	35		30.3	37.2	19.1	3.6	4.8
Sulphate	mg/L	500	-	258	-	29		24	15	33	33	45	43	36	51	57	57	48	52		52	69	22	16	16
TDS	mg/L	500	340	314	-	226		208	308	252	330	312	322	283	363	351	356	377	389		362	433	286	215	282
TKN	mg/L	NV	-	-	-	1.3		1.7	2.2	2.9	3.8	3.5	3.9	4.3	5.2	4.2	4.3	6	5.7		11.5	11.9	3.9	1.9	2.9
Ammonia	mg/L	NV	-	-	-	0.8		1.03	1.47	2.22	2.94	2.95	3.34	3.58	4.45	3.61	3.59	6.19	5.91		7.17	7.08	4.46	0.34	0.54
Aluminum	mg/L	0.1	-	0.06	0.075	0.03		0.03	0.06	0.04	0.06	0.04	0.04	0.02	0.02	0.02	0.02	0.07	0.07		0.04	0.04	0.05	0.02	0.02
Antimony	mg/L	0.006	-	0.0016	0.02	< 0.0001		0.0001	0.0008	< 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	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	-	0.006	0.005	0.0002		0.0008	< 0.0001	0.0008	0.0013	0.0007	0.0006	0.0007	0.0006	0.0008	0.0008	0.0008	0.0009		0.0009	0.0009	0.0006	0.0004	0.0009
Barium	mg/L	1	-	0.33	-	0.197		0.178	0.318	0.258	0.362	0.337	0.354	0.279	0.367	0.352	0.371	0.422	0.429		0.376	0.304	0.233	0.138	0.195
Beryllium	mg/L	NV	-	-	0.011	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.002	< 0.002
Boron	mg/L	5	1.3	1.3	0.568			0.69	0.558	1.04	0.737	1.47	0.766	1.22	0.846	1.37	1.37	1.13	1.15		1.12	1.86	0.591	0.063	0.073
Cadmium	mg/L	0.005	-	0.001	0.0001	< 0.000015		< 0.000015	0.000017	< 0.000015	0.00003	< 0.000015	< 0.000015	< 0.000015	0.000011	< 0.000010	0.000010	0.000028	0.00003		< 0.000015	< 0.000015	< 0.000015	0.00016	0.00025
Chromium	mg/L	0.05	-	0.013	0.001	0.002		0.001	0.002	0.008	0.004	0.002	0.002	< 0.001	< 0.001	0.002	0.002	0.002	0.002		0.001	0.001	< 0.001	0.0027	0.0095
Cobalt	mg/L	NV	-	-	0.0009	0.0064		0.007	0.007	0.007	0.006	0.007	0.006	0.005	0.007	0.006	0.008	0.0104	0.011		0.0109	0.0036	0.0048	0.042	0.078
Copper	mg/L	1	-	0.5	0.005	0.0008		0.0023	0.0018	0.0083	0.0034	0.0031	0.0014	0.0023	0.0012	0.0007	0.0009	0.0015	0.0018		0.0042	0.0007	0.001	0.0229	0.0335
Lead	mg/L	0.01	-	0.0025	0.003	< 0.00002		0.00004	0.00003	0.00006	0.00024	0.00007	0.00005	0.00003	0.00003	0.00003	0.00002	0.00004	0.00004		0.00006	0.00014	0.00018	< 0.00002	< 0.00002
Molybdenum	mg/L	NV	-	-	0.04	0.0007		0.0007	0.0005	0.0008	0.0005	0.0006	0.0005	0.0006	0.0005	0.0005	0.0005	0.0005	0.0005		0.0006	0.0007	0.0004	< 0.0001	0.0006
Nickel	mg/L	NV	-	-	0.025	< 0.01		< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0041	0.0044		0.0033	0.0021	0.0019	0.03	0.04
Selenium	mg/L	0.01	-	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	0.001	0.002
Silver	mg/L	NV	-	-	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	< 0.00002	< 0.00002
Strontium	mg/L	NV	-	-	-	0.249		0.223	0.356	0.251	0.335	0.328	0.349	0.286	0.382	0.37	0.369	0.439	0.446		0.487	0.453	0.357	0.57	0.744
Thallium	mg/L	NV	-	-	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	< 0.00005	0.00007
Vanadium	mg/L	NV	-	-	0.006	0.0016		0.0012	0.0011	0.0015	0.0016	0.0015	0.001	0.0013	0.0011	0.0013	0.0013	0.0015	0.0017		0.0012	0.0013	0.0014	0.0017	0.0034
Zinc	mg/L	5	-	2.5	0.02	0.006		< 0.005	< 0.005	< 0.005	< 0.005	0.005	0.005	< 0.005	< 0.005	0.006	< 0.005	0.005	< 0.005		0.006	< 0.005	< 0.005	< 0.005	0.006
Field Conductivity	µs/cm	NV	-	-	-	450		450	500	505	465	640	605	460	530	500	500	540	540		680	813	607	324	416
Field pH	-	6.5 - 8.5	-	-	-	6.6		7.31	6.47	7.04	6.9	7.42	6.74	6.41	6.71	7.4	7.4	6.63	6.63		6.96	6.78	6.29	6.44	6.54
Field Temperature	°C	NV	-	-	-	15.8		14.6	11.3	10.6	12.9	10.7	13.3	13.8	11.2	10.2	10.2	10.8	10.8		13.5	14.2	13	14.44	12.37

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP - Reasonable Use Policy Criteria

Bold / Grey Highlighting - ODWQS Exceedance

Bold / Underlined - PWQO / CWQG Exceedance

Red Bold / Italics - RUP Exceedance

Green Bold / italics - Trigger Exceedance

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW8 30-May-16	MW8 17-Oct-16	MW8 19-Apr-17	MW8 17-Oct-17	MW8 24-Apr-18	MW8 26-Sep-18	MW8 17-Apr-19	MW8 18-Oct-19	MW8 21-Apr-20	MW8 13-Oct-20	MW8 15-Apr-21	MW8 13-Oct-21	MW8 12-Apr-22	MW8 16-Oct-22	MW8 26-Apr-23	MW8 26-Apr-23	MW8 11-Oct-23	MW8 11-Oct-23	MW8 29-Apr-24	MW8 08-Oct-24
Alkalinity	mg/L	500	-	304	-	144	157	123	140	58	85	49	110	140	185	193	161	166	191	185	187	189	192	176	182
Calcium	mg/L	NV	-	-	-	29.1	55.8	36.7	46.8	26.8	14.2	44.8	22.4	47.5	62.1	63.8	55.5	46.7	53.4	56	53.8	47.4	48.8	44.8	48.1
Chloride	mg/L	250	128	-	120	2.7	5.4	6.9	8.4	50.3	14.5	106	9.4	4.8	5.1	6.2	8.8	3	10.4	19.7	19.6	7.4	7.6	29.3	3.8
COD	mg/L	NV	-	127	-	60	79	42	55	20	27	13	33	63		75	56	66	69	41	40	43	55	54	66
Conductivity	µS/cm	NV	-	-	-	345	481	357	429	294	249	519	295	351	448	442	404	356	482	456	454	443	444	468	417
DOC	mg/L	5	-	3.6	-	21.6	28.3	16.8	20.8	6.4	11.9	3.3	15.6	23.5	25.6	25.7	16.8	22.5	18.2	10.2	17.1	22.2	22.1	14.6	25.5
Fluoride	mg/L	1.5	-	0.45	-	0.2	0.1	0.2	0.1	< 0.1	0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	-	311	-	120	204	135	168	96	50	153	76	158	195	208	181	154	179	187	182	164	167	164	166
Iron	mg/L	0.3	-	0.36	0.3	0.006	0.006	< 0.005	0.013	0.01	0.118	0.015	0.009	0.021	< 0.005	< 0.005	0.007	< 0.005	< 0.005	0.006	< 0.005	0.029	0.028	0.009	0.012
Magnesium	mg/L	NV	-	-	-	11.5	15.7	10.6	12.3	7.03	3.62	9.95	4.85	9.57	9.57	11.9	10.2	9.03	11.1	11.4	11.6	11	10.9	12.8	11.2
Manganese	mg/L	0.05	-	0.03	-	10.9	10.1	6.97	6.49	3.89	1.8	3.05	1.15	3.93	4.36	3.57	2.6	1.48	1.43	1.55	1.49	1.12	1.14	0.79	1.14
Mercury	mg/L	0.001	-	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	< 0.00002	< 0.00002	< 0.00002	
Nitrate	mg/L	10	-	2.5	13	3	14.2	8.3	10.5	0.23	1.07	0.4	2.66	3.77	4.44	1.51	4.93	1.56	5.31	1.65	1.65	4.82	4.68	0.35	1.96
Nitrite	mg/L	1	-	0.29	0.06	< 0.1	0.2	0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05	0.19	< 0.05	0.14	0.05	0.05	< 0.05	< 0.05	< 0.05	0.06
pH	pH Units	6.5 - 8.5	-	-	-	7.03	7.18	7.14	6.96	7	7.16	6.69	7.26	7.09	7.3	7.12	6.84	7.41	7.21	7.15	7.22	6.8	6.79	7.09	7.62
Phenols	mg/L	NV	-	-	0.001	< 0.001	< 0.001	< 0.001	0.007	< 0.001	0.003	< 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	
Phosphorus	mg/L	NV	-	-	0.03	0.04	0.04	< 0.1	< 0.1	< 0.1	0.35	0.1	< 0.1	< 0.1	0.12	0.12	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	NV	-	-	-	6.5	17.6	19.1	24.3	21.2	13.1	15.9	12.4	18.4	21.6	18.3	22.7	27.7	35.4	38.8	39.6	42.3	41	47.8	51.4
Sodium	mg/L	200	-	101	-	3.5	3.7	4.3	4.1	9.1	20	15.4	32.1	3.2	3.1	3.1	4	2.1	3.5	3.1	3.2	2.8	2.8	2.9	3.7
Sulphate	mg/L	500	-	258	-	13	14	9	10	9	7	6	8	7	9	5	8	6	6	5	5	7	7	5	6
TDS	mg/L	500	340	314	-	174	280	205	197	162	126	231	156	179	225	228	208	196	236	246	246	229	229	242	215
TKN	mg/L	NV	-	-	-	1.1	2.1	1.1	1.4	0.3	0.8	0.3	0.8	1	1.3	0.9	1.3	1.1	1.1	0.9	0.6	1.1	1.2	1.1	1
Ammonia	mg/L	NV	-	-	-	0.25	0.13	0.03	0.06	0.03	0.16	0.03	0.05	0.02	0.09	0.03	0.09	0.27	0.07	0.14	0.04	0.16	0.19	1.1	0.22
Aluminum	mg/L	0.1	-	0.06	0.075	0.02	0.03	0.02	0.04	0.03	0.02	0.04	0.03	0.03	0.04	0.01	0.03	0.02	< 0.01	0.04	0.02	0.04	0.04	0.02	0.02
Antimony	mg/L	0.006	-	0.0016	0.02	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0001	< 0.0001	0.0001	
Arsenic	mg/L	0.025	-	0.006	0.005	0.0004	0.0005	0.0005	0.0004	< 0.0001	0.0013	0.001	< 0.0001	0.0026	0.0007	0.002	0.0017	0.0023	0.0024	0.0022	0.0022	0.0034	0.0033	0.0027	0.0039
Barium	mg/L	1	-	0.33	-	0.109	0.298	0.259	0.414	0.238	0.117	0.302	0.145	0.267	0.308	0.3	0.299	0.305	0.389	0.433	0.415	0.403	0.41	0.399	0.459
Beryllium	mg/L	NV	-	-	0.011	< 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	< 0.0001	
Boron	mg/L	5	1.3	1.3	1.3	0.036	0.052	0.013	0.055	0.036	0.038	0.026	0.062	0.099	0.129	0.113	0.099	0.112	0.11	0.103	0.104	0.13	0.126	0.104	0.147
Cadmium	mg/L	0.005	-	0.001	0.0001	0.00014	0.00018	0.000151	0.000222	0.000174	0.000103	0.000254	0.00009	0.000138	0.000164	0.000149	0.000108	0.000083	0.000112	0.000109	0.000108	0.000109	0.000101	0.00007	0.000095
Chromium	mg/L	0.05	-	0.013	0.001	< 0.0002	0.0018	< 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	< 0.001
Cobalt	mg/L	NV	-	-	0.0009	0.035	0.073	0.059	0.069	0.0443	0.02	0.048	0.009	0.042	0.033	0.017	0.024	0.017	0.017	0.024	0.021	0.0273	0.0273	0.0142	0.0201
Copper	mg/L	1	-	0.5	0.005	0.0194	0.0189	0.0143	0.016	0.0107	0.0122	0.0075	0.0217	0.0386	0.0499	0.0429	0.0347	0.0409	0.0427	0.0329	0.0335	0.0535	0.0525	0.0288	0.0441
Lead	mg/L	0.01	-	0.0025	0.003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004	0.00013	0.00005	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	< 0.00002	
Molybdenum	mg/L	NV	-	-	0.04	0.0005	0.0004	0.0004	0.0003	0.0002	0.0003	0.0002	0.0004	0.0004	0.0005	0.0005	0.0006	0.0008	0.0008	0.001	0.001	0.0009	0.0009	0.0009	0.0011
Nickel	mg/L	NV	-	-	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	< 0.01	0.01	0.01	< 0.01	0.0112	0.0112	0.0078	0.0109
Selenium	mg/L	0.01	-	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	0.002	0.002	< 0.001	< 0.001
Silver	mg/L	NV	-	-	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	< 0.0001	< 0.0001
Strontium	mg/L	NV	-	-	-	0.391	0.748	0.494	0.549	0.337	0.178	0.452	0.209	0.398	0.497	0.502	0.422	0.353	0.406	0.403	0.411	0.38	0.37	0.42	0.419
Thallium	mg/L	NV	-	-	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	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	NV	-	-	0.006	0.0014	0.0007	0.001	0.0006	0.0003	0.0001	< 0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0001	0.0002
Zinc	mg/L	5	-	2.5	0.02	< 0.005	< 0.005	< 0.005	0.005	0.006	< 0.005	0													

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP - Reasonable Use Policy Criteria

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW8 28-Apr-25	MW8 (Dup) 28-Apr-25	MW8 02-Oct-25	MW10 09-Jun-15	MW10 11-Sep-15	MW10 31-May-16	MW10 17-Oct-16	MW10 19-Apr-17	MW10 17-Oct-17	MW10 24-Apr-18	MW10 26-Sep-18	MW10 17-Apr-19	MW10 18-Oct-19	MW10 21-Apr-20	MW10 13-Oct-20	MW10 15-Apr-21	MW10 13-Oct-21	MW10 12-Apr-22	MW10 16-Oct-22	MW10 26-Apr-23
Alkalinity	mg/L	500	-	304	-	149	164	167	136	135	136	147	151	154	147	157	139	144	130	136	131	144	147	164	155
Calcium	mg/L	NV	-	-	-	34.7	34.4	34.9	128	130	149	97.6	122	116	136	113	137	116	136	115	141	129	132	122	146
Chloride	mg/L	250	128	-	120	10.5	11	3.4	2.5	2.3	14.9	4.5	6.1	4.8	4.6	5.1	4	4	2.8	3.6	3.6	5.3	3.6	9.4	7.6
COD	mg/L	NV	-	127	-	51	51	69	9	<5	7	5	<5	10	5	<5	10	7	6		5	13	10	6	<5
Conductivity	µS/cm	NV	-	-	-	392	392	369	724	725	775	583	684	680	711	712	762	696	710	667	733	698	752	781	844
DOC	mg/L	5	-	3.6	-	22.9	22.7	27.9	3	1.9	1.8	2.9	3.1	3.3	3.5	4.3	3.8	4.3	3.4	3.8	4.4	3.1	3.6	4.8	3.1
Fluoride	mg/L	1.5	-	0.45	-	<0.1	<0.1	<0.1	0.6	0.7	0.6	0.4	0.6	0.4	0.4	0.3	<0.1	0.4	0.2	0.6	0.4	0.6	<0.1	0.3	0.2
Hardness	mg/L	500	-	311	-	126	125	120	367	373	430	294	366	348	404	346	402	350	397	336	414	381	388	366	429
Iron	mg/L	0.3	-	0.36	0.3	0.011	0.009	0.013	0.784	1.31	1.91	1.49	1.87	2.23	2.1	2.25	2.35	2.24	2.37	2.05	2.63	2.68	2.63	2.93	3.65
Magnesium	mg/L	NV	-	-	-	9.63	9.46	8	11.7	11.5	14	12.2	14.8	14.2	15.5	15.5	14.5	14.5	13.9	11.8	15	14.3	14.3	14.6	15.5
Manganese	mg/L	0.05	-	0.03	-	0.782	0.776	0.734	0.153	0.174	0.196	0.183	0.24	0.217	0.235	0.22	0.246	0.23	0.214	0.187	0.241	0.232	0.221	0.237	0.27
Mercury	mg/L	0.001	-	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	<0.00002	0.00005	<0.00002	<0.00002
Nitrate	mg/L	10	-	2.5	13	0.39	0.4	0.09	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	0.12
Nitrite	mg/L	1	-	0.29	0.06	<0.05	<0.05	<0.05	0.1	<0.1	<0.1	0.2	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
pH	pH Units	6.5 - 8.5	-	-	-	7.07	7	7.41	7.96	8	7.81	7.93	7.93	7.81	7.76	7.75	7.56	7.77	7.63	7.83	7.66	7.21	7.78	7.63	7.54
Phenols	mg/L	NV	-	-	0.001	0.003	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.006	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus	mg/L	NV	-	-	0.03	<0.1	<0.1	<0.1	<0.01	0.01	0.01	0.01	<0.1	<0.1	<0.1	<0.1	0.23	0.008	<0.1	0.04	<0.01	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	NV	-	-	-	42.9	42.5	45.7	1.9	2.1	2.5	2.1	2.1	2.3	2.5	2.5	2.3	2.5	2.4	2.3	2.5	2.5	2.4	2.5	2.6
Sodium	mg/L	200	-	101	-	2.4	2.3	1.5	12	14.4	14.6	6.4	6.9	6.9	8.4	8	9.3	9.1	7.4	7.8	8.2	8.2	7.3	8.8	9
Sulphate	mg/L	500	-	258	-	7	7	7	227	238	249	154	202	164	246	207	221	203	241	211	254	251	246	242	258
TDS	mg/L	500	340	314	-	202	202	190	466	481	529	367	447	404	504	448	474	439	484	436	506	500	496	502	536
TKN	mg/L	NV	-	-	-	0.6	0.7	9.7	0.1	0.2	0.1	0.3	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.4	0.2	0.2
Ammonia	mg/L	NV	-	-	-	0.09	0.06	0.25	0.02	0.02	0.03	0.07	<0.01	0.03	0.03	0.03	0.04	0.04	0.03	0.06	0.02	0.05	0.24	0.04	0.03
Aluminum	mg/L	0.1	-	0.06	0.075	0.02	0.01	0.02	0.04	0.04	0.04	0.04	0.04	0.06	0.08	0.08	0.07	0.09	0.07	0.07	0.08	0.07	0.04	0.03	0.05
Antimony	mg/L	0.006	-	0.0016	0.02	<0.0001	<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	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.025	-	0.006	0.005	0.003	0.003	0.004	<0.0001	0.0002	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
Barium	mg/L	1	-	0.33	-	0.348	0.345	0.336	0.02	0.014	0.019	0.063	0.074	0.092	0.091	0.104	0.063	0.07	0.068	0.049	0.075	0.071	0.066	0.066	0.083
Beryllium	mg/L	NV	-	-	0.011	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Boron	mg/L	5	1.3	1.3	0.11	0.11	0.108	0.103	0.025	0.038	0.045	0.03	0.012	0.07	0.085	0.122	0.092	0.116	0.066	0.08	0.091	0.121	0.079	0.126	0.125
Cadmium	mg/L	0.005	-	0.001	0.0001	0.000077	0.000074	0.000064	<0.00002	<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	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.05	-	0.013	0.001	<0.001	<0.001	<0.001	0.0012	0.0037	<0.0002	0.0013	<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
Cobalt	mg/L	NV	-	-	0.0009	0.0046	0.0046	0.0143	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0001	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	mg/L	1	-	0.5	0.005	0.0112	0.0111	0.036	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0002	0.0005	0.0008	0.0018	0.0002	<0.0001	0.0003	0.0003	0.0006	0.0006	0.0006
Lead	mg/L	0.01	-	0.0025	0.003	<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	0.00005	<0.00002	<0.00002	0.00003	<0.00002	<0.00002	0.00002
Molybdenum	mg/L	NV	-	-	0.04	0.001	0.0009	0.0018	0.002	0.0033	0.0027	0.0021	0.0026	0.0018	0.0024	0.0016	0.0023	0.002	0.0024	0.002	0.0022	0.0019	0.0024	0.002	0.0025
Nickel	mg/L	NV	-	-	0.025	0.0028	0.0028	0.0074	<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	<0.01	<0.01
Selenium	mg/L	0.01	-	0.003	0.1	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	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	NV	-	-	0.0001	<0.0001	<0.0001	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium	mg/L	NV	-	-	-	0.3	0.296	0.255	3.45	3.4	4.13	2.31	2.76	2.58	3.23	2.79	3.3	3.06	3.15	2.77	3.32	3.14	3.2	3.05	3.68
Thallium	mg/L	NV	-	-	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	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	NV	-	-	0.006	<0.0001	<0.0001	0.0002	0.0009	0.0015	0.0009	0.0007	0.0008	0.0005	0.0007	0.0003	0.0002	0.0003	0.0002	0.0003	0.0003	0.0003	0.0002	0.0003	0.0002
Zinc	mg/L	5	-	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	<0.005	<0.005	<0.005	<0.005
Field Conductivity	µs/cm	NV	-	-	-	403	403	403	720	825	767	515	544	590	770	625	880	605	750	490	800	740	625	610	622
Field pH	-	6.5 - 8.5	-	-	-	6.8	6.8	6.51	7.69	7.52	6.64	7.54	7.36	7.66	7.35	7.22	7.15	7.19	7.59	7	7.73	7.56	7.21	7.03	7.1
Field Temperature	°C	NV	-	-	-	7.7	7.7	11.1	13.19	11.09	11.42	10.2	9.8	11	10.1	13	11	10.2	8	10.5	8.5	12.1	11.2	10.9	10.9

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP - Reasonable Use Policy Criteria

Bold / Grey Highlighting - ODWQS Exceedance

Bold / Underlined - PWQO / CWQG Exceedance

Red Bold / Italics - RUP

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW10 11-Oct-23	MW10 29-Apr-24	MW10 08-Oct-24	MW10 28-Apr-25	MW10 02-Oct-25	MW10 09-Jun-15	MW12 11-Sep-15	MW12 31-May-16	MW12 17-Oct-16	MW12 19-Apr-17	MW12 17-Oct-17	MW12 24-Apr-18	MW12 26-Sep-18	MW12 17-Apr-19	MW12 18-Oct-19	MW12 21-Apr-20	MW12 13-Oct-20	MW12 15-Apr-21	MW12 13-Oct-21	MW12 12-Apr-22
Alkalinity	mg/L	500	-	304	-	154	177	144	195	238	113	113	105	113	129	154	177	186	183	181	154	146	128	143	157
Calcium	mg/L	NV	-	-	-	169	138	216	148	161	29.3	30.4	32.5	36.2	42.8	52.4	72.7	67	57.1	51.2	41.6	36	34.3	36.3	37.5
Chloride	mg/L	250	128	-	120	5.1	11.5	10.2	15.1	19.7	1.9	2.1	4.5	5.5	11.7	30.8	54.7	43.7	26.4	20.4	12.6	10.4	9.4	14.9	10.4
COD	mg/L	NV	-	127	-	9	11	42	15	24	11	5	7	295	44	83	37	5	75	34	79		45	35	66
Conductivity	µS/cm	NV	-	-	-	1040	907	1100	970	948	252	248	249	284	335	457	533	579	529	489	403	379	346	386	392
DOC	mg/L	5	-	3.6	-	3.5	4.7	4.8	8.4	10.7	2.2	1.1	1.1	2	2.2	3.2	3.1	3.3	4.3	4.2	3	3.8	4.3	3.3	3.8
Fluoride	mg/L	1.5	-	0.45	-	0.3	<0.1	0.8	0.2	0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hardness	mg/L	500	-	311	-	483	416	605	445	479	123	125	134	146	174	217	298	282	238	221	172	141	140	149	157
Iron	mg/L	0.3	-	0.36	0.3	2.91	3.34	1.93	4.65	5.69	0.508	0.428	0.801	1.43	1.4	1.59	2.01	1.89	0.533	1.52	0.811	0.561	0.786	1.41	0.762
Magnesium	mg/L	NV	-	-	-	14.7	17.4	15.5	17.9	18.8	12	11.9	12.8	13.6	16.3	20.9	28.3	27.8	23.1	22.6	16.5	12.5	13.3	14.1	15.4
Manganese	mg/L	0.05	-	0.03	-	0.242	0.269	0.219	0.343	0.404	0.116	0.051	0.123	0.116	0.179	0.117	0.172	0.15	0.104	0.128	0.094	0.058	0.188	0.07	0.187
Mercury	mg/L	0.001	-	0.0003	0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00009	<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
Nitrate	mg/L	10	-	2.5	13	<0.05	0.08	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite	mg/L	1	-	0.29	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	0.1	<0.1	0.2	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH	pH Units	6.5 - 8.5	-	-	-	6.94	7.38	8.05	7.2	7.58	7.75	7.71	7.39	7.61	7.53	7.56	7.4	7.52	7.16	7.54	7.43	7.62	7.42	7.02	7.61
Phenols	mg/L	NV	-	-	0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005	<0.001	0.003	<0.002	0.002	<0.002	<0.002	<0.002	<0.001	<0.001
Phosphorus	mg/L	NV	-	-	0.03	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.09	0.17	11.1	<0.1	<0.1	<0.1	3.56	0.87	<0.1	<0.1	2.01	1.04	<0.1	
Potassium	mg/L	NV	-	-	-	2.5	3	3.4	3.1	3.3	2.1	2.4	2.5	2.5	2.6	3	3.6	3.9	3.2	3.7	3.2	2.9	3	3	3
Sodium	mg/L	200	-	101	-	8.7	9.9	19.2	11.6	17.6	1.5	1.9	1.9	2.1	2	2.3	4.5	6.6	13.3	18.3	22.9	22.9	25	25.1	21
Sulphate	mg/L	500	-	258	-	449	296	427	317	254	12	11	15	20	21	22	42	42	35	34	30	27	26	36	33
TDS	mg/L	500	340	314	-	558	481	587	517	504	127	129	133	151	175	226	315	305	268	261	220	200	188	217	216
TKN	mg/L	NV	-	-	-	1.3	0.3	1.1	0.3	0.6	0.2	0.3	0.3	4.6	0.7	1.2	0.6	0.6	1.3	0.6	0.9	1.2	0.8	0.7	2
Ammonia	mg/L	NV	-	-	-	1.21	0.09	0.89	0.08	0.12	<0.01	<0.01	0.01	0.1	<0.01	0.03	0.05	0.03	0.05	0.06	0.01	0.07	0.04	0.12	0.38
Aluminum	mg/L	0.1	-	0.06	0.075	0.1	0.05	0.07	0.06	0.05	<0.01	<0.01	<0.01	0.05	0.02	0.04	0.05	0.05	0.04	0.04	0.03	0.03	0.03	0.03	0.01
Antimony	mg/L	0.006	-	0.0016	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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.025	-	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	<0.0001	<0.0001	<0.0001	<0.0001
Barium	mg/L	1	-	0.33	-	0.069	0.098	0.043	0.118	0.14	0.11	0.121	0.128	0.144	0.169	0.259	0.304	0.293	0.24	0.231	0.196	0.163	0.16	0.165	0.18
Beryllium	mg/L	NV	-	-	0.011	<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	<0.002	<0.002	<0.002	<0.002
Boron	mg/L	5	1.3	1.3	1.3	0.112	0.234	0.189	0.275	0.443	0.01	0.021	0.017	0.019	0.016	0.066	0.177	0.265	0.334	0.434	0.452	0.417	0.486	0.524	0.798
Cadmium	mg/L	0.005	-	0.001	0.0001	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00002	<0.00002	0.000024	0.000023	<0.000014	0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.05	-	0.013	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0014	0.003	<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
Cobalt	mg/L	NV	-	-	0.0009	0.0003	0.0003	0.0003	0.0003	0.0003	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0031	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	0.006
Copper	mg/L	1	-	0.5	0.005	0.0005	0.0003	0.0001	0.0004	0.0002	<0.0001	0.0004	<0.0001	0.0003	0.0018	0.0002	0.0003	0.0007	0.0017	0.0006	0.0007	0.0004	0.0018	0.0006	0.0023
Lead	mg/L	0.01	-	0.0025	0.003	<0.00004	<0.00002	<0.00002	0.00005	<0.00002	<0.00002	<0.00002	0.00004	<0.00002	<0.00002	<0.00002	0.00003	<0.00002	<0.00002	<0.00002	<0.00002	0.00006	0.00003	<0.00002	
Molybdenum	mg/L	NV	-	-	0.04	0.003	0.0024	0.0031	0.0023	0.0019	<0.0001	0.0007	<0.00002	0.0004	0.0003	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0004
Nickel	mg/L	NV	-	-	0.025	0.0003	0.0007	0.0005	0.001	0.0019	<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
Selenium	mg/L	0.01	-	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	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	NV	-	-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Strontium	mg/L	NV	-	-	-	4.27	3.9	6.61	3.82	3.79	0.213	0.213	0.238	0.261	0.293	0.351	0.494	0.504	0.405	0.414	0.293	0.252	0.242	0.266	0.268
Thallium	mg/L	NV	-	-	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	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	NV	-	-	0.006	0.0002	0.0003	0.0001	0.0003	0.0005	0.0009	0.0011	0.0007	0.0005	0.0007	0.0003	0.0007	<0.0001	<0.0001	<0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001
Zinc	mg/L	5	-	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	<0.005	<0.005	<0.005	<0.005
Field Conductivity	µs/cm	NV	-	-	-	300	840	8.44	826	440	198	212	231	245	280	340	620	510	590	430	420	300	440	390	340
Field pH	-	6.5 - 8.5	-	-	-	7.07	7.19	7.02	7.24	6.22	7.42	7.17	6.65	7.45	7.56	7.61	7.15	7.19	7.36	7.2	7.48	7.3	8.03	7.39	7.24
Field Temperature	°C	NV	-	-	-	11.2	10.1	12.9	13.5	12.4	12.61	10.93	9.92	10.6	9.7	12.1	8	10.9	8.6	7.9	6	9.7	7.1	11.5	9

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP - Reasonable Use Policy Criteria

Bold / Grey Highlighting - ODWQS Exceedance

Bold / Underlined - PWQO / CWQG Exceedance

Red Bold / Italics - RUP Exceedance

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW12 16-Oct-22	MW12 26-Apr-23	MW12 11-Oct-23	MW12 29-Apr-24	MW12 08-Oct-24	MW12 28-Apr-25	MW12 02-Oct-25	MW13 09-Jun-15	MW13 11-Sep-15	MW13 31-May-16	MW13 17-Oct-16	MW13 19-Apr-17	MW13 17-Oct-17	MW13 24-Apr-18	MW13 26-Sep-18	MW13 17-Apr-19	MW13 18-Oct-19	MW13 21-Apr-20	MW13 13-Oct-20	MW13 15-Apr-21
Alkalinity	mg/L	500	-	304	-	150	145	155	148	142	134	135	99	102	110	101	104	101	99	103	118	130	123	134	116
Calcium	mg/L	NV	-	-	-	34	37	35.8	32.3	40.6	28.8	34.6	24.5	28.7	-	28.8	28.8	28.4	28.8	34	40.7	40.7	45.7	42.1	36.9
Chloride	mg/L	250	128	-	120	11.2	12.3	10.3	7	8.3	6.8	7.5	1.5	1.6	<1	2.2	3.2	2.3	3.6	21.4	23.7	16.1	11.2	9.7	5.8
COD	mg/L	NV	-	127	-	43	35	47	27	25	25	14	9	<5	8.9	11	5	11	11	<5	7	8	10		<5
Conductivity	µS/cm	NV	-	-	-	396	374	376	360	369	339	342	221	226	240	229	231	228	212	294	355	339	314	338	298
DOC	mg/L	5	-	3.6	-	3	4	3.7	3	3.9	4.3	4.5	2.2	1.1	1.2	1.7	1.7	2.1	1.4	1.9	1.8	2.8	2.4	2.8	3.6
Fluoride	mg/L	1.5	-	0.45	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.1	< 0.10	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	-	311	-	145	152	149	141	169	125	143	103	117	120	117	118	115	118	144	165	173	182	169	150
Iron	mg/L	0.3	-	0.36	0.3	1.31	0.449	1.04	0.482	1.36	1.32	1.52	0.061	0.195	< 0.1	0.213	0.203	0.233	0.081	0.235	0.209	2.08	0.204	0.292	0.255
Magnesium	mg/L	NV	-	-	-	14.7	14.5	14.5	14.6	16.5	12.9	13.8	10.2	11.1	10	11.1	11.2	10.6	11.2	14.3	15.3	17.3	16.6	15.5	14
Manganese	mg/L	0.05	-	0.03	-	0.07	0.091	0.06	0.189	0.084	0.181	0.087	0.009	0.011	0.051	0.013	0.013	0.016	0.011	0.014	0.016	0.017	0.02	0.016	0.029
Mercury	mg/L	0.001	-	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	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	mg/L	10	-	2.5	13	< 0.05	< 0.05	0.05	< 0.05	0.1	< 0.05	< 0.05	< 0.1	< 0.001	< 0.10	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05	1.18
Nitrite	mg/L	1	-	0.29	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.1	< 0.1	< 0.010	0.2	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
pH	pH Units	6.5 - 8.5	-	-	-	7.4	7.18	6.76	7.28	7.76	7	7.49	7.69	7.68	7.16	7.75	7.78	7.71	7.5	7.61	7.34	7.53	7.43	7.72	7.52
Phenols	mg/L	NV	-	-	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.0010	< 0.001	< 0.001	0.006	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	NV	-	-	0.03	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.09	0.05	< 0.10	1.49	< 0.1	< 0.1	< 0.1	0.24	0.07	< 0.1	< 0.1	0.33	
Potassium	mg/L	NV	-	-	-	3	3	2.8	3.1	3.6	2.7	2.8	1.8	2.2	2.5	2.3	2.1	2.3	2.3	2.8	2.5	3	2.8	2.8	2.7
Sodium	mg/L	200	-	101	-	19.6	17.7	18	14.4	16.5	12.1	13.6	1.2	1.8	1.5	1.8	1.5	1.8	1.8	2	1.9	2.2	2.3	4.1	8.4
Sulphate	mg/L	500	-	258	-	31	32	30	29	29	30	29	11	11	15	12	12	10	12	12	12	16	17	21	19
TDS	mg/L	500	340	314	-	205	204	194	185	190	174	176	110	118	135	120	121	116	119	149	167	176	170	176	157
TKN	mg/L	NV	-	-	-	0.7	0.6	0.8	1.7	0.5	0.3	0.5	0.1	0.2	0.19	<1	0.1	0.4	0.1	0.1	0.2	0.2	0.1	0.1	0.2
Ammonia	mg/L	NV	-	-	-	0.09	0.04	0.09	0.18	0.23	0.05	0.28	< 0.01	< 0.01	< 0.01	0.05	< 0.01	0.05	0.07	0.03	0.02	0.03	< 0.01	0.04	0.01
Aluminum	mg/L	0.1	-	0.06	0.075	< 0.01	0.02	0.03	0.02	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.0050	0.03	0.01	0.03	0.02	0.03	0.03	0.08	0.03	0.03	0.03
Antimony	mg/L	0.006	-	0.0016	0.02	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.00050	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	-	0.006	0.005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0010	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	-	0.33	-	0.162	0.176	0.16	0.158	0.184	0.141	0.154	0.081	0.097	0.1	0.094	0.097	0.113	0.098	0.12	0.125	0.146	0.146	0.142	0.134
Beryllium	mg/L	NV	-	-	0.011	< 0.002	< 0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.002	< 0.002	< 0.00050	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	1.3	1.3	1.3	0.725	0.764	0.741	0.726	0.798	0.486	0.542	< 0.005	0.01	0.01	0.009	< 0.005	0.014	0.011	0.01	0.016	0.031	0.07	0.144	0.213
Cadmium	mg/L	0.005	-	0.001	0.0001	< 0.000010	< 0.000010	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.00002	< 0.00002	< 0.00010	< 0.00002	0.000019	0.00002	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	-	0.013	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0013	0.0035	< 0.0050	0.0009	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	NV	-	-	0.0009	< 0.005	< 0.005	0.0017	0.0052	0.0018	0.0038	0.0019	< 0.005	< 0.005	0.0012	< 0.005	< 0.005	< 0.005	0.0005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	-	0.5	0.005	0.0009	0.0004	0.0009	0.0006	0.0005	0.0005	0.0078	< 0.0001	0.0002	0.0013	< 0.0001	0.0009	0.0007	0.0003	0.0005	0.0004	0.0016	0.0019	0.0003	0.002
Lead	mg/L	0.01	-	0.0025	0.003	0.00003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00050	< 0.0002	< 0.00002	0.00002	< 0.00002	0.00002	< 0.00002	0.00002	0.00005	< 0.00002	0.00006
Molybdenum	mg/L	NV	-	-	0.04	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	< 0.0001	0.0006	< 0.00050	0.0003	0.0003	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003	0.0002
Nickel	mg/L	NV	-	-	0.025	< 0.01	< 0.01	0.0016	0.0021	0.0012	0.0015	0.0014	< 0.01	< 0.01	< 0.0010	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	-	0.003	0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.0020	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	NV	-	-	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.00002	< 0.00002	< 0.00010	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	NV	-	-	-	0.259	0.274	0.26	0.275	0.327	0.23	0.253	0.186	0.205	0.19	0.213	0.207	0.187	0.204	0.271	0.287	0.321	0.304	0.301	0.262
Thallium	mg/L	NV	-	-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.000050	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	NV	-	-	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0008	0.0013	< 0.00050	0.0004	0.0006	0.0002	0.0003	< 0.0001	< 0.0001	0.0006	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	5	-	2.5	0.02	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0062	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Field Conductivity	µs/cm	NV	-	-	-	325	310	290	349	442	320	381	176	198	276	215	195	200	280	280	410	305	365	275	390
Field pH	-	6.5 - 8.5	-	-	-	7.25	7.5	7.22	7.24	6.91	7.27	6.76	7.64	7.29	8.05	7.54	7.86	7.66	7.55	7.36	7.65	7.39	7.5	7.42	8
Field Temperature	°C	NV	-	-	-	10	8.1	10.8	8.6	9.7	8.6	10.8	13.12	11.69	9.9	10.6	10	11.9	8.2	10.5	5.7	8	6.6	9.1	6.9

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW13 13-Oct-21	MW13 12-Apr-22	MW13 16-Oct-22	MW13 26-Apr-23	MW13 11-Oct-23	MW13 29-Apr-24	MW13 08-Oct-24	MW13 28-Apr-25	MW13 02-Oct-25	MW14 09-Jun-15	MW14 11-Sep-15	MW14 31-May-16	MW14 17-Oct-16	MW14 19-Apr-17	MW14 17-Oct-17	MW14 24-Apr-18	MW14 26-Sep-18	MW14 17-Apr-19	MW14 18-Oct-19	MW14 21-Apr-20
Alkalinity	mg/L	500	-	304	-	134	145	146	145	151	137	131	139	141	96	96	98	97	102	139	98	93	88	96	99
Calcium	mg/L	NV	-	-	-	37.8	34	33.7	37	32.6	28.9	36.7	32.4	37.5	25.2	27.7	28.4	27.7	28.8	27.8	27.3	24.4	23.7	25.9	30
Chloride	mg/L	250	128	-	120	10.9	7.4	10.1	9.6	8.2	6.2	7.3	9.8	9.6	1.3	1.3	1.7	1.1	2.1	1.4	1.5	2.1	1.8	2.8	2.2
COD	mg/L	NV	-	127	-	14	13	6	<5	11	9	12	6	14	8	10	6	7	8	<5	8	<5	<5	6	<5
Conductivity	µS/cm	NV	-	-	-	359	355	388	372	337	326	334	363	364	216	214	215	217	225	224	204	209	204	219	229
DOC	mg/L	5	-	3.6	-	2.8	3.1	3.3	4.3	2.9	2.4	3.8	2.9	3.9	2	1	0.9	1.3	1.5	1.7	1.1	1.4	1.8	1.9	1.5
Fluoride	mg/L	1.5	-	0.45	-	< 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	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	-	311	-	154	143	141	151	135	126	152	139	154	105	113	117	112	117	113	111	103	97	111	123
Iron	mg/L	0.3	-	0.36	0.3	0.383	0.285	0.241	0.124	0.224	0.095	0.169	0.151	0.335	0.183	0.265	0.34	0.388	0.326	0.505	0.363	0.423	0.304	0.544	0.727
Magnesium	mg/L	NV	-	-	-	14.5	14.2	13.9	14.3	13.1	13.2	14.5	14	14.8	10.3	10.6	11.1	10.4	10.9	10.5	10.5	10.2	9.11	11.2	11.6
Manganese	mg/L	0.05	-	0.03	-	0.013	0.015	0.01	0.016	0.007	0.017	0.01	0.027	0.017	0.006	0.006	0.008	0.011	0.011	0.01	0.009	0.008	0.007	0.009	0.01
Mercury	mg/L	0.001	-	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	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	mg/L	10	-	2.5	13	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	1	-	0.29	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	0.1	< 0.1	0.2	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
pH	pH Units	6.5 - 8.5	-	-	-	7.05	7.73	7.53	7.27	6.84	7.23	7.78	7.04	7.44	7.68	7.72	7.69	7.73	7.75	7.73	7.56	7.65	7.38	7.52	7.45
Phenols	mg/L	NV	-	-	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	0.002	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	mg/L	NV	-	-	0.03	0.41	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.25	0.97	0.27	0.57	< 0.1	< 0.1	< 0.1	< 0.1	0.3	0.21	< 0.1
Potassium	mg/L	NV	-	-	-	2.8	2.8	2.8	2.8	2.7	2.9	3.3	2.9	3	1.7	1.9	2.1	2	1.8	2	2	2.1	1.8	2.2	2.2
Sodium	mg/L	200	-	101	-	13.7	19.8	17.8	20.4	16.2	14.7	16	13.6	13.8	1.3	1.8	1.7	1.8	1.6	1.6	1.8	1.7	1.5	1.8	1.7
Sulphate	mg/L	500	-	258	-	37	31	35	35	29	25	24	33	32	11	11	11	11	11	9	11	11	10	11	12
TDS	mg/L	500	340	314	-	198	197	201	206	173	167	172	187	187	109	114	116	113	118	113	114	108	101	113	119
TKN	mg/L	NV	-	-	-	0.2	0.3	< 0.1	0.2	0.2	1	0.3	0.2	0.2	0.1	0.2	0.3	0.5	0.1	0.2	< 0.1	< 0.1	0.1	0.1	< 0.1
Ammonia	mg/L	NV	-	-	-	0.07	0.1	< 0.01	0.03	< 0.05	1.05	0.11	0.05	0.09	< 0.01	0.02	< 0.01	0.05	< 0.01	0.02	0.02	< 0.01	0.02	0.02	< 0.01
Aluminum	mg/L	0.1	-	0.06	0.075	0.03	0.01	< 0.01	0.01	0.03	0.01	0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	0.05	< 0.01	0.02	0.02	0.01	0.02	0.03	0.03
Antimony	mg/L	0.006	-	0.0016	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	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	-	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	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	-	0.33	-	0.144	0.145	0.136	0.153	0.128	0.115	0.143	0.136	0.145	0.082	0.095	0.101	0.091	0.098	0.115	0.096	0.09	0.077	0.094	0.104
Beryllium	mg/L	NV	-	-	0.011	< 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	< 0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	1.3	1.3	0.27	0.565	0.457	0.684	0.715	0.486	0.555	0.464	0.548	< 0.005	0.011	0.008	0.009	< 0.005	0.011	0.01	0.008	0.011	0.012	0.01	0.01
Cadmium	mg/L	0.005	-	0.001	0.0001	< 0.000015	< 0.000015	< 0.000010	< 0.000010	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.00002	< 0.00002	0.00007	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	-	0.013	0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.0027	< 0.0002	0.0008	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	NV	-	-	0.0009	< 0.005	< 0.005	< 0.005	< 0.005	0.0007	0.0011	0.0006	0.0016	0.0011	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	-	0.5	0.005	0.0006	0.0021	0.0007	0.0004	0.0008	0.0014	0.0007	0.0005	0.0003	< 0.0001	0.0003	< 0.0001	< 0.0001	0.0003	0.0002	0.0001	0.0003	0.0004	0.0003	0.0002
Lead	mg/L	0.01	-	0.0025	0.003	0.00003	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00009	< 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	0.00003
Molybdenum	mg/L	NV	-	-	0.04	0.0003	0.0004	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	< 0.0001	0.0005	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
Nickel	mg/L	NV	-	-	0.025	< 0.01	< 0.01	< 0.01	< 0.01	0.0012	0.0012	0.0009	0.0012	0.0014	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	-	0.003	0.1	< 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	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	NV	-	-	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	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	NV	-	-	-	0.286	0.258	0.258	0.285	0.25	0.256	0.303	0.263	0.286	0.195	0.204	0.221	0.207	0.208	0.192	0.198	0.199	0.174	0.219	0.215
Thallium	mg/L	NV	-	-	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	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	NV	-	-	0.006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0007	0.0011	0.0007	0.0004	0.0006	0.0003	0.0004	0.0001	0.0001	0.0001	0.0003
Zinc	mg/L	5	-	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	< 0.005	< 0.005	< 0.005	< 0.005
Field Conductivity	µs/cm	NV	-	-	-	350	325	315	315	270	261	330	334	404	177	191	198	205	189	192	280	195	230	200	250
Field pH	-	6.5 - 8.5	-	-	-	7.54	7.38	7.28	7.49	7.28	7.88	7.32	7.28	6.33	7.59	7.28	6.73	7.6	7.71	7.64	7.68	7.49	7.93	7.45	7.67
Field Temperature	°C	NV	-	-	-	11.5	8.2	9.5	7.7	10.6	7.7	9.8	8	10.5	11.31	10.19	9.58	10.2	10.1	12.2	6.9	10.6	6.8	7.9	5.4

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP - Reasonable Use

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW14 13-Oct-20	MW14 15-Apr-21	MW14 13-Oct-21	MW14 12-Apr-22	MW14 16-Oct-22	MW14 26-Apr-23	MW14 11-Oct-23	MW14 29-Apr-24	MW14 08-Oct-24	MW14 28-Apr-25	MW14 02-Oct-25	MW15 29-Apr-24	MW15 08-Oct-24	MW15 28-Apr-25	MW15 02-Oct-25	MW16 09-Jun-15	MW16 11-Sep-15	MW16 31-May-16	MW16 17-Oct-16	MW16 19-Apr-17
Alkalinity	mg/L	500	-	304	-	103	98	104	115	113	106	107	117	105	108	109	Dry	Dry	Dry	Dry	119	124	121	126	129
Calcium	mg/L	NV	-	-	-	29.1	30.8	33.4	30.5	28.1	29.2	28.3	26.4	32.6	25.5	29.9					31.8	35.9	37.8	38.3	41.9
Chloride	mg/L	250	128	-	120	3.2	2.2	3.9	2.4	2.5	2.2	3.1	3.3	4.2	3.9	5.6					2.9	3.3	3.3	5	7.5
COD	mg/L	NV	-	127	-	< 5	8	13	< 5	< 5	13	10	14	12	< 5					292	590	470	900	430	
Conductivity	µS/cm	NV	-	-	-	240	238	249	253	254	247	240	250	247	246	249					284	303	295	316	343
DOC	mg/L	5	-	3.6	-	1.9	2.7	2	1.7	1.1	2.4	1.8	1.6	2.7	2.7	3.2					3	1.9	1.4	2.1	2.4
Fluoride	mg/L	1.5	-	0.45	-	< 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
Hardness	mg/L	500	-	311	-	114	125	134	127	118	119	116	114	134	108	123					134	147	156	155	170
Iron	mg/L	0.3	-	0.36	0.3	0.485	0.521	0.634	0.551	0.632	0.435	0.19	0.186	0.199	0.376	0.509					< 0.005	0.075	0.053	0.318	0.056
Magnesium	mg/L	NV	-	-	-	10.1	11.6	12.4	12.4	11.6	11.2	11.1	11.8	12.8	10.9	11.8					13.2	14	14.9	14.5	15.8
Manganese	mg/L	0.05	-	0.03	-	0.008	0.011	0.011	0.01	0.009	0.01	0.004	0.012	0.006	0.01	0.011					0.06	0.064	0.066	0.081	0.097
Mercury	mg/L	0.001	-	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
Nitrate	mg/L	10	-	2.5	13	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05					< 0.1	< 0.1	< 0.1	0.1	< 0.1
Nitrite	mg/L	1	-	0.29	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05					0.1	< 0.1	< 0.1	0.2	0.1
pH	pH Units	6.5 - 8.5	-	-	-	7.72	7.64	6.93	7.69	7.59	7.15	6.66	6.93	7.83	6.83	7.36					7.39	7.51	7.27	7.38	7.47
Phenols	mg/L	NV	-	-	0.001	< 0.002	< 0.002	< 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
Phosphorus	mg/L	NV	-	-	0.03	< 0.1	0.28	0.28	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1					68	12.3	33.6	58.7	< 0.1
Potassium	mg/L	NV	-	-	-	2.1	2.2	2.2	2.2	2.2	2.1	2	2.3	2.7	2.1	2.3					2.6	2.9	3.1	3.2	3.2
Sodium	mg/L	200	-	101	-	1.7	1.8	1.9	1.7	1.7	1.9	1.9	1.9	2.3	1.9	2.2					4.2	5	4.6	4.5	4.2
Sulphate	mg/L	500	-	258	-	12	12	19	17	15	14	15	17	15	14	15					21	26	24	28	32
TDS	mg/L	500	340	314	-	121	120	136	135	130	125	123	128	126	126	127					148	162	161	171	182
TKN	mg/L	NV	-	-	-	< 0.1	0.1	0.2	0.2	< 0.1	< 0.1	0.1	0.4	0.3	0.2	0.5					0.8	0.7	0.8	1.4	2.2
Ammonia	mg/L	NV	-	-	-	0.03	< 0.01	0.05	0.02	< 0.01	< 0.01	0.07	0.35	0.18	0.06	0.45					0.16	0.11	0.14	0.16	0.1
Aluminum	mg/L	0.1	-	0.06	0.075	0.02	0.02	0.03	< 0.01	0.02	0.02	0.03	0.01	0.01	< 0.01	0.01					0.03	0.06	0.03	0.26	0.02
Antimony	mg/L	0.006	-	0.0016	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	< 0.0001	0.0004	< 0.0001
Arsenic	mg/L	0.025	-	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	0.0002	< 0.0001	0.0002	0.0001
Barium	mg/L	1	-	0.33	-	0.1	0.108	0.119	0.113	0.104	0.106	0.095	0.096	0.113	0.097	0.107					0.078	0.091	0.098	0.102	0.111
Beryllium	mg/L	NV	-	-	0.011	< 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	< 0.002
Boron	mg/L	5	1.3	1.3	1.3	0.013	0.011	0.014	0.007	0.03	0.036	0.041	0.046	0.056	0.047	0.06					0.078	0.095	0.083	0.088	0.052
Cadmium	mg/L	0.005	-	0.001	0.0001	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015					< 0.00002	0.00003	0.00003	0.00002	0.000047
Chromium	mg/L	0.05	-	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					0.0016	0.0052	< 0.0002	0.0014	< 0.001
Cobalt	mg/L	NV	-	-	0.0009	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0002	0.0004	0.0002	0.0003	0.0003					< 0.005	< 0.005	< 0.005	0.009	< 0.005
Copper	mg/L	1	-	0.5	0.005	0.0002	0.0017	0.0003	0.0005	0.0004	0.0002	0.0002	0.0003	0.0006	0.0003	0.0003					0.0009	0.0018	0.001	0.0028	0.002
Lead	mg/L	0.01	-	0.0025	0.003	< 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	0.0001	< 0.00002
Molybdenum	mg/L	NV	-	-	0.04	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004					< 0.0001	0.0004	0.0003	0.0002	0.0003
Nickel	mg/L	NV	-	-	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0003	0.0004	0.0005	0.0004	0.0004					< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	-	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	NV	-	-	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
Strontium	mg/L	NV	-	-	-	0.212	0.219	0.245	0.227	0.213	0.22	0.211	0.227	0.266	0.201	0.226					0.27	0.292	0.313	0.324	0.331
Thallium	mg/L	NV	-	-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005					0.00011	0.00018	0.00013	0.00013	0.00012
Vanadium	mg/L	NV	-	-	0.006	0.0001	0.0002	0.0002	0.0002	0.0003	0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0001					0.0013	0.002	0.0011	0.0015	0.0011
Zinc	mg/L	5	-	2.5	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.014	< 0.005	< 0.005	< 0.005					< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Field Conductivity	µs/cm	NV	-	-	-	220	310	265	225	220	210	200	215	236	223	294					232	255	267	290	237
Field pH	-	6.5 - 8.5	-	-	-	7.7	8.09	7.49	7.3	7.36	7.51	7.33	7.79	7.34	7.35	6.44					7.28	6.94	6.58	7.19	7.38
Field Temperature	°C	NV	-	-	-	9	6	10.6	9	9	7.4	10.6	6.6	10.2	8.5	10.3					10.7	9.79	10.86	10.5	9.2

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP - Reasonable Use Policy Criteria

Bold / Grey Highlighting - ODWQS Exceedance

Bold / Underlined - PWQO / CWQG Exceedance

Red Bold / Italics - RUP Exceedance

Green Bold / italics - Trigger Exceedance

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW16 17-Oct-17	MW16 24-Apr-18	MW16 26-Sep-18	MW16 17-Apr-19	MW16 18-Oct-19	MW16 21-Apr-20	MW16 13-Oct-20	MW16 15-Apr-21	MW16 13-Oct-21	MW16 12-Apr-22	MW16 16-Oct-22	MW16 26-Apr-23	MW16 11-Oct-23	MW16 29-Apr-24	MW16 08-Oct-24	MW16 28-Apr-25	MW16 02-Oct-25	MW16-1 09-Jun-15	MW16-1 10-Sep-15	MW16-1 31-May-16
Alkalinity	mg/L	500	-	304	-	160	192	225	244	226	205	182	188	209	238	219	198	196	207	200	213	179	125	128	161
Calcium	mg/L	NV	-	-	-	49.1	64.9	66.3	73.3	61.6	62.7	51.4	60.7	61	63.8	55.4	56	47.4	62.3	62.3	48.1	48.1	36.3	39.9	56.1
Chloride	mg/L	250	128	-	120	10.9	17.9	23.7	21.2	18.7	16.3	12.8	12.7	13.6	13.8	11.1	13.2	11.4	11.9	11.3	11.3	10.5	4.5	5.5	12.7
COD	mg/L	NV	-	127	-	307	24	16	129	230	250		149	69	469	307	122	49	244	501	379	671	9	< 5	7
Conductivity	µS/cm	NV	-	-	-	411	453	581	622	553	507	459	480	495	527	515	465	435	487	479	484	431	313	326	429
DOC	mg/L	5	-	3.6	-	4.1	3.7	5	6.4	6.1	5.8	4.8	7	5.3	6	4.9	5.3	4.4	5.7	5.3	5.7	6	3		2.3
Fluoride	mg/L	1.5	-	0.45	-	< 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	< 0.1	0.1	< 0.1	0.1
Hardness	mg/L	500	-	311	-	198	258	277	293	258	250	195	238	238	255	220	211	186	225	243	194	188	151	163	228
Iron	mg/L	0.3	-	0.36	0.3	0.075	0.063	0.226	0.151	0.215	0.091	0.09	0.123	0.175	0.543	0.154	0.135	0.46	11.5	0.166	0.11	0.113	0.021	0.023	0.034
Magnesium	mg/L	NV	-	-	-	18.4	23.3	27.1	26.6	25.3	22.6	16.1	21	20.7	23.1	19.9	17.3	16.4	16.8	21.1	18	16.4	14.8	15.3	21.3
Manganese	mg/L	0.05	-	0.03	-	0.106	0.181	0.176	0.19	0.155	0.198	0.154	0.224	0.256	0.274	0.292	0.407	0.359	2.31	0.733	0.823	0.791	0.123	0.132	0.181
Mercury	mg/L	0.001	-	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	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	mg/L	10	-	2.5	13	< 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	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	0.1
Nitrite	mg/L	1	-	0.29	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.2	0.2	< 0.1
pH	pH Units	6.5 - 8.5	-	-	-	7.31	7.25	7.29	6.9	7.13	7.14	7.36	7.19	6.99	7.43	7.37	7.32	6.99	7.04	7.95	7	7.35	7.62	7.51	7.31
Phenols	mg/L	NV	-	-	0.001	< 0.001	< 0.001	0.003	< 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	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	NV	-	-	0.03	< 0.1	< 0.1	< 0.1	29.9	17.1	< 0.1	< 0.1	25.5	25.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.02	< 0.01	< 0.01	< 0.01
Potassium	mg/L	NV	-	-	-	3.7	4.3	4.8	4.3	4.8	4.4	3.9	4.2	4.3	4.4	4.1	3.8	3.6	7.6	4.6	3.7	3.8	2.4	2.8	3.4
Sodium	mg/L	200	-	101	-	4.3	5.5	7.7	10.7	15.7	17.1	14.8	17.1	17.2	15.7	15.7	16.9	16.1	19.5	15.8	14.2	15	1.9	2.4	4.1
Sulphate	mg/L	500	-	258	-	27	35	37	32	32	32	30	31	30	28	29	29	29	29	31	30	31	25	29	38
TDS	mg/L	500	340	314	-	210	267	302	315	294	279	238	260	273	293	267	256	225	252	248	250	222	161	173	233
TKN	mg/L	NV	-	-	-	1.5	1	0.7	0.5	0.7	0.8	1	0.3	1.9	21.2	0.1	1.1	1	1.1	2.5	1	2.6	< 0.1	0.1	0.2
Ammonia	mg/L	NV	-	-	-	0.1	0.29	0.11	0.17	0.09	0.06	0.13	0.17	0.09	0.25	0.04	0.95	0.14	0.16	0.2	0.21	0.18	< 0.01	< 0.01	< 0.01
Aluminum	mg/L	0.1	-	0.06	0.075	0.04	0.05	0.05	0.05	0.06	0.04	0.04	0.05	0.04	0.22	< 0.01	0.02	0.03	0.03	0.03	0.02	0.04	0.01	0.01	0.02
Antimony	mg/L	0.006	-	0.0016	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	0.0002	< 0.0001	0.0002	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	-	0.006	0.005	0.0002	0.0001	0.0002	0.0002	< 0.0001	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	< 0.0001	< 0.0001	0.0001
Barium	mg/L	1	-	0.33	-	0.151	0.177	0.179	0.189	0.178	0.172	0.138	0.167	0.167	0.177	0.149	0.157	0.133	0.226	0.17	0.139	0.124	0.15	0.172	0.25
Beryllium	mg/L	NV	-	-	0.011	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	1.3	1.3	1.3	0.107	0.165	0.249	0.317	0.381	0.388	0.386	0.451	0.492	0.572	0.535	0.557	0.558	0.737	0.77	0.646	0.602	0.028	0.05	0.182
Cadmium	mg/L	0.005	-	0.001	0.0001	0.000056	0.000074	0.000082	0.000082	0.000072	0.000079	0.000069	0.000067	0.000072	0.000074	0.000088	0.000074	0.000059	0.000052	0.000101	0.00009	0.000112	< 0.00002	0.00002	0.00003
Chromium	mg/L	0.05	-	0.013	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0019	0.0066	< 0.0002
Cobalt	mg/L	NV	-	-	0.0009	< 0.005	0.0035	0.016	0.008	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	0.006	0.006	0.006	0.0061	0.0072	0.0053	0.0068	< 0.005	< 0.005	< 0.005
Copper	mg/L	1	-	0.5	0.005	0.0015	0.0036	0.0023	0.0039	0.0039	0.0033	0.0033	0.0049	0.0038	0.0052	0.0038	0.0032	0.0024	0.0029	0.0031	0.003	0.0039	0.0015	0.0015	0.0018
Lead	mg/L	0.01	-	0.0025	0.003	< 0.00002	0.00006	< 0.00002	0.00003	0.00002	< 0.00002	0.00007	0.00006	0.00007	0.0002	< 0.00002	< 0.00002	0.00002	< 0.00002	0.00002	0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002
Molybdenum	mg/L	NV	-	-	0.04	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003	0.0004	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004	0.0004	0.0003	0.0003	0.0004	< 0.0001	0.0004	0.0003
Nickel	mg/L	NV	-	-	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	0.0056	0.0064	0.0064	0.0052	0.0065	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	-	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	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	NV	-	-	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	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	NV	-	-	-	0.367	0.502	0.592	0.579	0.564	0.476	0.395	0.455	0.483	0.497	0.434	0.406	0.365	0.473	0.52	0.396	0.378	0.279	0.29	0.429
Thallium	mg/L	NV	-	-	0.0003	0.00015	0.00012	0.00016	0.00017	0.00014	0.00012	0.00015	0.0001	0.00016	0.00015	0.00015	0.00012	0.00005	0.00014	0.00016	0.00013	0.00018	< 0.00005	0.00006	< 0.00005
Vanadium	mg/L	NV	-	-	0.006	0.0007	0.0011	0.0003	0.0003	0.0003	0.0003	0.0004	0.0003	0.0004	0.0013	0.0004	0.0003	0.0004	0.0002	0.0004	0.0003	0.0005	0.0012	0.0023	0.0011
Zinc	mg/L	5	-	2.5	0.02	< 0.005	0.005	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	< 0.005	< 0.005	< 0.005
Field Conductivity	µs/cm	NV	-	-	-	205	410	450	670	455	535	385	510	490	455	410	270	260	516	444	468	276	254	263	383
Field pH	-	6.5 - 8.5	-	-	-	7.74	7.05	6.81	6.87	6.84	7.07	7.08	7.6	6.8	7.08	7.01	7.1	7	7.56	7.15	6.82	6.48	7.26	7.01	6.48
Field Temperature	°C	NV	-	-	-	11.2	9.9	12	8.5	9.2	5.8	10.3	6.9	11.3	8.9	9.8	8.3	11.5	8	13.1	9.1	12.7	11.73	11.52	10.36

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP - Reasonable Use Policy Criteria

Bold / Grey Highlighting - ODWQS Exceedance

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW16-I 17-Oct-16	MW16-I 19-Apr-17	MW16-I 17-Oct-17	MW16-I 24-Apr-18	MW16-I 26-Sep-18	MW16-I 17-Apr-19	MW16-I 18-Oct-19	MW16-I 21-Apr-20	MW16-I 13-Oct-20	MW16-I 15-Apr-21	MW16-I 13-Oct-21	MW16-I 12-Apr-22	MW16-I 16-Oct-22	MW16-I 26-Apr-23	MW16-I 11-Oct-23	MW16-I 29-Apr-24	MW16-I 08-Oct-24	MW16-I 28-Apr-25	MW16-I 02-Oct-25	MW17 09-Jun-15
Alkalinity	mg/L	500	-	304	-	176	201	192	184	181	170	155	156	153	159	148	157	160	154	172	147	296	140	142	75
Calcium	mg/L	NV	-	-	-	59.5	72.5	64.7	63.3	47.5	48.3	38.6	47.9	42.3	55.6	45.9	42	40.8	45.5	42.5	35	98.4	36.4	41	16.2
Chloride	mg/L	250	128	-	120	25.3	40.5	35.9	34.3	22.2	16.3	10.8	13.5	13.6	18.8	13.1	11	11.3	13	10	7.7	23.4	11.3	8.5	3.1
COD	mg/L	NV	-	127	-	5	9	11	16	<5	16	5	10	10	17	26	6	6	14	11	37	8	11	217	
Conductivity	µS/cm	NV	-	-	-	495	597	580	504	488	462	392	415	409	466	395	385	409	399	398	364	722	367	352	192
DOC	mg/L	5	-	3.6	-	3.2	4.2	3.6	4.5	4.4	4.9	4.2	4.6	4.5	6.8	4.3	4.4	4.1	4.7	4.1	4	11.4	4.6	4.7	10.6
Fluoride	mg/L	1.5	-	0.45	-	<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	< 0.1	< 0.1	< 0.1	0.2
Hardness	mg/L	500	-	311	-	238	293	261	253	198	192	160	187	158	213	176	165	159	173	163	141	328	144	156	73
Iron	mg/L	0.3	-	0.36	0.3	0.049	0.052	0.059	0.054	0.054	0.043	0.035	0.048	0.042	0.065	0.057	0.043	0.047	0.054	0.061	0.045	11.3	0.046	0.043	3.3
Magnesium	mg/L	NV	-	-	-	21.8	27.2	24.2	23	19.3	17.3	15.5	16.4	12.8	18	14.8	14.6	13.9	14.3	13.8	13.1	20	13	13.2	7.97
Manganese	mg/L	0.05	-	0.03	-	0.2	0.243	0.225	0.213	0.175	0.176	0.152	0.188	0.168	0.224	0.184	0.176	0.177	0.193	0.194	0.149	3.85	0.173	0.179	0.221
Mercury	mg/L	0.001	-	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	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	mg/L	10	-	2.5	13	<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	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1
Nitrite	mg/L	1	-	0.29	0.06	<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	< 0.05	< 0.05	< 0.05	0.1
pH	pH Units	6.5 - 8.5	-	-	-	7.42	7.33	7.32	7.39	7.51	7.19	7.47	7.36	7.5	7.33	7.08	7.55	7.36	7.11	6.75	7.03	7.45	6.88	7.32	7.48
Phenols	mg/L	NV	-	-	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	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001
Phosphorus	mg/L	NV	-	-	0.03	0.02	< 0.1	< 0.1	< 0.1	< 0.1	0.24	0.01	< 0.1	0.03	0.02	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	4.56
Potassium	mg/L	NV	-	-	-	3.5	3.7	3.9	4	3.8	3.3	3.5	3.5	3.3	3.8	3.4	3.4	3.4	3.4	3.4	3.4	12.3	3.3	3.2	0.7
Sodium	mg/L	200	-	101	-	7.6	9.5	14.7	18.7	22.9	20.3	23.7	22	20.7	22.5	19.4	17.1	16.5	16.1	17.2	13.6	30.7	8.9	10.2	3.9
Sulphate	mg/L	500	-	258	-	36	47	36	41	34	28	26	32	32	40	36	30	32	33	31	28	38	33	26	13
TDS	mg/L	500	340	314	-	260	322	294	295	259	236	212	230	217	255	222	213	214	218	205	187	376	189	181	94.7
TKN	mg/L	NV	-	-	-	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.2	0.3	0.2	0.3	3.9	0.2	0.3	0.7
Ammonia	mg/L	NV	-	-	-	0.05	< 0.01	0.01	0.03	0.01	0.02	0.03	< 0.01	0.07	0.03	0.05	0.17	0.04	0.05	0.11	0.1	3.8	0.11	0.12	0.23
Aluminum	mg/L	0.1	-	0.06	0.075	0.02	0.02	0.04	0.04	0.03	0.04	0.04	0.03	0.03	0.03	0.04	0.01	< 0.01	0.02	0.04	0.02	0.04	0.01	0.01	< 0.01
Antimony	mg/L	0.006	-	0.0016	0.02	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	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	-	0.006	0.005	0.0002	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	0.0005	< 0.0001	< 0.0001	< 0.0001
Barium	mg/L	1	-	0.33	-	0.257	0.327	0.359	0.291	0.23	0.215	0.184	0.214	0.192	0.256	0.211	0.198	0.189	0.209	0.197	0.158	0.371	0.168	0.178	0.029
Beryllium	mg/L	NV	-	-	0.011	<0.0002	< 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	< 0.002
Boron	mg/L	5	1.3	1.3	1.3	0.275	0.257	0.365	0.368	0.408	0.443	0.471	0.562	0.663	0.905	0.843	0.781	0.742	0.744	0.776	0.551	1.23	0.282	0.381	< 0.005
Cadmium	mg/L	0.005	-	0.001	0.0001	<0.00002	0.000069	0.000039	0.000044	0.000039	0.000036	0.000034	0.000036	0.000033	0.000059	0.000034	0.000036	0.000041	0.000043	0.000032	0.000041	<0.000015	0.000073	0.000044	< 0.00002
Chromium	mg/L	0.05	-	0.013	0.001	0.0016	< 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	0.0011
Cobalt	mg/L	NV	-	-	0.0009	<0.005	< 0.005	< 0.005	0.0013	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0012	0.0008	0.0059	0.0007	0.0008	< 0.005
Copper	mg/L	1	-	0.5	0.005	0.0016	0.0032	0.003	0.005	0.0037	0.004	0.0036	0.0052	0.0042	0.0058	0.0045	0.004	0.0041	0.0037	0.0041	0.0031	0.0003	0.0025	0.0028	< 0.0001
Lead	mg/L	0.01	-	0.0025	0.003	<0.00002	< 0.00002	< 0.00002	0.00005	0.00002	0.00002	< 0.00002	0.00005	0.00002	0.00005	0.00003	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00005	<0.00002	0.00003	0.00002	< 0.00002
Molybdenum	mg/L	NV	-	-	0.04	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0006	0.0003	0.0003	0.0002
Nickel	mg/L	NV	-	-	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	0.0023	0.0018	0.0029	0.0016	0.0016	0.01
Selenium	mg/L	0.01	-	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	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	NV	-	-	0.0001	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.00002
Strontium	mg/L	NV	-	-	-	0.447	0.53	0.449	0.46	0.402	0.358	0.327	0.332	0.303	0.395	0.336	0.315	0.303	0.337	0.317	0.302	0.62	0.29	0.302	0.093
Thallium	mg/L	NV	-	-	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	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	NV	-	-	0.006	0.0007	0.0015	0.0006	0.0009	0.0001	0.0001	0.0001	0.0001	< 0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0022	< 0.0001	< 0.0001	0.0007
Zinc	mg/L	5	-	2.5	0.02	<0.005	< 0.005	< 0.005	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	< 0.005	0.013
Field Conductivity	µs/cm	NV	-	-	-	440	470	500	580	425	520	345	440	365	570	430	340	335	330	310	281	391	364	345	155
Field pH	-	6.5 - 8.5	-	-	-	7.07	7.24	7.65	6.97	7.02	7.04	7	7.18	7.1	7.6	6.94	7.19	7.12	7.22	7.05	7.75	7.09	6.92	6.54	7.63
Field Temperature	°C	NV	-	-	-	9.3	9.9	10.5	10	10.9	10	9.5	4.9	10.1	8.6	10	10.8	9.8	9.7	10.3	9.1	13	9.7	11	10.99

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP -

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW17 11-Sep-15	MW17 02-Jun-16	MW17 17-Oct-16	MW17 19-Apr-17	MW17 17-Oct-17	MW17 24-Apr-18	MW17 26-Sep-18	MW17 17-Apr-19	MW17 18-Oct-19	MW17 21-Apr-20	MW17 13-Oct-20	MW17 15-Apr-21	MW17 13-Oct-21	MW17 12-Apr-22	MW17 16-Oct-22	MW17 26-Apr-23	MW17 11-Oct-23	MW17 29-Apr-24	MW17 08-Oct-24	MW17 28-Apr-25
Alkalinity	mg/L	500	-	304	-	83	89	89	Submerged	Submerged	Submerged	Submerged	Submerged	174	Submerged	Submerged	Submerged	Submerged	Submerged	Submerged	Submerged	Submerged	Submerged	Submerged	Submerged
Calcium	mg/L	NV	-	-	-	21.8	17.4	24.7						44.1											
Chloride	mg/L	250	128	-	120	3.6	4.3	6.3						3.1											
COD	mg/L	NV	-	127	-	248	53	97						147											
Conductivity	µS/cm	NV	-	-	-	203	216	228						343											
DOC	mg/L	5	-	3.6	-	-	2	2.5						15.3											
Fluoride	mg/L	1.5	-	0.45	-	0.2	0.1	0.1						0.1											
Hardness	mg/L	500	-	311	-	96	76	107						186											
Iron	mg/L	0.3	-	0.36	0.3	6.01	1.84	0.371						1.96											
Magnesium	mg/L	NV	-	-	-	10.1	7.97	10.9						18.4											
Manganese	mg/L	0.05	-	0.03	-	0.289	0.191	0.235						0.149											
Mercury	mg/L	0.001	-	0.0003	0.0002	< 0.00002	< 0.00002	< 0.00002						< 0.00002											
Nitrate	mg/L	10	-	2.5	13	< 0.1	< 0.1	< 0.1						< 0.05											
Nitrite	mg/L	1	-	0.29	0.06	< 0.1	< 0.1	0.2						0.06											
pH	pH Units	6.5 - 8.5	-	-	-	7.7	7.83	7.93						7.67											
Phenols	mg/L	NV	-	-	0.001	< 0.001	< 0.001	< 0.001						< 0.002											
Phosphorus	mg/L	NV	-	-	0.03	1.56	0.75	1.56						3.08											
Potassium	mg/L	NV	-	-	-	1.1	0.9	1.3						1.2											
Sodium	mg/L	200	-	101	-	5.7	4.7	6.7						2.4											
Sulphate	mg/L	500	-	258	-	13	13	15						2											
TDS	mg/L	500	340	314	-	112	104	120						179											
TKN	mg/L	NV	-	-	-	0.9	0.5	< 1						4.1											
Ammonia	mg/L	NV	-	-	-	0.21	0.19	0.23						1.05											
Aluminum	mg/L	0.1	-	0.06	0.075	< 0.01	< 0.01	0.04						0.03											
Antimony	mg/L	0.006	-	0.0016	0.02	< 0.0001	< 0.0001	0.0003						0.0003											
Arsenic	mg/L	0.025	-	0.006	0.005	0.0001	< 0.0001	0.0001						< 0.0001											
Barium	mg/L	1	-	0.33	-	0.036	0.026	0.031						0.064											
Beryllium	mg/L	NV	-	-	0.011	< 0.002	< 0.002	< 0.002						< 0.002											
Boron	mg/L	5	1.3	1.3	1.3	0.011	0.01	0.007						0.018											
Cadmium	mg/L	0.005	-	0.001	0.0001	< 0.00002	< 0.00002	< 0.00002						< 0.000015											
Chromium	mg/L	0.05	-	0.013	0.001	0.003	0.0004	0.0007						0.002											
Cobalt	mg/L	NV	-	-	0.0009	< 0.005	< 0.005	< 0.005						< 0.005											
Copper	mg/L	1	-	0.5	0.005	0.0003	< 0.0001	< 0.0001						0.0002											
Lead	mg/L	0.01	-	0.0025	0.003	0.00002	< 0.00002	< 0.00002						0.00003											
Molybdenum	mg/L	NV	-	-	0.04	0.0012	0.0008	0.0006						0.0001											
Nickel	mg/L	NV	-	-	0.025	< 0.01	< 0.01	< 0.01						< 0.01											
Selenium	mg/L	0.01	-	0.003	0.1	< 0.001	< 0.001	< 0.001						< 0.001											
Silver	mg/L	NV	-	-	0.0001	< 0.00002	< 0.00002	< 0.00002						< 0.0001											
Strontium	mg/L	NV	-	-	-	0.12	0.1	0.142						0.537											
Thallium	mg/L	NV	-	-	0.0003	< 0.00005	< 0.00005	< 0.00005						< 0.00005											
Vanadium	mg/L	NV	-	-	0.006	0.0012	0.0002	0.0006						0.0012											
Zinc	mg/L	5	-	2.5	0.02	0.007	0.013	0.015						< 0.005											
Field Conductivity	µs/cm	NV	-	-	-	191	202	280						310											
Field pH	-	6.5 - 8.5	-	-	-	7.33	6.44	7.5						7.4											
Field Temperature	°C	NV	-	-	-	11.99	11.18	11.6						9.3											

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

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RUP - Reasonable Use Policy Criteria

Bold / Grey Highlighting - ODWQS Exceedance

Bold / Underlined - PWQO / CWQG Exceedance

Red Bold / Italics - RUP Exceedance

Green Bold / italics - Trigger Exceedance

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW17 02-Oct-25	MW18 23-Jun-15	MW18 11-Sep-15	MW18 31-May-16	MW18 17-Oct-16	MW18 19-Apr-17	MW18 17-Oct-17	MW18 24-Apr-18
Alkalinity	mg/L	500	-	304	-	Submerged	52	96	48	57	71	85	102
Calcium	mg/L	NV	-	-	-		19.9	18.8	8.33	17.5		21.1	26.3
Chloride	mg/L	250	128	-	120		2.2	2.1	2.3	2.3	2.5	1.6	1.9
COD	mg/L	NV	-	127	-		112	48	41	57	37	37	55
Conductivity	µS/cm	NV	-	-	-		179	175	163	172	169	191	207
DOC	mg/L	5	-	3.6	-		5.8	6.1	7.8	6.3	10.3	11.6	13.1
Fluoride	mg/L	1.5	-	0.45	-		0.1	< 0.1	0.1	<0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	-	311	-		85	79	43	73		88	110
Iron	mg/L	0.3	-	0.36	0.3		10.6	8.49	4.1	6.52	7.31	7.41	9.37
Magnesium	mg/L	NV	-	-	-		8.58	7.71	5.29	7.12		8.59	10.8
Manganese	mg/L	0.05	-	0.03	-		0.124	0.107	0.044	0.086	0.093	0.1	0.126
Mercury	mg/L	0.001	-	0.0003	0.0002		< 0.00002	< 0.00002	<0.00002	<0.00002	< 0.00002	0.00003	< 0.00002
Nitrate	mg/L	10	-	2.5	13		< 0.1	< 0.1	0.1	<0.1	< 0.1	< 0.05	< 0.05
Nitrite	mg/L	1	-	0.29	0.06		0.1	< 0.1	<0.1	0.1	0.2	< 0.05	< 0.05
pH	pH Units	6.5 - 8.5	-	-	-		6.89	6.98	6.66	6.9	6.84	6.94	6.83
Phenols	mg/L	NV	-	-	0.001		0.004	< 0.001	<0.001	<0.001	0.002	< 0.001	0.004
Phosphorus	mg/L	NV	-	-	0.03		0.19	0.13	0.06	0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	NV	-	-	-		0.6	0.5	0.5	0.7		0.8	0.8
Sodium	mg/L	200	-	101	-		3.3	3.6	3.8	3.1		2.9	3.2
Sulphate	mg/L	500	-	258	-		29	25	26	22	9	10	7
TDS	mg/L	500	340	314	-		107	125	80.7	95.2	87.5	105	113
TKN	mg/L	NV	-	-	-		2.2	1.3	1.2	1.5	1.4	1.6	2.1
Ammonia	mg/L	NV	-	-	-		0.97	0.73	0.96	1.14	0.98	1.22	1.15
Aluminum	mg/L	0.1	-	0.06	0.075		0.8	0.07	0.05	0.09	0.07	0.07	0.06
Antimony	mg/L	0.006	-	0.0016	0.02		< 0.0001	< 0.0001	<0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	-	0.006	0.005		0.0004	0.0001	<0.0001	0.0001	< 0.0001	0.0001	0.0002
Barium	mg/L	1	-	0.33	-		0.078	0.061	0.021	0.056	0.058	0.082	0.083
Beryllium	mg/L	NV	-	-	0.011		< 0.002	< 0.002	<0.002	<0.002	< 0.002	< 0.002	< 0.002
Boron	mg/L	5	1.3	1.3	1.3		0.006	0.013	0.005	0.013	< 0.005	0.017	0.016
Cadmium	mg/L	0.005	-	0.001	0.0001		0.00002	< 0.00002	<0.00002	<0.00002	< 0.000014	< 0.000014	< 0.000015
Chromium	mg/L	0.05	-	0.013	0.001		0.0089	0.0053	0.0006	0.0017	< 0.001	< 0.001	0.002
Cobalt	mg/L	NV	-	-	0.0009		< 0.005	< 0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.0001
Copper	mg/L	1	-	0.5	0.005		< 0.0001	< 0.0001	<0.0001	<0.0001	0.0005	0.0001	0.0002
Lead	mg/L	0.01	-	0.0025	0.003		0.00037	< 0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	0.00033
Molybdenum	mg/L	NV	-	-	0.04		< 0.0001	0.0001	<0.001	<0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	mg/L	NV	-	-	0.025		< 0.01	< 0.01	<0.01	<0.01	< 0.01	< 0.01	< 0.01
Selenium	mg/L	0.01	-	0.003	0.1		0.001	< 0.001	<0.001	<0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	NV	-	-	0.0001		< 0.00002	< 0.00002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	NV	-	-	-		0.189	0.18	0.082	0.168	0.167	0.186	0.233
Thallium	mg/L	NV	-	-	0.0003		< 0.00005	< 0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	NV	-	-	0.006		0.0061	0.0031	0.0022	0.0015	0.0017	0.0012	0.0018
Zinc	mg/L	5	-	2.5	0.02		11.3	0.043	0.115	1.02	0.033	0.043	0.138
Field Conductivity	µs/cm	NV	-	-	-		133.4	164	170	480	158	185	310
Field pH	-	6.5 - 8.5	-	-	-		6.86	6.6	6.98	7.13	7.03	7.34	6.61
Field Temperature	°C	NV	-	-	-		8.7	11.28	10.4	10	6.8	6.5	6.1

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Red Bold / Italics - RUP Exceedance

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW18 26-Sep-18	MW18 17-Apr-19	MW18 18-Oct-19	MW18 21-Apr-20	MW18 13-Oct-20	MW18 15-Apr-21	MW18 13-Oct-21	MW18 12-Apr-22	MW18 16-Oct-22	MW18 26-Apr-23	MW18 11-Oct-23	MW18 29-Apr-24	MW18 08-Oct-24	MW18 28-Apr-25	MW18 02-Oct-25	MW19 09-Jun-15	MW19 31-May-16	MW19 17-Oct-16	MW19 19-Apr-17	MW19 17-Oct-17
Alkalinity	mg/L	500	-	304	-	107	102	133	Submerged	151	148	166	Submerged	Submerged	Submerged	Submerged	Submerged	Submerged	Submerged	112	142	156	183	175	
Calcium	mg/L	NV	-	-	-	24.2	23.9	30.4		36	40.3	39.7								30.8	50.9	64.8	71.6	59.6	
Chloride	mg/L	250	128	-	120	2.5	1.8	2.4		2.8	2.1	3.3								4.2	17.7	64	55.7	39.8	
COD	mg/L	NV	-	127	-	33	39	35			38	50								8	6	5	9	9	
Conductivity	µS/cm	NV	-	-	-	266	215	270		306	315	335								267	382	551	613	560	
DOC	mg/L	5	-	3.6	-	13.6	12.8	14		13.8	16	12.9								2.6	2	2.6	3.9	3.3	
Fluoride	mg/L	1.5	-	0.45	-	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1								0.1	0.1	0.1	< 0.1	< 0.1	
Hardness	mg/L	500	-	311	-	106	101	135		144	169	165								129	208	261	292	241	
Iron	mg/L	0.3	-	0.36	0.3	8.64	13.2	10.8		12.1	16.5	14.8								< 0.005	0.012	0.02	0.017	0.015	
Magnesium	mg/L	NV	-	-	-	11.1	10.1	14.4		13.1	16.7	15.9								12.6	19.7	24.1	27.5	22.3	
Manganese	mg/L	0.05	-	0.03	-	0.115	0.122	0.143		0.163	0.2	0.192								0.036	0.044	0.058	0.069	0.063	
Mercury	mg/L	0.001	-	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	
Nitrate	mg/L	10	-	2.5	13	< 0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05								< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	
Nitrite	mg/L	1	-	0.29	0.06	< 0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05								0.1	< 0.1	< 0.1	0.3	< 0.05	
pH	pH Units	6.5 - 8.5	-	-	-	6.88	6.55	6.8		6.92	6.63	6.5								7.63	7.36	7.49	7.42	7.44	
Phenols	mg/L	NV	-	-	0.001	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.001								< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Phosphorus	mg/L	NV	-	-	0.03	< 0.1	0.28	0.06		< 0.1	0.17	0.19								0.07	0.05	0.05	< 0.1	< 0.1	
Potassium	mg/L	NV	-	-	-	1	0.7	1.1		1	1	1.1								2.1	3	3.3	3.4	3.5	
Sodium	mg/L	200	-	101	-	3	2.5	3		2.4	2.4	2.5								1.4	2.9	5.1	12.5	17.2	
Sulphate	mg/L	500	-	258	-	3	1	2		< 1	< 1	< 1								17	24	32	45	33	
TDS	mg/L	500	340	314	-	111	103	135		160	153	164								135	203	287	327	280	
TKN	mg/L	NV	-	-	-	1.6	1.4	1.8		2	1.7	2.2								0.2	0.2	0.3	0.2	0.3	
Ammonia	mg/L	NV	-	-	-	1.16	1.07	1.35		1.51	1.28	1.54								< 0.01	0.03	0.13	0.02	0.01	
Aluminum	mg/L	0.1	-	0.06	0.075	0.06	0.06	0.06		0.06	0.07	0.06								< 0.01	0.01	0.02	0.02	0.04	
Antimony	mg/L	0.006	-	0.0016	0.02	< 0.0001	0.0002	0.0001		< 0.0001	< 0.0001	0.0001								< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	
Arsenic	mg/L	0.025	-	0.006	0.005	0.0002	0.0004	< 0.0001		0.0002	0.0002	0.0002								< 0.0001	< 0.0001	0.0002	0.0002	0.0002	
Barium	mg/L	1	-	0.33	-	0.079	0.067	0.095		0.108	0.117	0.123								0.118	0.206	0.247	0.291	0.313	
Beryllium	mg/L	NV	-	-	0.011	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002								< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Boron	mg/L	5	1.3	1.3	1.3	0.019	0.029	0.023		0.049	0.015	0.017								< 0.005	0.129	0.194	0.277	0.312	
Cadmium	mg/L	0.005	-	0.001	0.0001	< 0.000015	< 0.000015	< 0.000015		< 0.000015	< 0.000015	< 0.000015								< 0.00002	0.00003	< 0.00002	0.000081	0.000026	
Chromium	mg/L	0.05	-	0.013	0.001	< 0.001	0.001	0.002		< 0.001	< 0.001	0.001								0.0015	< 0.0002	0.0013	< 0.001	< 0.001	
Cobalt	mg/L	NV	-	-	0.0009	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005								< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
Copper	mg/L	1	-	0.5	0.005	0.0001	0.0009	0.0003		0.0002	0.0016	0.0005								0.001	0.0016	0.0013	0.0035	0.0032	
Lead	mg/L	0.01	-	0.0025	0.003	< 0.00002	< 0.00002	< 0.00002		< 0.00002	0.00006	0.00003								< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	
Molybdenum	mg/L	NV	-	-	0.04	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001								< 0.0001	0.0004	0.0002	0.0003	0.0002	
Nickel	mg/L	NV	-	-	0.025	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Selenium	mg/L	0.01	-	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	NV	-	-	0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001								< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	
Strontium	mg/L	NV	-	-	-	0.264	0.22	0.322		0.326	0.355	0.371								0.247	0.401	0.492	0.54	0.425	
Thallium	mg/L	NV	-	-	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	NV	-	-	0.006	0.0009	0.0014	0.0011		0.0013	0.0012	0.0012								0.0011	0.0009	0.0006	0.0009	0.0006	
Zinc	mg/L	5	-	2.5	0.02	0.102	0.056	0.129		0.167	0.114	0.112								< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
Field Conductivity	µs/cm	NV	-	-	-	230	290	280		295	470	980								218	344	480	490	483	
Field pH	-	6.5 - 8.5	-	-	-	6.7	7.2	6.5		6.4	7.8	6.84								7.3	6.76	7.13	7.29	7.76	
Field Temperature	°C	NV	-	-	-	12	6.1	8.9		10.3	6.1	12.8								11.71	10.22	10	9.7	9.9	

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP - Reasonable Use Policy Criteria

Bold / Grey Highlighting - ODWQS Exceedance

Bold / Underlined - PWQO / CWQG Exceedance

Red Bold / Italics - RUP Exceedance

Green Bold / italics - Trigger Exceedance

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW19 24-Apr-18
Alkalinity	mg/L	500	-	304	-	183
Calcium	mg/L	NV	-	-	-	56.7
Chloride	mg/L	250	128	-	120	31.3
COD	mg/L	NV	-	127	-	15
Conductivity	µS/cm	NV	-	-	-	508
DOC	mg/L	5	-	3.6	-	5
Fluoride	mg/L	1.5	-	0.45	-	< 0.1
Hardness	mg/L	500	-	311	-	230
Iron	mg/L	0.3	-	0.36	0.3	0.017
Magnesium	mg/L	NV	-	-	-	21.5
Manganese	mg/L	0.05	-	0.03	-	0.063
Mercury	mg/L	0.001	-	0.0003	0.0002	< 0.00002
Nitrate	mg/L	10	-	2.5	13	< 0.05
Nitrite	mg/L	1	-	0.29	0.06	< 0.05
pH	pH Units	6.5 - 8.5	-	-	-	7.44
Phenols	mg/L	NV	-	-	0.001	< 0.001
Phosphorus	mg/L	NV	-	-	0.03	< 0.1
Potassium	mg/L	NV	-	-	-	3.7
Sodium	mg/L	200	-	101	-	28.6
Sulphate	mg/L	500	-	258	-	43
TDS	mg/L	500	340	314	-	295
TKN	mg/L	NV	-	-	-	0.2
Ammonia	mg/L	NV	-	-	-	0.03
Aluminum	mg/L	0.1	-	0.06	0.075	0.04
Antimony	mg/L	0.006	-	0.0016	0.02	< 0.0001
Arsenic	mg/L	0.025	-	0.006	0.005	0.0001
Barium	mg/L	1	-	0.33	-	0.258
Beryllium	mg/L	NV	-	-	0.011	< 0.002
Boron	mg/L	5	1.3	1.3	1.3	0.404
Cadmium	mg/L	0.005	-	0.001	0.0001	0.000038
Chromium	mg/L	0.05	-	0.013	0.001	< 0.001
Cobalt	mg/L	NV	-	-	0.0009	0.0008
Copper	mg/L	1	-	0.5	0.005	0.0045
Lead	mg/L	0.01	-	0.0025	0.003	< 0.00002
Molybdenum	mg/L	NV	-	-	0.04	0.0002
Nickel	mg/L	NV	-	-	0.025	< 0.01
Selenium	mg/L	0.01	-	0.003	0.1	< 0.001
Silver	mg/L	NV	-	-	0.0001	< 0.00002
Strontium	mg/L	NV	-	-	-	0.431
Thallium	mg/L	NV	-	-	0.0003	< 0.00005
Vanadium	mg/L	NV	-	-	0.006	0.0009
Zinc	mg/L	5	-	2.5	0.02	< 0.005
Field Conductivity	µs/cm	NV	-	-	-	570
Field pH	-	6.5 - 8.5	-	-	-	7.1
Field Temperature	°C	NV	-	-	-	10

ODWQS - Ontario Drinking Water Quality Objectives

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Bold / Grey Highlighting - ODWQS Exceedance

Bold / Underlined - PWQO / CWQG Exceedance

Red Bold / Italics - RUP Exceedance

Green Bold / italics - Trigger Exceedance

Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW19 26-Sep-18	MW19 17-Apr-19	MW19 18-Oct-19	MW19 21-Apr-20	MW19 13-Oct-20	MW19 15-Apr-21	MW19 13-Oct-21	MW19 12-Apr-22	MW19 16-Oct-22	MW19 26-Apr-23	MW19 11-Oct-23	MW19 29-Apr-24	MW19 08-Oct-24	MW19 28-Apr-25	MW19 02-Oct-25	MW20-I 26-Apr-23	MW20-I 11-Oct-23	MW20-I 29-Apr-24	MW20-I 08-Oct-24	MW20-I 28-Apr-25
Alkalinity	mg/L	500	-	304	-	169	149	124	132	132	140	133	151	134	143	150	139	118	124	110	240	230	274	211	320
Calcium	mg/L	NV	-	-	-	39.3	35.7	27.6	35.9	34.6	46.8	38.9	38.8	33.3	39.5	33.6	33.9	37.1	29	28.8	71.4	67	74.5	74.3	80.2
Chloride	mg/L	250	128	-	120	18.5	10.8	8.4	9	12.2	14.5	10.8	10.7	8	10.8	7.1	7.7	6.1	6	4.2	20.8	17.4	24.5	18.5	29
COD	mg/L	NV	-	127	-	< 5	11	9	9		5	17	11	< 5	< 5	13	9	7	6	22	46	24	37	30	38
Conductivity	µS/cm	NV	-	-	-	448	393	311	345	356	410	355	367	342	374	329	359	310	307	258	601	550	685	550	777
DOC	mg/L	5	-	3.6	-	4.6	4.3	3.9	3.5	4	5.9	4.1	4.4	3.9	4.3	2.9	3.8	4.6	4.1	3.8	4	6.5	6.8	6.3	10.7
Fluoride	mg/L	1.5	-	0.45	-	< 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	< 0.1	< 0.1	< 0.1	< 0.1
Hardness	mg/L	500	-	311	-	168	146	117	145	133	187	157	160	136	157	134	144	149	120	114	259	245	292	277	310
Iron	mg/L	0.3	-	0.36	0.3	0.011	0.011	0.01	0.007	0.007	0.011	0.017	< 0.005	< 0.005	0.005	0.007	< 0.005	0.111	< 0.005	< 0.005	3.62	3.97	1.99	1.88	1.01
Magnesium	mg/L	NV	-	-	-	16.9	13.8	11.8	13.5	11.4	17.1	14.5	15.2	12.9	14.2	12.2	14.4	13.8	11.7	10.3	19.7	18.8	25.6	22.3	26.6
Manganese	mg/L	0.05	-	0.03	-	0.048	0.043	0.038	0.05	0.049	0.074	0.064	0.068	0.06	0.072	0.064	0.067	0.075	0.066	0.063	1.61	1.03	1.08	0.979	1.38
Mercury	mg/L	0.001	-	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	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	mg/L	10	-	2.5	13	< 0.05	< 0.05	< 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	0.11	0.08	0.06	< 0.05
Nitrite	mg/L	1	-	0.29	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
pH	pH Units	6.5 - 8.5	-	-	-	7.48	7.18	7.42	7.33	7.51	7.32	6.94	7.55	7.36	7.11	6.73	7.04	7.76	6.88	7.28	7.44	6.87	7.08	7.67	7.12
Phenols	mg/L	NV	-	-	0.001	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	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus	mg/L	NV	-	-	0.03	< 0.1	0.27	0.04	< 0.1	0.06	0.02	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Potassium	mg/L	NV	-	-	-	3.4	2.7	2.9	3	2.7	3.2	2.9	2.9	2.7	2.8	2.5	3	3.2	2.6	2.5	5.6	4.6	5.5	5.3	5.6
Sodium	mg/L	200	-	101	-	28.7	24.4	25.4	22.3	19.3	19.6	16.6	15	12.7	14.2	12.2	12.9	11.8	8.3	7.2	18.1	18.7	14.5	15.6	25.5
Sulphate	mg/L	500	-	258	-	31	25	20	26	29	39	34	28	27	34	25	34	26	25	17	45	46	50	41	54
TDS	mg/L	500	340	314	-	239	202	171	189	189	224	198	201	177	202	169	185	159	158	132	330	285	356	285	407
TKN	mg/L	NV	-	-	-	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.6	0.6
Ammonia	mg/L	NV	-	-	-	0.02	0.05	0.03	< 0.01	0.04	0.01	0.04	0.13	< 0.01	0.03	0.53	0.14	0.1	0.06	0.1	0.12	0.12	0.12	0.21	0.2
Aluminum	mg/L	0.1	-	0.06	0.075	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.01	< 0.01	0.02	0.03	0.02	0.02	< 0.01	0.01	0.03	0.04	0.06	0.03	0.03
Antimony	mg/L	0.006	-	0.0016	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	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.025	-	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	0.0002	0.0003	0.0003	0.0002	0.0002	0.0002
Barium	mg/L	1	-	0.33	-	0.185	0.149	0.126	0.16	0.152	0.206	0.173	0.172	0.149	0.175	0.15	0.148	0.162	0.131	0.119	0.184	0.178	0.204	0.208	0.256
Beryllium	mg/L	NV	-	-	0.011	< 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	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Boron	mg/L	5	1.3	1.3	1.3	0.424	0.392	0.331	0.442	0.516	0.868	0.802	0.721	0.542	0.72	0.543	0.604	0.478	0.31	0.225	0.712	0.629	0.983	0.718	1.24
Cadmium	mg/L	0.005	-	0.001	0.0001	0.00003	0.00003	0.000028	0.000053	0.000026	0.000034	0.000022	0.000029	0.000022	0.000031	0.000025	0.000024	0.000018	0.000025	0.000015	< 0.000010	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	mg/L	0.05	-	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	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	NV	-	-	0.0009	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0009	0.0007	0.0009	0.0004	0.0005	< 0.005	0.0011	0.0023	0.0018	0.0036
Copper	mg/L	1	-	0.5	0.005	0.0042	0.0048	0.0034	0.0035	0.0039	0.0057	0.0045	0.0036	0.0038	0.0038	0.0039	0.0032	0.0021	0.0026	0.0026	0.0004	0.0006	0.0008	0.0004	0.0009
Lead	mg/L	0.01	-	0.0025	0.003	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005	0.00003	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00004	0.00022	< 0.00002	0.0001
Molybdenum	mg/L	NV	-	-	0.04	0.0002	0.0003	0.0004	0.0003	0.0003	0.0002	0.0002	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0017	0.0012	0.0005	0.0007	0.0006
Nickel	mg/L	NV	-	-	0.025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0011	0.0013	0.0009	0.0009	0.0009	< 0.01	0.0019	0.0034	0.0018	0.0041
Selenium	mg/L	0.01	-	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	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	NV	-	-	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	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	mg/L	NV	-	-	-	0.345	0.276	0.242	0.271	0.263	0.345	0.312	0.302	0.261	0.308	0.258	0.308	0.307	0.242	0.223	0.763	0.641	0.886	0.782	0.867
Thallium	mg/L	NV	-	-	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	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	mg/L	NV	-	-	0.006	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0005	0.0008	0.0006	0.0003
Zinc	mg/L	5	-	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	< 0.005	< 0.005	< 0.005	< 0.005
Field Conductivity	µs/cm	NV	-	-	-	395	440	280	375	285	500	380	330	300	310	265	326	412	281	313	445	400	718	502	737
Field pH	-	6.5 - 8.5	-	-	-	7.31	7.51	7.39	7.33	7.18	7.87	6.95	7.15	7.2	7.34	7.16	7.16	7.27	7.42	6.83	7.04	6.73	7.24	7.09	6.65
Field Temperature	°C	NV	-	-	-	10.5	9.4	8.9	6.6	10	7.8	10.1	10.6	9.3	9.4	10	9.5	8.5	9.5	10.4	12	12.4	8.5	13.1	10.3

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

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Overburden Ground Water Quality Data

PARAMETER	UNITS	ODWQS	Trigger Limits	RUP	PWQO / CWQG	MW20-I 02-Oct-25	MW20-I (Dup) 02-Oct-25	MW20-II 26-Apr-23	MW20-II 11-Oct-23	MW20-II 29-Apr-24	MW20-II 08-Oct-24	MW20-II 28-Apr-25	MW20-II 02-Oct-25
Alkalinity	mg/L	500	-	304	-	230	230	101	168	104	142	136	196
Calcium	mg/L	NV	-	-	-	69.7	69.8	30.1	41	25.2	46.1	28.7	54.2
Chloride	mg/L	250	128	-	120	21.4	21.4	1.7	1.7	2	3.6	3.1	8.3
COD	mg/L	NV	-	127	-	41	39	102	53	71	35	42	75
Conductivity	µS/cm	NV	-	-	-	572	570	226	313	229	329	297	428
DOC	mg/L	5	-	3.6	-	8	8.4	5.1	12.7	6.9	10.4	8	13.5
Fluoride	mg/L	1.5	-	0.45	-	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1
Hardness	mg/L	500	-	311	-	261	262	111	158	103	180	115	213
Iron	mg/L	0.3	-	0.36	0.3	1.01	1.02	1.12	2.42	1.8	2.69	1.71	3.89
Magnesium	mg/L	NV	-	-	-	21.1	21.2	8.64	13.5	9.85	15.7	10.4	18.9
Manganese	mg/L	0.05	-	0.03	-	0.842	0.842	0.701	0.621	0.571	0.457	0.55	0.764
Mercury	mg/L	0.001	-	0.0003	0.0002	<0.00002	<0.00002	< 0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Nitrate	mg/L	10	-	2.5	13	<0.05	<0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite	mg/L	1	-	0.29	0.06	<0.05	<0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH	pH Units	6.5 - 8.5	-	-	-	7.5	7.52	7.09	6.78	6.97	7.7	6.98	7.46
Phenols	mg/L	NV	-	-	0.001	0.003	0.003	< 0.001	<0.001	<0.001	<0.001	0.001	<0.001
Phosphorus	mg/L	NV	-	-	0.03	<0.1	<0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	NV	-	-	-	4.7	4.7	2.2	1.8	1.8	2.1	1.5	2.1
Sodium	mg/L	200	-	101	-	15.3	15.4	2.1	1.9	2.4	2.8	2.6	9
Sulphate	mg/L	500	-	258	-	39	39	8	5	10	17	13	15
TDS	mg/L	500	340	314	-	297	296	116	161	117	169	152	221
TKN	mg/L	NV	-	-	-	0.6	0.6	0.7	0.5	0.4	0.7	0.4	0.8
Ammonia	mg/L	NV	-	-	-	0.25	0.36	0.19	0.21	0.17	0.39	0.17	0.4
Aluminum	mg/L	0.1	-	0.06	0.075	0.03	0.03	< 0.01	0.06	0.29	0.03	0.07	0.04
Antimony	mg/L	0.006	-	0.0016	0.02	<0.0001	<0.0001	< 0.0001	<0.0001	0.0003	0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.025	-	0.006	0.005	0.0002	0.0002	0.0004	0.0008	0.0007	0.0007	0.0004	0.0007
Barium	mg/L	1	-	0.33	-	0.195	0.195	0.043	0.05	0.032	0.047	0.031	0.058
Beryllium	mg/L	NV	-	-	0.011	<0.0001	<0.0001	< 0.002	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	5	1.3	1.3	1.3	0.706	0.708	0.035	0.031	0.02	0.055	0.034	0.311
Cadmium	mg/L	0.005	-	0.001	0.0001	<0.000015	<0.000015	< 0.000010	<0.000015	0.00002	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.05	-	0.013	0.001	<0.001	<0.001	< 0.001	0.002	<0.001	0.001	<0.001	0.002
Cobalt	mg/L	NV	-	-	0.0009	0.0035	0.0034	< 0.005	0.0004	0.0013	0.0005	0.0004	0.0003
Copper	mg/L	1	-	0.5	0.005	0.0004	0.0004	0.0006	0.001	0.0039	0.0003	0.0015	0.0004
Lead	mg/L	0.01	-	0.0025	0.003	<0.00002	<0.00002	0.00005	0.00026	0.0006	0.00002	0.0004	0.00006
Molybdenum	mg/L	NV	-	-	0.04	0.0006	0.0006	0.0011	0.0002	0.0013	0.0003	0.0009	0.0006
Nickel	mg/L	NV	-	-	0.025	0.0027	0.003	< 0.01	0.0008	0.0028	0.0007	0.0007	0.0009
Selenium	mg/L	0.01	-	0.003	0.1	<0.001	<0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	NV	-	-	0.0001	<0.0001	<0.0001	< 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium	mg/L	NV	-	-	-	0.691	0.697	0.251	0.351	0.249	0.478	0.277	0.516
Thallium	mg/L	NV	-	-	0.0003	<0.00005	<0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Vanadium	mg/L	NV	-	-	0.006	0.0005	0.0005	0.0049	0.0124	0.006	0.0095	0.0041	0.0088
Zinc	mg/L	5	-	2.5	0.02	<0.005	<0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Field Conductivity	µs/cm	NV	-	-	-	607	607	220	255	199	313	258	500
Field pH	-	6.5 - 8.5	-	-	-	6.39	6.39	7.48	6.85	7.6	7.16	7.23	6.44
Field Temperature	°C	NV	-	-	-	12.7	12.7	11	14.3	7.2	12.6	8.1	13.4

ODWQS - Ontario Drinking Water Quality Objectives

PWQO - Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines (underlined value) - long term criteria

RUP - Reasonable Use Policy Criteria

Bold / Grey Highlighting - ODWQS Exceedance

Bold / Underlined - PWQO / CWQG Exceedance

Red Bold / Italics - RUP Exceedance

Green Bold / italics - Trigger Exceedance

Surface Water Quality Data

Parameter	Trigger Limits	PWQO	SWA 09-Jun-15	SWA 29-Jul-15	SWA 11-Sep-15	SWA 30-May-16	SWA 24-Aug-16	SWA 17-Oct-16	SWA 19-Apr-17	SWA 17-Jul-17	SWA 17-Oct-17	SWA 24-Apr-18	SWA 18-Jul-18	SWA 26-Sep-18	SWA 17-Apr-19	SWA 18-Jul-19
Alkalinity	-	-	186	172	72	68	133	79	79	150	142	39	151	134	110	13
BOD	-	NV	11	8	< 3	<2	3	8	< 3	< 3	< 3	< 3	36	3	< 3	5
Calcium	-	NV	54.2	87.8	27	23.7	53.5	77.5	22.7	36.1	43.4	15.3	46.3	36.3	29.5	5.84
Chloride	128	NV	0.7	0.9	1.7	1.3	0.6	3.6	1.5	1.1	2.3	< 0.5	4.5	1.8	1.8	< 0.5
COD	-	NV	113	489	91	359	79	72	38	55	69	46	148	65	15	61
Colour	-	NV	79	185	308	289	97	61	102	95	150	70	110	120	40	164
Conductivity (µS/cm)	-	NV	354	341	191	141	398	543	179	291	290	84	315	262	238	36
DOC	-	NV	16.5	25.7	46.5	29.3	20.2	19	13.8	18.9	21	8.7	25.2	20.1	7.6	15.8
Fluoride	-	NV	0.1	< 0.1	0.1	0.2	0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	< 0.005	< 0.005	< 0.005
Hardness	-	NV	213	307	109	91	215	288	97	148	177	60	184	140	120	16
Iron	-	0.3	8.35	68.2	0.336	2.36	0.293	0.448	0.069	0.242	0.426	0.125	5.48	0.401	0.187	4.57
Magnesium	-	NV	18.7	21.3	10.2	7.82	19.7	22.9	9.38	13.9	16.6	5.39	16.5	13.8	11.9	0.86
Manganese	-	NV	0.623	3.59	0.14	0.133	0.218	0.433	0.017	0.096	0.291	0.035	1.29	0.371	0.034	0.125
Mercury	-	0.0002	< 0.00002	< 0.00002	< 0.00002	0.00009	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00004	< 0.00002	< 0.00002	< 0.00002
Nitrate	-	NV	0.1	0.1	< 0.1	0.1	0.2	<0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.17	0.09
Nitrite	-	NV	< 0.1	< 0.1	< 0.1	<0.1	0.1	0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
pH	-	6.5 - 8.5	7.77	7.12	7.21	7.02	7.67	7.21	7.32	8.03	7.84	7.11	7.68	7.69	7.53	6.56
Phenols	-	0.001	< 0.001	< 0.001	< 0.001	<0.001	<0.001	0.002	0.002	0.009	0.004	< 0.001	0.002	0.003	< 0.002	< 0.002
Phosphorus	-	0.03	0.56	9.18	0.08	0.76	0.06	0.21	0.03	0.09	0.17	0.06	1.18	0.09	0.26	0.18
Potassium	-	NV	0.7	1.7	1.8	1.4	0.8	1.7	0.5	0.7	2.2	1.1	7.8	0.6	0.7	0.3
Sodium	-	NV	1.9	2.5	1.3	1.8	1.2	5	1	1	2.2	1.9	2.9	0.9	1.3	1.1
Sulphate	-	NV	2	2	18	1	73	193	9	1	3	2	< 1	1	4	< 1
TDS	-	NV	200	297	104	81.2	231	352	92.2	144	145	49	177	136	116	21
TKN	-	NV	3.1	53.4	1.5	8.2	1.3	2.4	0.6	0.9	1.1	0.6	5.4	1.1	0.5	1.8
Ammonia	-	NV	0.19	3.75	0.03	0.21	0.24	0.06	0.03	0.06	0.03	0.07	0.74	0.1	0.22	0.08
TSS	-	NV	148	1000	8	620	16	122	< 3	6	10	6	1200	6	< 3	70
Turbidity (NTU)	-	NV	47.7	458	1.6	177	4.4	32.7	0.8	1.2	2.4	1	114	1.8	0.8	15.9
Ammonia - Unionized	0.011	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
Aluminum	-	0.075	0.62	7.01	0.13	1.28	0.03	0.04	0.07	0.02	0.04	0.03	0.03	0.04	0.03	0.06
Antimony	-	0.02	0.0002	0.0003	0.0003	0.0001	0.0001	0.0001	< 0.0001	0.0001	0.0001	< 0.0001	0.0002	0.0001	< 0.0001	0.0002
Arsenic	-	0.005	0.001	0.0055	0.001	0.0008	0.0006	0.0004	0.0002	0.0003	0.0005	0.0004	0.0009	0.0003	0.0001	0.0001
Barium	-	NV	0.145	0.661	0.053	0.081	0.086	0.1	0.041	0.059	0.071	0.029	0.193	0.063	0.039	0.024
Beryllium	-	0.011	< 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	0.11	0.2	0.012	0.053	0.024	0.008	0.021	0.033	< 0.005	0.011	0.015	0.006	0.057	< 0.005	0.007	0.035
Cadmium	-	0.0001	0.00023	0.0022	0.00005	0.00033	<0.00002	<0.00002	0.000043	< 0.000014	0.000062	0.000062	0.000125	0.000125	< 0.000015	0.000026
Chromium	-	0.001	0.0012	0.0045	0.0008	0.0018	<0.0002	0.0006	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.001	< 0.001	< 0.001
Cobalt	-	0.0009	< 0.005	0.013	< 0.005	<0.005	0.0002	0.0003	< 0.0001	0.0001	0.0002	< 0.0001	0.0013	0.0003	0.0002	0.001
Copper	-	0.005	0.0031	0.0244	0.0033	0.0102	0.0004	<0.0001	< 0.0001	0.0002	0.0097	0.0062	0.0048	0.0048	0.0002	0.0013
Lead	-	0.003	0.00474	0.0306	0.00109	0.00382	0.00005	<0.00002	0.00007	0.00008	0.00079	0.00122	0.00221	0.00036	0.00003	0.00015
Molybdenum	-	0.04	0.0006	0.0012	0.0004	0.0003	0.0011	0.0005	0.0002	0.0004	0.0004	0.0002	0.0006	0.0002	0.0003	< 0.0001
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	< 0.01	< 0.01	< 0.01
Selenium	-	0.1	< 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	-	0.0001	< 0.00002	0.00015	0.00002	0.00004	<0.00002	<0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	-	NV	0.452	0.753	0.237	0.204	0.426	0.572	0.182	0.295	0.273	0.117	0.347	0.307	0.188	0.025
Thallium	-	0.0003	< 0.00005	0.00022	< 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	0.0024	0.0241	0.0006	0.003	0.0002	0.0002	0.0002	< 0.0001	0.0002	0.0002	0.0011	0.0001	0.0003	0.0003
Zinc	-	0.02	0.032	0.311	0.021	0.038	<0.005	0.014	0.006	0.007	0.054	0.036	0.027	0.023	0.01	0.008
Field Temperature (°C)	-	NV	20.89	20.1	16.26	14.75	-	12.1	7.7	19.6	5.4	1.7	16.8	17	2	18.9
Field Dissolved Oxygen (mg/L)	-	NV	5.98	0.18	2.22	0.01	-	4.73	6.2	1.08	1.32	6.58	0.48	3.2	8.74	0.85
Field pH (units)	-	6.5 - 8.5	7.46	6.99	7.01	7.98	-	7.65	7.89	8.36	7.45	8.37	6.95	6.6	7.94	7.74
Field Conductivity (µs/cm)	-	NV	308	361.6	156	139	-	520	150	223	235	160	290	225	270	52

Notes:

1. All results are expressed in mg/L unless otherwise stated.
2. PWQO = Provincial Water Quality Objective, 1994.
3. Bold highlighted text indicate values exceeding PWQO.
4. Bold & Highlighted indicates Trigger Exceedance

Surface Water Quality Data

Parameter	Trigger Limits	PWQO	SWA 18-Oct-19	SWA 21-Apr-20	SWA 20-Jul-20	SWA 13-Oct-20	SWA 15-Apr-21	SWA 16-Aug-21	SWA 13-Oct-21	SWA 12-Apr-22	SWA 20-Jul-22	SWA 16-Oct-22	SWA 26-Apr-23	SWA 11-Aug-23	SWA 11-Oct-23	SWA 29-Apr-24
Alkalinity	-	-	95	96	Dry	116	136	162	219	62	Dry	109	107	Dry	146	145
BOD	-	NV	4	< 3		< 3	< 3	< 3	7	< 3		< 3	< 3		9	3
Calcium	-	NV	30.6	29.5		36.4	36.2	46.6	62.2	18.1		26.4	7.88		23.2	36.8
Chloride	128	NV	2.9	1.8		2.3	2.2	0.8	4.8	2.7		3.6	0.9		8	1.9
COD	-	NV	59	28		42	29	68	81	42		45	33		86	89
Colour	-	NV	125	57		131	79	88	190	79		127	75		195	63
Conductivity (µS/cm)	-	NV	241	214		239	275	302	405	145		215	223		278	273
DOC	-	NV	24.1	9.1		0.9	15.2	21.9	26.9	14.7		18.6	18.4		43.8	10
Fluoride	-	NV	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1		<0.1	<0.1
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
Hardness	-	NV	130	120		145	161	181	241	79		110	118		127	151
Iron	-	0.3	0.203	0.061		0.108	0.087	0.404	0.472	0.097		0.06	0.077		0.803	0.324
Magnesium	-	NV	13.4	11.2		13.1	13.6	14.9	25.7	6.82		11.1	9.79		16.9	14.3
Manganese	-	NV	0.061	0.003		0.017	0.009	0.263	0.894	0.008		0.014	0.003		0.679	0.052
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
Nitrate	-	NV	< 0.05	< 0.05		< 0.05	< 0.05	0.07	0.13	1.34		< 0.05	0.12		<0.05	0.12
Nitrite	-	NV	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	< 0.05		<0.05	<0.05
pH	-	6.5 - 8.5	7.75	7.73		7.94	8	7.89	7.78	7.53		7.25	7.88		7.36	7.9
Phenols	-	0.001	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002	0.005	< 0.001		< 0.001	< 0.001		0.002	<0.001
Phosphorus	-	0.03	0.06	0.01		0.03	0.05	0.13	0.13	< 0.1		< 0.1	< 0.1		0.38	0.31
Potassium	-	NV	1.7	0.5		0.6	0.9	0.2	2.3	0.8		1.2	0.5		6.3	0.5
Sodium	-	NV	1.4	1.5		0.8	1.8	0.5	2.5	1.3		1.8	1.4		3.1	1.8
Sulphate	-	NV	18	8		4	7	3	< 1	7		2	6		<1	5
TDS	-	NV	125	110		122	143	163	231	75		112	108		147	148
TKN	-	NV	0.8	0.4		0.7	0.7	1.9	1.3	0.6		0.6	0.6		2.1	2.7
Ammonia	-	NV	0.04	< 0.01		0.03	0.02	0.06	0.08	0.57		< 0.01	0.15		0.14	<0.05
TSS	-	NV	61	5		< 3	3	43	13	5		14	< 3		20	12
Turbidity (NTU)	-	NV	1.2	0.7		2.1	1.4	16.3	2.4	0.6		1.5	0.6		8	4.6
Ammonia - Unionized	0.011	0.02	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01		<0.01	<0.01
Aluminum	-	0.075	0.05	0.02		0.03	0.04	0.02	0.04	0.05		< 0.01	0.02		0.03	0.15
Antimony	-	0.02	0.0003	< 0.0001		0.0002	0.0003	0.0004	0.0002	0.0003		0.0003	0.0002		0.0005	0.0001
Arsenic	-	0.005	0.0003	0.0002		0.0002	0.0002	0.0004	0.0003	0.0002		0.0001	0.0002		0.0002	0.0002
Barium	-	NV	0.043	0.037		0.05	0.048	0.071	0.112	0.025		0.035	0.037		0.044	0.054
Beryllium	-	0.011	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002		<0.0001	<0.0001
Boron	0.11	0.2	0.017	0.007		0.02	0.012	0.022	0.022	0.012		0.013	0.007		0.008	0.008
Cadmium	-	0.0001	< 0.000015	< 0.000015		< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015		< 0.000015	< 0.000015		<0.000015	0.000034
Chromium	-	0.001	0.001	< 0.001		< 0.001	< 0.001	0.004	0.002	< 0.001		0.005	< 0.001		<0.001	<0.001
Cobalt	-	0.0009	0.0002	< 0.0001		< 0.0001	< 0.0001	0.0004	0.0005	0.0001		< 0.0001	< 0.0001		0.0005	0.0001
Copper	-	0.005	0.0005	0.0002		0.0003	0.0002	0.0004	0.0003	0.0004		0.0002	0.0003		0.0003	0.0009
Lead	-	0.003	0.00014	0.00007		0.00003	0.00004	0.00009	0.00007	0.00005		0.00003	< 0.00002		0.00005	0.00065
Molybdenum	-	0.04	0.0006	0.0003		0.0002	0.0004	< 0.0001	0.0002	0.0002		0.0001	0.0002		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		0.0007	0.0006
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	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001		<0.0001	<0.0001
Strontium	-	NV	0.248	0.185		0.283	0.269	0.391	0.538	0.134		0.215	0.214		0.192	0.261
Thallium	-	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	0.0003		0.0001	0.0002	0.0001	0.0001	0.0004		0.0001	0.0001		0.0001	0.0004
Zinc	-	0.02	0.009	< 0.005		< 0.005	0.107	0.022	0.009	< 0.005		< 0.005	< 0.005		<0.005	0.008
Field Temperature (°C)	-	NV	7.1	4		10.2	6.6	15.4	16.1	4.1		7.9	4.7		4.7	10.4
Field Dissolved Oxygen (mg/L)	-	NV	5.62	9.61		7.71	18.85	2.01	0.28	8.02		4.2	8		3.95	2.78
Field pH (units)	-	6.5 - 8.5	7.31	8.05		7.49	8.28	7	7.17	6.95		7.07	8.55		8.55	7.45
Field Conductivity (µs/cm)	-	NV	200	230		210	360	266.3	430	170		220	190		230	256

Notes:

1. All results are expressed in mg/L unless otherwise stated.
2. PWQO = Provincial Water Quality Objective, 1994.
3. Bold highlighted text indicate values exceeding PWQO.
4. Bold & Highlighted indicates Trigger Exceedance

Surface Water Quality Data

Parameter	Trigger Limits	PWQO	SWA	SWA	SWA	SWA	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2
			03-Jul-24	08-Oct-24	25-Apr-25	02-Oct-25	09-Jun-15	29-Jul-15	10-Sep-15	30-May-16	24-Aug-16	17-Oct-16	19-Apr-17	17-Jul-17	17-Oct-17	24-Apr-18
Alkalinity	-	-	127	140	106	Dry	185	244	180	177	205	179	103	180	160	89
BOD	-	NV	<3	<3	<3		< 2	25	< 3	5	<3	<3	< 3	< 3	< 3	< 3
Calcium	-	NV	33	35.1	27.1		60.8	85.5	65.4	46.9	54.5	54.2	29.8	52.9	46.2	23.3
Chloride	128	NV	<0.5	6.2	1.8		4.7	4.6	4	1.7	3.1	4.2	2.8	2.4	3.8	0.8
COD	-	NV	49	51	42		36	511	30	63	58	22	24	57	28	18
Colour	-	NV	95	112	36		59	70	94	200	79	47	50	165	64	25
Conductivity (µS/cm)	-	NV	242	282	220		454	503	431	352	422	381	234	361	346	191
DOC	-	NV	20	19.5	15.1		14.9	17.1	17.1	17.7	17.7	12.5	9.1	21.7	12.3	5
Fluoride	-	NV	<0.1	<0.1	<0.1		0.2	0.2	0.2	0.2	0.2	0.1	< 0.1	0.1	< 0.1	< 0.1
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	< 0.005	< 0.005
Hardness	-	NV	126	151	111		220	296	242	187	207	201	124	203	178	98
Iron	-	0.3	0.109	0.313	0.118		5.49	137	2.65	2.87	3.03	3.23	0.356	9.37	2.41	0.226
Magnesium	-	NV	10.7	15.5	10.6		16.6	20.1	19	16.9	17.2	16.1	11.4	17.2	15.2	9.61
Manganese	-	NV	0.024	0.067	0.035		0.667	21	0.457	0.867	0.537	0.433	0.029	0.539	0.267	0.036
Mercury	-	0.0002	<0.00002	<0.00002	<0.00002		< 0.00002	0.00003	< 0.00002	0.00003	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nitrate	-	NV	0.05	0.05	0.05		< 0.1	< 0.1	< 0.1	<0.1	0.1	<0.1	< 0.1	< 0.05	< 0.05	< 0.05
Nitrite	-	NV	<0.05	<0.05	<0.05		< 0.1	< 0.1	< 0.1	<0.1	<0.1	0.2	< 0.1	< 0.05	< 0.05	< 0.05
pH	-	6.5 - 8.5	7.85	7.7	7.62		7.64	7.21	7.65	7.59	7.61	7.78	7.69	7.71	7.98	7.83
Phenols	-	0.001	<0.001	<0.001	0.003		< 0.001	< 0.001	< 0.001	0.014	<0.001	<0.001	< 0.001	0.011	0.002	< 0.001
Phosphorus	-	0.03	0.04	0.04	0.05		0.01	0.68	< 0.01	0.07	0.05	0.07	0.01	0.12	0.03	0.02
Potassium	-	NV	<0.1	2.2	1.1		1	1.2	1	1.9	2.1	2	0.9	1.4	2.5	1
Sodium	-	NV	0.4	3.7	1.4		6.6	7.9	5.1	2.3	3.7	4.3	1.9	3.5	3.1	1.3
Sulphate	-	NV	<1	1	6		44	17	40	7	11	13	15	3	11	9
TDS	-	NV	121	148	112		251	441	246	186	219	206	124	198	177	99
TKN	-	NV	0.9	0.9	0.8		0.6	4.3	0.9	1	1	0.7	0.5	1.1	0.7	0.3
Ammonia	-	NV	0.13	0.12	0.07		0.02	0.13	0.02	0.04	0.2	0.15	< 0.01	0.1	0.14	0.01
TSS	-	NV	4	6	9		34	1300	4	15	12	14	7	32	6	< 3
Turbidity (NTU)	-	NV	1.5	2	1.1		17.8	749	5.4	5.2	10.9	13.2	1.7	23.6	7.5	0.9
Ammonia - Unionized	0.011	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
Aluminum	-	0.075	0.04	0.02	0.03		0.05	0.28	0.03	0.04	0.03	0.03	0.02	0.08	0.04	0.02
Antimony	-	0.02	0.0004	0.0004	0.0004		0.0001	0.0003	0.0002	0.0001	<0.0001	<0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001
Arsenic	-	0.005	0.0002	0.0002	0.0002		0.0004	0.002	0.0005	0.0005	0.0004	0.0005	0.0002	0.0007	0.0003	0.0004
Barium	-	NV	0.05	0.049	0.038		0.067	0.549	0.077	0.072	0.08	0.073	0.032	0.088	0.06	0.022
Beryllium	-	0.011	<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	0.11	0.2	0.006	0.012	0.007		0.097	0.128	0.07	0.01	0.046	0.048	< 0.005	0.039	0.028	0.009
Cadmium	-	0.0001	<0.000015	<0.000015	<0.000015		< 0.00002	0.0001	0.00004	0.00004	<0.00002	<0.00002	< 0.000014	0.000115	0.000055	< 0.000014
Chromium	-	0.001	<0.001	<0.001	<0.001		0.0007	0.0014	0.0005	0.0005	<0.0002	0.0004	< 0.001	0.002	< 0.001	< 0.001
Cobalt	-	0.0009	0.0002	0.0002	0.0002		< 0.005	0.009	< 0.005	<0.005	0.0001	<0.0001	< 0.0001	0.0005	< 0.0001	< 0.0001
Copper	-	0.005	0.0009	0.0001	0.0003		0.0009	0.002	0.0022	0.0048	<0.0001	<0.0001	< 0.0001	0.0127	0.0083	< 0.0001
Lead	-	0.003	0.00004	0.00003	0.00007		0.00053	0.00195	0.00044	0.00029	0.00003	<0.00002	< 0.00002	0.00134	0.00036	0.00005
Molybdenum	-	0.04	<0.0001	<0.0001	0.0002		0.0004	0.0008	0.0003	0.003	0.0001	0.0001	0.0005	0.0005	0.0002	0.0003
Nickel	-	0.025	0.0005	0.0003	<0.0002		< 0.01	< 0.01	< 0.01	<0.01	<0.01	<0.01	< 0.01	< 0.01	< 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	< 0.001	< 0.001	< 0.001
Silver	-	0.0001	<0.0001	<0.0001	<0.0001		< 0.00002	0.00004	< 0.00002	<0.00002	<0.00002	<0.00002	0.00006	< 0.00002	< 0.00002	< 0.00002
Strontium	-	NV	0.273	0.271	0.197		0.884	1.08	0.952	0.479	0.617	0.62	0.291	0.596	0.435	0.212
Thallium	-	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	<0.0001	<0.0001	0.0002		0.0008	0.0055	0.0003	0.0008	0.0004	0.0005	0.0004	0.0017	0.0003	0.0003
Zinc	-	0.02	0.029	<0.005	0.006		< 0.005	0.155	< 0.005	0.011	<0.005	<0.005	< 0.005	0.019	0.006	0.005
Field Temperature (°C)	-	NV	18.9	15.7	5.5		16.82	23.4	19.55	22.24	-	11.3	9.9	21.3	11.1	6.8
Field Dissolved Oxygen (mg/L)	-	NV	1.09	1.87	4.37		4.03	2.03	5.7	0.66	-	4.76	7.62	2.06	7.76	9.53
Field pH (units)	-	6.5 - 8.5	6.44	7.34	6.99		7.06	7.36	7	6.59	-	7.09	7.35	7.19	4.88	7.53
Field Conductivity (µs/cm)	-	NV	286	195	197		376	527	385	335	-	370	198	290	205	250

Notes:

1. All results are expressed in mg/L unless otherwise stated.
2. PWQO = Provincial Water Quality Objective, 1994.
3. Bold highlighted text indicate values exceeding PWQO.
4. Bold & Highlighted indicates Trigger Exceedance

Surface Water Quality Data

Parameter	Trigger Limits	PWQO	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2	SWC2
			18-Jul-18	26-Sep-18	17-Apr-19	18-Jul-19	18-Oct-19	21-Apr-20	20-Jul-20	13-Oct-20	15-Apr-21	16-Aug-21	13-Oct-21	12-Apr-22	20-Jul-22	16-Oct-22
Alkalinity	-	-	178	170	89	194	138	100	187	143	119	226	185	97	221	165
BOD	-	NV	< 2	2	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	4
Calcium	-	NV	61.6	47.8	24.9	55.3	41.3	29	65.1	46.9	32.8	58.1	52.9	25.9	59.6	45.8
Chloride	128	NV	5.9	5.2	1.9	3.3	3.1	3.2	6	4.4	3.5	4.2	4.2	3	2.9	3.9
COD	-	NV	56	34	14	49	32	20	34	39	19	41	47	26	42	76
Colour	-	NV	70	130	31	174	37	32	73	47	39	124	103	34	82	31
Conductivity (µS/cm)	-	NV	392	352	203	388	317	239	400	312	273	418	348	212	407	329
DOC	-	NV	12.1	17.5	6.6	19.3	12.5	6.9	15.5	15.1	10.6	18.8	14.7	8.2	19	14.1
Fluoride	-	NV	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.4	< 0.1	< 0.1	< 0.1	< 0.1
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	< 0.005	< 0.005	< 0.005
Hardness	-	NV	220	177	101	203	166	129	218	172	149	243	196	116	221	164
Iron	-	0.3	5.85	6.72	0.354	12.6	1	0.189	4.85	8.3	0.539	11.4	7.26	0.407	6.82	28.6
Magnesium	-	NV	16.1	14.3	9.99	17.2	15.2	10.8	17.7	13.4	11.2	17.1	17.5	9.57	17.6	14.8
Manganese	-	NV	0.393	0.392	0.044	0.481	0.047	0.018	0.328	0.162	0.061	0.529	0.393	0.036	0.424	0.461
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	< 0.00002
Nitrate	-	NV	< 0.05	< 0.05	0.13	< 0.05	< 0.05	0.06	< 0.05	< 0.05	0.08	< 0.05	< 0.05	0.09	0.07	< 0.05
Nitrite	-	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
pH	-	6.5 - 8.5	7.77	7.71	7.49	7.72	7.91	7.65	7.75	7.89	7.88	7.81	7.67	7.78	7.57	7.34
Phenols	-	0.001	< 0.001	0.003	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001
Phosphorus	-	0.03	0.12	0.08	0.24	0.18	0.05	< 0.01	0.05	0.14	0.01	0.11	0.06	< 0.1	< 0.1	0.4
Potassium	-	NV	1.3	1.3	0.9	0.4	0.9	1	1.5	1.3	1.7	1	1.5	1.2	0.6	1
Sodium	-	NV	4.9	3.2	1.5	4	2.6	2.5	6.7	3.6	3.2	4.1	3.8	1.8	4.5	4.4
Sulphate	-	NV	20	6	7	2	17	15	7	11	16	3	3	14	4	9
TDS	-	NV	223	187	100	212	164	122	221	162	141	236	202	115	229	181
TKN	-	NV	0.9	0.8	0.4	1	0.7	0.3	0.7	0.9	0.4	1	0.7	0.9	0.9	1.7
Ammonia	-	NV	0.32	0.09	0.08	0.2	0.05	< 0.01	0.12	0.05	0.05	0.28	0.13	0.92	0.35	0.06
TSS	-	NV	13	8	4	50	11	< 3	3	22	7	15	10	3	12	70
Turbidity (NTU)	-	NV	46.7	17.7	1.4	18.2	15.7	0.8	17.1	20.7	1.9	39.1	2.2	1.9	170	0.2
Ammonia - Unionized	0.011	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
Aluminum	-	0.075	0.03	0.04	0.03	0.05	0.04	0.02	0.04	0.03	0.04	0.02	0.04	0.02	0.03	< 0.01
Antimony	-	0.02	< 0.0001	< 0.0001	0.0002	< 0.0001	0.0003	0.0002	0.0003	0.0002	0.0003	0.0003	0.0002	0.0003	0.0003	0.0002
Arsenic	-	0.005	0.0003	0.0003	0.0001	0.0005	0.0002	0.0001	0.0003	0.0003	0.0001	0.0005	0.0003	0.0001	0.0004	0.0008
Barium	-	NV	0.103	0.072	0.028	0.099	0.042	0.029	0.106	0.067	0.036	0.096	0.082	0.029	0.09	0.106
Beryllium	-	0.011	< 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	0.11	0.2	0.077	0.045	0.014	0.073	0.025	0.029	0.139	0.063	0.037	0.08	0.065	0.021	0.098	0.089
Cadmium	-	0.0001	< 0.000015	0.000068	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000027
Chromium	-	0.001	< 0.001	0.001	< 0.001	< 0.001	0.002	< 0.001	0.01	0.001	< 0.001	0.001	0.002	< 0.001	< 0.001	< 0.001
Cobalt	-	0.0009	0.0003	0.0002	0.0001	0.0003	0.0002	< 0.0001	0.0002	0.0001	< 0.0001	0.0003	0.0002	< 0.0001	0.0002	0.0004
Copper	-	0.005	0.0001	0.0053	0.0002	0.0004	0.0001	0.0005	0.0001	0.0003	< 0.0001	0.0002	0.0002	0.0002	0.0002	0.0006
Lead	-	0.003	0.00014	0.00031	0.00006	0.0001	0.00008	0.00004	0.00007	0.00031	0.00003	0.00005	0.0001	0.00005	0.00002	0.00075
Molybdenum	-	0.04	0.0001	0.0002	0.0003	0.0001	0.0002	0.0004	0.0002	0.0001	0.0004	0.0002	0.0001	0.0005	< 0.0001	0.0004
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	< 0.01	< 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	< 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	< 0.0001
Strontium	-	NV	0.577	0.543	0.224	0.601	0.474	0.232	0.608	0.487	0.332	0.612	0.588	0.23	0.631	0.532
Thallium	-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	-	0.006	0.0012	0.0008	0.0003	0.0014	0.0005	0.0002	0.0008	0.0015	0.0004	0.0011	0.0008	0.0003	0.0007	0.0035
Zinc	-	0.02	0.054	0.019	0.009	0.005	0.005	0.005	0.007	< 0.005	< 0.005	0.014	0.009	< 0.005	0.006	< 0.005
Field Temperature (°C)	-	NV	20.9	15.2	3.5	17.3	8.6	6.5	18.1	10.4	7.7	13.2	16	11.3	18.5	8.2
Field Dissolved Oxygen (mg/L)	-	NV	1.98	3.31	8.22	0.96	7.42	9.05	2.02	5.21	12.45	0.23	1.05	7.52	3.08	3.52
Field pH (units)	-	6.5 - 8.5	7.63	7.21	7.34	7.26	7.28	7.92	7.9	7.4	7.92	7.02	7.17	7.57	6.97	7.15
Field Conductivity (µs/cm)	-	NV	365	315	230	366	280	240	331	255	360	474.3	380	195	355	290

Notes:

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2. PWQO = Provincial Water Quality Objective, 1994.
3. Bold highlighted text indicate values exceeding PWQO.
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Surface Water Quality Data

Parameter	Trigger Limits	PWQO	SWC2 26-Apr-23	SWC2 31-Aug-23	SWC2 11-Oct-23	SWC2 29-Apr-24	SWC2 03-Jul-24	SWC2 08-Oct-24	SWC2 28-Apr-25	SWC2 02-Oct-25	SWD 15-Jun-15	SWD 11-Sep-15	SWD 30-May-16	SWD 24-Aug-16	SWD 17-Oct-16	SWD 19-Apr-17
Alkalinity	-	-	123	181	172	133	185	Dry	128	268	155	156	187	123	124	113
BOD	-	NV	< 3	<3	<3	<3	<3		<3	<3	5	< 3	6	6	19	< 3
Calcium	-	NV	8.01	40.9	34.8	34.8	47.7		34.9	72.8	41.3	49.5	49.2	44.9	38.8	31.8
Chloride	128	NV	1.7	0.6	3.2	1.7	1.3		2.7	8	0.6	1.5	1.3	1	2.1	1.7
COD	-	NV	10	45	36	27	58		30	53	86	49	68	90	74	30
Colour	-	NV	42	101	52	50	106		32	15	96	100	117	127	108	72
Conductivity (µS/cm)	-	NV	257	324	305	267	350		266	522	301	326	350	339	272	234
DOC	-	NV	10.7	19.8	16.2	8.8	17.5		9	10.3	14.9	19.6	19.7	21.1	22	11
Fluoride	-	NV	< 0.1	<0.1	<0.1	<0.1	0.2		<0.1	<0.1	0.1	0.1	0.2	<0.1	0.1	< 0.1
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	<0.005	< 0.005
Hardness	-	NV	135	160	137	144	185		144	273	166	201	197	178	150	131
Iron	-	0.3	0.499	4.79	3.58	0.793	18.3		0.369	26.4	1.53	0.934	0.823	2.05	2.51	0.103
Magnesium	-	NV	11.3	14.1	12.1	13.9	16		13.8	22.3	15.2	18.7	18	16.1	12.8	12.5
Manganese	-	NV	0.029	0.128	0.218	0.028	0.445		0.025	0.475	0.143	0.212	1.64	0.925	0.492	0.009
Mercury	-	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
Nitrate	-	NV	0.08	0.08	<0.05	<0.05	0.18		0.05	0.17	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1
Nitrite	-	NV	< 0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	< 0.1	< 0.1	<0.1	<0.1	0.2	< 0.1
pH	-	6.5 - 8.5	8.01	7.47	7.53	7.81	8		7.99	7.72	7.72	7.66	7.54	7.44	7.29	7.7
Phenols	-	0.001	< 0.001	<0.001	<0.001	<0.001	<0.001		0.003	0.001	< 0.001	< 0.001	0.002	<0.001	0.023	0.002
Phosphorus	-	0.03	< 0.1	0.14	0.06	0.03	0.23		0.02	0.37	0.15	0.02	0.26	0.38	0.8	0.06
Potassium	-	NV	1	0.2	0.9	0.8	<0.1		1.2	1.9	0.3	0.4	1.8	1.9	2.7	0.8
Sodium	-	NV	2.1	1.1	3	2.2	2.5		2.7	11.5	1.1	1.8	1.9	1.1	1	0.9
Sulphate	-	NV	9	4	6	13	2		10	3	2	12	<1	46	11	8
TDS	-	NV	127	174	167	147	200		142	308	155	179	187	188	147	123
TKN	-	NV	1	0.8	0.5	0.5	1.2		0.4	1.4	1.6	0.7	2.4	1.9	4.2	0.7
Ammonia	-	NV	0.58	0.12	0.1	0.07	0.24		0.08	0.54	0.02	0.01	0.07	0.06	0.14	< 0.01
TSS	-	NV	3	18	25	5	38		<3	55	64	10	50	26	128	3
Turbidity (NTU)	-	NV	1.7	29.1	21.4	2.5	116		0.8	196	7.1	3.5	7.3	6.3	25	0.6
Ammonia - Unionized	0.011	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
Aluminum	-	0.075	< 0.01	0.04	0.04	0.03	0.11		0.03	0.08	0.08	0.07	0.05	0.03	0.03	0.03
Antimony	-	0.02	0.0003	0.0003	0.0008	<0.0001	0.0004		0.0004	0.0005	< 0.0001	0.0002	0.0002	0.0002	<0.0001	< 0.0001
Arsenic	-	0.005	0.0001	0.0003	0.0003	0.0002	0.0007		0.0001	0.0007	0.0004	0.0006	0.0007	0.0006	0.0005	0.0002
Barium	-	NV	0.031	0.051	0.053	0.035	0.098		0.035	0.132	0.064	0.076	0.107	0.098	0.109	0.041
Beryllium	-	0.011	< 0.002	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	< 0.002	< 0.002	<0.002	<0.002	0.002	< 0.002
Boron	0.11	0.2	0.034	0.016	0.054	0.017	0.062		0.043	0.318	0.015	0.022	<0.005	0.019	0.019	< 0.005
Cadmium	-	0.0001	< 0.000015	<0.000015	<0.000015	<0.000015	<0.000015		<0.000015	<0.000015	< 0.00002	0.00003	0.00005	<0.00002	<0.00002	0.000017
Chromium	-	0.001	< 0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	< 0.0002	0.0003	0.0004	<0.0002	0.0005	< 0.001
Cobalt	-	0.0009	0.0001	0.0002	0.0003	<0.0001	0.0004		0.0002	0.0003	< 0.005	< 0.005	<0.005	0.0004	0.0003	< 0.0001
Copper	-	0.005	0.0004	<0.0001	0.0002	0.0006	0.0004		0.0003	0.0003	< 0.0001	0.0023	0.0027	0.0002	<0.0001	< 0.0001
Lead	-	0.003	0.00005	0.00004	0.00005	0.00012	0.00064		0.00002	0.00046	0.00069	0.0005	0.00034	0.00009	<0.00002	0.00019
Molybdenum	-	0.04	0.0003	<0.0001	0.0001	0.0003	0.0002		0.0003	<0.0001	0.0002	0.0006	0.0005	0.0002	<0.0001	0.0003
Nickel	-	0.025	< 0.01	<0.0002	0.0004	0.0006	0.0006		0.0003	0.0008	< 0.01	< 0.01	<0.01	<0.01	<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	<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	<0.00002	0.00003	<0.00002	0.00007
Strontium	-	NV	0.273	0.474	0.371	0.339	0.517		0.27	0.689	0.339	0.351	0.364	0.361	0.301	0.216
Thallium	-	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	0.0003	0.0008	0.0003	0.0003	0.002		0.0002	0.0019	0.0004	0.0003	0.0003	<0.0001	0.0002	0.0001
Zinc	-	0.02	< 0.005	<0.005	0.011	0.005	0.014		0.005	<0.005	0.009	0.011	0.018	<0.005	0.01	0.01
Field Temperature (°C)	-	NV	7.59	15.6	12.2	10.5	22.1		8.9	8	18.55	16.51	15.86	-	10.7	9
Field Dissolved Oxygen (mg/L)	-	NV	8.83	0.27	3.92	4.8	0.02		6.39	2.47	2.49	4.45	0.85	-	3.09	6.79
Field pH (units)	-	6.5 - 8.5	7.59	6.91	7.59	7.61	6.74		7.24	6.63	5.95	7.22	6.96	-	7.05	7.54
Field Conductivity (µs/cm)	-	NV	230	283	250	240	545		257	589	257	284	326	-	255	200

Notes:

1. All results are expressed in mg/L unless otherwise stated.
2. PWQO = Provincial Water Quality Objective, 1994.
3. Bold highlighted text indicate values exceeding PWQO.
4. Bold & Highlighted indicates Trigger Exceedance

Surface Water Quality Data

Parameter	Trigger Limits	PWQO	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD
			17-Jul-17	17-Oct-17	24-Apr-18	18-Jul-18	26-Sep-18	17-Apr-19	18-Jul-19	18-Oct-19	21-Apr-20	20-Jul-20	13-Oct-20	15-Apr-21	16-Aug-21	13-Oct-21
Alkalinity	-	-	143	154	41	156	132	71	112	110	113	105	115	144	142	182
BOD	-	NV	7	< 3	< 3	6	3	< 3	4	5	6	4	11	< 10	17	8
Calcium	-	NV	36.8	51.7	17.7	44.4	34.7	21.6	30.1	29.9	32.1	37.3	36	36.5	38.4	44.5
Chloride	128	NV	1.2	1.9	< 0.5	3.3	1.5	1.2	2.2	2.3	2.3	0.8	2.1	3.2	1.3	4
COD	-	NV	53	57	19	60	49	22	108	99	29	59	84	30	143	92
Colour	-	NV	90	85	21	90	100	25	83	62	46	112	81	58	79	90
Conductivity (µS/cm)	-	NV	278	309	86	318	221	160	224	235	237	212	234	292	269	340
DOC	-	NV	17.4	18	3.9	19.4	17.1	7.9	17.2	18.6	9.5	20.6	18.5	12.6	22.9	17.9
Fluoride	-	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	0.2	< 0.1
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	< 0.005	< 0.005	< 0.005
Hardness	-	NV	151	200	71	181	114	74	117	126	135	124	141	171	159	191
Iron	-	0.3	0.289	1.34	0.086	0.796	1.04	0.923	1.63	0.519	0.129	1.99	1.28	0.563	1.86	0.992
Magnesium	-	NV	14.3	17.1	6.4	17	11.9	5.91	12.2	11.9	12.7	12.9	12.5	14.1	16.7	17
Manganese	-	NV	0.038	0.107	0.017	0.125	0.155	0.164	0.108	0.058	0.008	0.055	0.131	0.038	0.064	0.134
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	0.00005	< 0.00002
Nitrate	-	NV	< 0.05	< 0.05	< 0.05	0.13	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07	0.14	0.15
Nitrite	-	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
pH	-	6.5 - 8.5	7.99	7.8	7.48	7.99	7.64	6.97	7.44	7.82	7.83	7.68	7.77	7.9	7.61	7.81
Phenols	-	0.001	0.01	0.005	< 0.001	< 0.001	0.003	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.003
Phosphorus	-	0.03	0.1	0.17	0.05	0.09	0.11	0.29	0.52	0.12	0.02	0.24	0.42	0.1	0.47	0.36
Potassium	-	NV	2.2	4.4	0.7	2.6	2.1	2.1	0.7	2.1	0.7	0.3	3.4	1.2	0.8	2.9
Sodium	-	NV	2	2.2	1.9	2.1	2.2	0.9	1.1	1.3	1.5	1.3	1.1	1.8	1	2.1
Sulphate	-	NV	< 1	< 1	2	< 1	3	3	< 1	4	7	1	2	6	4	2
TDS	-	NV	143	151	53	165	135	80	116	118	124	119	118	150	150	183
TKN	-	NV	1.1	1.2	0.5	1.3	1.2	1.3	4.7	1.4	0.4	1.9	2.5	1	4.3	2.5
Ammonia	-	NV	0.05	0.04	0.05	0.14	0.03	0.75	0.19	0.07	< 0.01	0.05	0.06	0.03	0.11	0.07
TSS	-	NV	16	36	10	18	30	5	160	15	140	14	130	11	870	48
Turbidity (NTU)	-	NV	1.9	3.2	0.4	3.7	21	4.9	74.2	5.8	5.2	10.1	5.6	4.3	228	5.7
Ammonia - Unionized	0.011	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
Aluminum	-	0.075	0.04	0.04	0.01	0.03	0.02	0.04	0.23	0.03	0.03	0.03	0.02	0.03	0.02	0.03
Antimony	-	0.02	0.0002	0.0001	< 0.0001	0.0002	0.0001	< 0.0001	< 0.0001	0.0001	0.0002	0.0003	0.0003	0.0002	0.0005	0.0003
Arsenic	-	0.005	0.0003	0.0005	0.0004	0.0004	0.0003	0.0001	0.0003	0.0002	0.0001	0.0005	0.0003	0.0002	0.0005	0.0003
Barium	-	NV	0.052	0.056	0.027	0.071	0.06	0.036	0.121	0.04	0.038	0.062	0.055	0.044	0.066	0.068
Beryllium	-	0.011	< 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	0.11	0.2	0.037	0.014	0.005	0.015	0.014	0.016	0.018	0.016	0.006	0.011	0.063	0.011	0.016	0.027
Cadmium	-	0.0001	0.00008	0.000028	< 0.000014	0.00008	0.000118	0.000019	0.000057	< 0.000015	< 0.000015	< 0.000015	0.000015	< 0.000015	0.000079	< 0.000015
Chromium	-	0.001	0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	0.002	0.007	< 0.001	< 0.001	< 0.001	0.001	0.001
Cobalt	-	0.0009	0.0002	< 0.0001	< 0.0001	0.0004	0.0002	0.0004	0.0002	0.0002	0.0001	0.0003	0.0003	< 0.0001	0.0003	0.0002
Copper	-	0.005	0.008	0.0036	< 0.0001	0.0028	0.0061	0.0008	0.0013	0.0007	0.0006	0.0005	0.0011	0.0002	0.0034	0.0005
Lead	-	0.003	0.00157	0.00048	0.00011	0.00081	0.00096	0.00029	0.00244	0.00012	0.00034	0.00035	0.00221	0.00016	0.00868	0.00066
Molybdenum	-	0.04	0.0003	0.0001	0.0003	0.0002	0.0001	0.0002	0.0001	0.0003	0.0003	< 0.0001	0.0002	0.0003	0.0002	0.0001
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	< 0.01	< 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	< 0.001	< 0.001	< 0.001	< 0.001
Silver	-	0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	-	NV	0.261	0.263	0.116	0.295	0.248	0.126	0.223	0.21	0.175	0.24	0.221	0.231	0.304	0.29
Thallium	-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	-	0.006	< 0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0004	0.0001	0.0003	0.0003	0.0004	0.0002	0.0013	0.0003
Zinc	-	0.02	0.029	0.16	0.021	0.037	0.023	0.135	0.012	0.009	0.006	0.011	0.025	0.005	0.049	0.01
Field Temperature (°C)	-	NV	22	6.8	1.3	22	15.9	1.8	18.1	6.6	5.9	20.8	10.9	9.1	15.5	17.1
Field Dissolved Oxygen (mg/L)	-	NV	3.3	1.33	8.67	3.24	2.44	3.78	0.65	8.17	8.12	0.97	2.42	7.65	0.21	0.64
Field pH (units)	-	6.5 - 8.5	8.1	7.47	7.66	7.31	7.05	7.51	7.19	7.47	7.58	7.77	7.3	7.94	6.92	6.95
Field Conductivity (µs/cm)	-	NV	223	241	90	305	195	170	180	205	250	232	220	360	250.5	380

Notes:

1. All results are expressed in mg/L unless otherwise stated.
2. PWQO = Provincial Water Quality Objective, 1994.
3. Bold highlighted text indicate values exceeding PWQO.
4. Bold & Highlighted indicates Trigger Exceedance

Surface Water Quality Data

Parameter	Trigger Limits	PWQO	SWD 12-Apr-22	SWD 20-Jul-22	SWD 16-Oct-22	SWD 26-Apr-23	SWD 31-Aug-23	SWD 11-Oct-23	SWD 29-Apr-24	SWD 03-Jul-24	SWD 08-Oct-24	SWD 25-Apr-25	SWD 02-Oct-25	SWF 09-Jun-15	SWF 29-Jul-15	SWF 10-Sep-15
Alkalinity	-	-	97	133	168	140	139	195	151	130	161	133	Dry	188	296	179
BOD	-	NV	< 3	5	4	< 3	9	5	<3	<3	<3	<3		< 2	80	< 3
Calcium	-	NV	25.8	34.8	41.2	8.05	31.6	45.9	36.8	34.4	44.8	36.8		51.3	173	63.3
Chloride	128	NV	2.8	1	3.6	1.5	1.1	3.6	2	<0.5	4.8	2		0.7	5.6	2.8
COD	-	NV	31	79	52	24	59	304	25	53	53	37		88	2600	46
Colour	-	NV	45	117	65	55	51	48	64	96	72	58		89	115	94
Conductivity (µS/cm)	-	NV	201	241	320	281	241	349	274	251	316	263		357	613	427
DOC	-	NV	10.4	30.6	16.6	15.2	17.4	22	9.2	16.4	15.2	12.6		18.5	32.3	17.9
Fluoride	-	NV	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		0.2	0.2	0.2
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	< 0.005	< 0.005
Hardness	-	NV	112	148	165	151	127	190	153	134	188	152		202	543	237
Iron	-	0.3	0.14	1.21	0.204	0.084	0.945	2.36	0.091	0.15	0.392	0.14		6.65	778	1.94
Magnesium	-	NV	10.1	14.8	16.5	12.7	11.8	18.2	14.9	11.6	18.4	14.7		17.9	26.8	19.2
Manganese	-	NV	0.012	0.055	0.023	0.006	0.102	0.118	0.024	0.074	0.074	0.021		0.263	137	0.172
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
Nitrate	-	NV	0.62	0.08	< 0.05	< 0.05	0.06	0.42	0.06	0.09	<0.05	<0.05		< 0.1	< 0.1	< 0.1
Nitrite	-	NV	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	0.1	<0.05	<0.05	<0.05	<0.05		< 0.1	< 0.1	< 0.1
pH	-	6.5 - 8.5	7.84	7.73	7.61	8.05	7.18	7.81	7.9	7.88	7.92	7.99		7.69	7.35	7.61
Phenols	-	0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	0.002	<0.001	<0.001	<0.001	0.003		< 0.001	< 0.001	< 0.001
Phosphorus	-	0.03	< 0.1	0.2	0.1	< 0.1	0.13	1.01	0.03	0.06	0.07	0.06		0.05	8.13	0.02
Potassium	-	NV	0.9	0.4	1.9	0.7	0.4	6.1	0.5	<0.1	2.2	0.9		0.1	3.3	0.4
Sodium	-	NV	1.4	1	2.1	1.4	0.8	2.7	1.8	0.4	2.8	1.5		2.2	9.9	3.4
Sulphate	-	NV	8	1	2	4	1	2	5	<1	2	5		< 1	24	41
TDS	-	NV	111	135	168	134	132	200	152	125	172	140		193	1330	239
TKN	-	NV	0.9	2.3	0.8	0.6	1.9	11.9	0.4	1.3	1.3	0.9		1	64.7	0.7
Ammonia	-	NV	0.64	0.47	< 0.01	0.02	0.07	0.24	<0.05	0.4	0.28	0.19		0.01	0.28	0.03
TSS	-	NV	3	21	21	< 3	54	74	3	46	12	<3		56	4600	10
Turbidity (NTU)	-	NV	1.3	7	1.6	0.9	10.4	34.5	0.7	2.3	31	1.2		24.9	1620	10.3
Ammonia - Unionized	0.011	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
Aluminum	-	0.075	0.03	0.04	< 0.01	< 0.01	0.09	0.04	0.02	0.04	0.09	0.04		0.1	4.76	0.05
Antimony	-	0.02	0.0003	0.0003	0.0003	0.0004	0.0004	0.0005	<0.0001	0.0004	0.0003	0.0004		0.0002	0.0005	0.0001
Arsenic	-	0.005	0.0001	0.0005	0.0002	0.0001	0.0002	0.0005	0.0001	0.0002	0.0002	0.0002		0.0007	0.0169	0.0006
Barium	-	NV	0.031	0.054	0.049	0.036	0.057	0.096	0.049	0.056	0.065	0.049		0.075	3.98	0.062
Beryllium	-	0.011	< 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	0.11	0.2	0.009	0.013	0.012	0.008	0.009	0.046	0.007	0.008	0.006	0.008		0.007	0.429	0.035
Cadmium	-	0.0001	< 0.000015	< 0.000015	< 0.000015	< 0.000015	<0.000015	0.000174	<0.000015	<0.000015	0.000015	<0.000015		0.00005	0.00104	0.00006
Chromium	-	0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001		0.0013	0.0119	0.0006
Cobalt	-	0.0009	< 0.0001	0.0002	< 0.0001	0.0001	0.0003	0.0007	<0.0001	0.0002	0.0002	0.0002		< 0.005	0.091	< 0.005
Copper	-	0.005	0.0004	0.0008	0.0004	0.0003	0.0004	0.006	0.0007	0.0002	0.0003	0.0002		0.0014	0.015	0.003
Lead	-	0.003	0.00013	0.0004	0.00011	0.00005	0.00019	0.0196	0.00008	0.0001	0.00031	0.00005		0.00119	0.0238	0.00078
Molybdenum	-	0.04	0.0004	0.0001	0.0003	0.0002	0.0001	0.0003	0.0002	<0.0001	0.0001	0.0002		0.0003	0.0029	0.0003
Nickel	-	0.025	< 0.01	< 0.01	< 0.01	< 0.01	<0.0002	0.0028	0.0007	0.0005	0.0005	<0.0002		< 0.01	< 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		< 0.001	0.003	< 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		< 0.00002	0.00013	0.00003
Strontium	-	NV	0.163	0.266	0.279	0.188	0.245	0.304	0.253	0.282	0.332	0.224		0.43	2.73	0.93
Thallium	-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005		< 0.00005	0.00015	< 0.00005
Vanadium	-	0.006	0.0002	0.0004	0.0001	0.0002	0.0004	0.0025	0.0001	<0.0001	0.0003	0.0003		0.0011	0.0616	0.0006
Zinc	-	0.02	0.005	0.011	< 0.005	0.037	0.006	0.116	<0.005	0.018	<0.005	<0.005		0.016	0.336	< 0.005
Field Temperature (°C)	-	NV	13.8	24	7.3	8.5	13.7	8.5	7.8	18.2	14.1	6.1		14.04	20.8	17.71
Field Dissolved Oxygen (mg/L)	-	NV	6.89	1.55	2.55	8.69	1.84	4.15	1.98	0.37	2.22	6.14		1.85	0.37	3.28
Field pH (units)	-	6.5 - 8.5	7.22	7.05	7.03	7.81	6.99	7.81	7.2	6.82	7.41	7.17		7.14	7.21	6.98
Field Conductivity (µs/cm)	-	NV	185	245	285	235	242	275	147	289	233	244		317	488.2	382

Notes:

1. All results are expressed in mg/L unless otherwise stated.
2. PWQO = Provincial Water Quality Objective, 1994.
3. Bold highlighted text indicate values exceeding PWQO.
4. Bold & Highlighted indicates Trigger Exceedance

Surface Water Quality Data

Parameter	Trigger Limits	PWQO	SWF 30-May-16	SWF 24-Aug-16	SWF 17-Oct-16	SWF 19-Apr-17	SWF 17-Jul-17	SWF 17-Oct-17	SWF 24-Apr-18	SWF 18-Jul-18	SWF 26-Sep-18	SWF 17-Apr-19	SWF 18-Jul-19	SWF 18-Oct-19	SWF 21-Apr-20	SWF 20-Jul-20
Alkalinity	-	-	170	203	179	110	145	173	24	147	139	49	146	148	106	110
BOD	-	NV	2	3	8	< 3	< 3	< 3	< 3	3	3	< 3	< 3	< 3	7	4
Calcium	-	NV	48.9	56.6	53.4	29.5	38.8	55.1	11.5	42.2	45.7	13.5	37.5	43.2	34.7	31.9
Chloride	128	NV	1.6	1	2.4	1.6	1.3	1.3	< 0.5	2.4	1.8	0.9	0.6	1.4	2.1	1.3
COD	-	NV	49	65	45	28	46	36	10	68	69	10	46	32	50	59
Colour	-	NV	97	89	48	65	85	50	8	80	90	33	74	41	42	77
Conductivity (µS/cm)	-	NV	342	391	352	232	290	256	46	313	294	107	288	328	243	216
DOC	-	NV	16.3	20.2	19.8	9.8	17	14.2	4.4	18.3	22.4	4.5	17.4	13.8	11.8	19.3
Fluoride	-	NV	0.2	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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	< 0.005	< 0.005	< 0.005
Hardness	-	NV	194	216	194	128	156	213	38	172	152	50	152	176	135	127
Iron	-	0.3	1.11	2.84	1.18	0.295	0.685	0.755	0.087	1.06	0.629	1.67	0.779	0.332	0.356	1.93
Magnesium	-	NV	17.4	18.1	14.7	11.8	14.4	18.2	2.27	16.3	14.2	2.78	14.8	15.5	11.6	15.8
Manganese	-	NV	0.162	0.424	0.277	0.009	0.114	0.061	0.027	0.042	0.121	0.18	0.053	0.037	0.054	0.083
Mercury	-	0.0002	0.0001	<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
Nitrate	-	NV	<0.1	<0.1	<0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	0.09	< 0.05	< 0.05	< 0.05
Nitrite	-	NV	<0.1	<0.1	0.2	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
pH	-	6.5 - 8.5	7.85	7.7	7.58	7.79	7.93	8.13	7.38	8.19	7.88	7.07	7.87	8.02	7.73	8.17
Phenols	-	0.001	<0.001	<0.001	0.018	0.004	0.01	0.004	< 0.001	0.001	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Phosphorus	-	0.03	0.08	0.04	0.09	0.02	0.04	0.04	0.03	0.05	0.05	0.25	0.04	0.07	0.09	0.09
Potassium	-	NV	1.9	1.7	1.9	0.6	1.5	2.1	0.8	2	1.1	0.8	0.2	0.5	1.8	0.5
Sodium	-	NV	2.4	1.9	2	0.9	2.1	3.1	1.3	2.6	3	0.7	1.5	1.6	1.6	2.5
Sulphate	-	NV	10	<1	2	10	1	9	< 1	2	12	3	2	17	12	2
TDS	-	NV	186	205	186	121	148	183	30	157	162	53	146	168	128	122
TKN	-	NV	1.1	1.1	1.5	0.5	0.9	0.7	0.2	1	1.1	0.5	1	0.9	0.7	1.7
Ammonia	-	NV	0.04	0.04	0.07	0.17	0.04	0.02	0.02	0.04	0.05	0.16	0.06	0.07	< 0.01	0.04
TSS	-	NV	8	12	18	3	10	5	< 3	< 3	3	4	10	5	54	14
Turbidity (NTU)	-	NV	0.9	6.7	6.4	0.8	2.2	2	0.4	4.1	1.7	5.4	4.4	1.3	2.3	9.5
Ammonia - Unionized	0.011	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	< 0.01
Aluminum	-	0.075	0.31	0.02	0.03	0.01	0.03	0.04	< 0.01	0.03	0.04	0.07	0.04	0.04	0.02	0.02
Antimony	-	0.02	0.0002	0.0001	0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0003	0.0002	0.0002
Arsenic	-	0.005	0.0004	0.0008	0.0006	0.0002	0.0003	0.0004	0.0003	0.0005	0.0003	0.0001	0.0003	0.0002	0.0002	0.0004
Barium	-	NV	0.074	0.078	0.063	0.033	0.05	0.065	0.017	0.041	0.179	0.028	0.041	0.038	0.033	0.053
Beryllium	-	0.011	<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	0.11	0.2	0.017	0.016	0.019	< 0.005	0.022	0.014	< 0.005	0.023	0.019	0.005	0.017	0.011	0.03	0.018
Cadmium	-	0.0001	0.00004	<0.00002	<0.00002	< 0.000014	0.000065	0.000036	< 0.000014	< 0.000015	0.000116	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Chromium	-	0.001	0.0006	<0.0002	0.0005	< 0.001	0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001
Cobalt	-	0.0009	<0.005	0.0002	0.0002	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0002	0.0001	0.0003	0.0001	0.0002	0.0001	< 0.0001
Copper	-	0.005	0.0025	<0.0001	0.0001	< 0.0001	0.0087	0.0056	< 0.0001	0.0001	0.0051	0.0008	0.0007	< 0.0001	0.0005	0.0001
Lead	-	0.003	0.00043	<0.00002	0.00025	< 0.00002	0.00053	0.00036	0.00006	0.00006	0.0003	0.0002	0.00007	0.00004	0.00031	0.00004
Molybdenum	-	0.04	0.0004	<0.0001	<0.0001	0.0004	0.0002	0.0002	< 0.0001	< 0.0001	0.0001	0.0002	< 0.0001	0.0002	0.0005	< 0.0001
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	< 0.01	< 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	< 0.001	< 0.001	< 0.001	< 0.001
Silver	-	0.0001	<0.00002	<0.00002	<0.00002	0.00005	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Strontium	-	NV	0.413	0.484	0.39	0.22	0.323	0.503	0.057	0.415	0.493	0.069	0.419	0.472	0.214	0.357
Thallium	-	0.0003	<0.00005	<0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	-	0.006	0.0008	<0.0001	<0.0001	< 0.0001	< 0.0001	0.0002	0.0001	0.0007	0.0001	0.0004	0.0001	0.0002	0.0003	0.0002
Zinc	-	0.02	0.02	<0.005	0.014	< 0.005	0.02	0.047	0.015	0.024	0.019	0.012	0.006	0.006	0.005	0.007
Field Temperature (°C)	-	NV	28.3	-	12	9.9	26	7.8	8.5	28.4	17.2	8.3	22.1	8.3	7.3	24.1
Field Dissolved Oxygen (mg/L)	-	NV	1.18	-	2.8	6.52	2.91	4.13	7.2	2.16	3.53	1.15	3.99	7.7	8.6	4.06
Field pH (units)	-	6.5 - 8.5	9.39	-	7.34	7.67	7.93	7.23	7.7	7.88	7.25	7.14	7.53	7.04	7.85	7.9
Field Conductivity (µs/cm)	-	NV	326	-	320	195	226	290	90	265	255	420	268	365	260	227

Notes:

1. All results are expressed in mg/L unless otherwise stated.
2. PWQO = Provincial Water Quality Objective, 1994.
3. Bold highlighted text indicate values exceeding PWQO.
4. Bold & Highlighted indicates Trigger Exceedance

Surface Water Quality Data

Parameter	Trigger Limits	PWQO	SWF 13-Oct-20	SWF 15-Apr-21	SWF 16-Aug-21	SWF 13-Oct-21	SWF 01-Nov-21	SWF 12-Apr-22	SWF 20-Jul-22	SWF 16-Oct-22	SWF 26-Apr-23	SWF 31-Aug-23	SWF 11-Oct-23	SWF 29-Apr-24	SWF 03-Jul-24	SWF 08-Oct-24
Alkalinity	-	-	138	120	99	165	152	93	86	160	129	157	180	144	113	151
BOD	-	NV	< 3	< 10	< 3	< 3	3	4	7	3	< 3	<3	3	<3	<3	<3
Calcium	-	NV	45.6	33.5	23	46.1	45.6	23.6	18	41.4	7.94	40.9	38	34.2	27.9	41.7
Chloride	128	NV	2	2.2	1.2	2.5	1	2.6	1.3	1.5	1.2	<0.5	1.3	2.8	<0.5	2.9
COD	-	NV	47	30	44	50	42	28	71	56	19	46	45	43	49	89
Colour	-	NV	57	53	78	51	54	41	64	40	50	56	46	95	93	48
Conductivity (µS/cm)	-	NV	305	266	179	307	313	193	161	310	265	285	312	272	210	291
DOC	-	NV	17	12.4	17.6	13.4	19.1	8.9	23.6	13.8	9	16.8	18.5	9.8	16.2	15
Fluoride	-	NV	< 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	< 0.1
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	< 0.005	< 0.005	< 0.005
Hardness	-	NV	169	157	113	175	180	105	93	161	143	160	156	145	117	165
Iron	-	0.3	0.288	0.73	0.648	0.401	0.411	0.229	2.91	0.293	0.194	0.979	0.689	0.081	0.212	1.14
Magnesium	-	NV	13.3	12.5	10.5	16.1	16.1	9.45	11.7	14.8	12.2	14	14.9	14.6	11.4	14.9
Manganese	-	NV	0.035	0.044	0.039	0.065	0.041	0.013	0.183	0.029	0.009	0.173	0.091	0.017	0.026	0.045
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	< 0.00002
Nitrate	-	NV	< 0.05	0.05	< 0.05	< 0.05	0.07	0.09	< 0.05	< 0.05	< 0.05	0.08	0.05	0.06	0.15	< 0.05
Nitrite	-	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
pH	-	6.5 - 8.5	8.01	7.9	8.75	7.96	7.48	7.82	7.52	7.54	7.94	7.57	7.62	7.88	8.25	7.77
Phenols	-	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
Phosphorus	-	0.03	0.06	0.06	0.03	0.03	0.05	< 0.1	0.2	< 0.1	< 0.1	0.04	0.04	0.06	0.07	0.19
Potassium	-	NV	0.5	1	0.1	0.9	0.7	0.8	0.2	0.5	0.8	0.4	0.4	0.7	< 0.1	1.7
Sodium	-	NV	1.8	1.9	0.9	1.6	2.2	1	1.3	2	1.4	0.9	1.3	1.7	0.6	2.1
Sulphate	-	NV	17	17	2	4	3	9	2	8	7	3	3	4	<1	2
TDS	-	NV	159	141	99	171	161	103	87	165	128	156	175	144	109	158
TKN	-	NV	1.2	0.8	0.9	0.9	1	0.6	2.1	1.2	0.8	1.1	5.2	0.8	1.2	2.5
Ammonia	-	NV	0.04	0.02	0.06	0.07	0.04	0.37	0.23	0.04	0.04	0.06	5.38	0.06	0.26	0.52
TSS	-	NV	7	12	10	< 3	20	34	560	18	6	3	11	4	5	47
Turbidity (NTU)	-	NV	1.4	2.3	4.8	2.3	3.1	1.3	16.2	76.4	1.8	5.1	10.8	1.2	2.9	72.1
Ammonia - Unionized	0.011	0.02	< 0.01	< 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
Aluminum	-	0.075	0.02	0.03	< 0.01	0.03	< 0.01	0.02	0.01	< 0.01	< 0.01	0.04	0.04	0.04	0.04	0.26
Antimony	-	0.02	0.0003	0.0002	0.0005	0.0002	0.0006	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003	< 0.0001	0.0005	0.0005
Arsenic	-	0.005	0.0002	0.0002	0.0003	0.0002	0.0002	0.0001	0.0003	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002
Barium	-	NV	0.04	0.033	0.027	0.063	0.046	0.025	0.038	0.043	0.032	0.05	0.046	0.044	0.043	0.045
Beryllium	-	0.011	< 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	0.11	0.2	0.019	0.013	0.009	0.016	0.014	0.011	0.016	0.011	0.01	0.015	0.009	0.007	0.007	0.013
Cadmium	-	0.0001	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000015	< 0.000015	< 0.000015
Chromium	-	0.001	< 0.001	0.002	0.001	0.002	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	-	0.0009	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	0.0001	0.0004	< 0.0001	0.0001	0.0001	0.0002	< 0.0001	0.0002	0.0004
Copper	-	0.005	0.0001	0.0002	0.0008	< 0.0001	0.0018	0.0007	0.0008	0.0007	0.0002	< 0.0001	< 0.0001	0.0006	0.0004	0.0006
Lead	-	0.003	0.00004	0.00005	0.00005	0.00003	0.00004	0.00006	0.00033	0.00004	0.00004	< 0.00002	0.00003	0.00014	0.00004	0.00019
Molybdenum	-	0.04	0.0002	0.0004	0.0051	0.0001	0.0002	0.0004	< 0.0001	0.0002	0.0003	< 0.0001	< 0.0001	0.0002	< 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	< 0.0002	0.0004	0.0005	0.0004	0.0006
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	< 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	< 0.0001
Strontium	-	NV	0.507	0.317	0.207	0.382	0.423	0.169	0.179	0.415	0.22	0.392	0.366	0.208	0.233	0.259
Thallium	-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Vanadium	-	0.006	0.0001	0.0002	0.0017	< 0.0001	0.0002	0.0002	0.001	0.0001	0.0002	< 0.0001	< 0.0001	0.0002	0.0001	0.0005
Zinc	-	0.02	< 0.005	0.006	0.019	< 0.005	0.005	< 0.005	0.007	< 0.005	0.008	0.007	0.015	0.007	0.011	0.006
Field Temperature (°C)	-	NV	13.1	9.8	17.9	18.7	7.6	10.5	25.6	8.6	10	15.2	10	8.7	23.5	14.9
Field Dissolved Oxygen (mg/L)	-	NV	6.24	12.37	0.82	4.42	7.7	6.11	0.35	3.31	8.52	1.71	5.01	3.81	3.01	3.12
Field pH (units)	-	6.5 - 8.5	7.5	7.9	6.66	7.69	7.31	7.23	7.53	7.02	7.27	7.17	7.27	7.51	6.53	7.23
Field Conductivity (µs/cm)	-	NV	250	330	204.7	330	316.7	180	145	290	230	254	250	239	246	209

Notes:

1. All results are expressed in mg/L unless otherwise stated.
2. PWQO = Provincial Water Quality Objective, 1994.
3. Bold highlighted text indicate values exceeding PWQO.
4. Bold & Highlighted indicates Trigger Exceedance

Surface Water Quality Data

Parameter	Trigger Limits	PWQO	SWF	SWF
			25-Apr-25	02-Oct-25
Alkalinity	-	-	121	215
BOD	-	NV	<3	4
Calcium	-	NV	33.2	54.3
Chloride	128	NV	1.7	1.4
COD	-	NV	24	81
Colour	-	NV	39	50
Conductivity (µS/cm)	-	NV	254	416
DOC	-	NV	10.2	18.3
Fluoride	-	NV	<0.1	<0.1
Cyanide	-	0.005	<0.005	<0.005
Hardness	-	NV	139	222
Iron	-	0.3	0.303	4.11
Magnesium	-	NV	13.7	20.9
Manganese	-	NV	0.017	0.308
Mercury	-	0.0002	<0.00002	<0.00002
Nitrate	-	NV	<0.05	0.1
Nitrite	-	NV	<0.05	<0.05
pH	-	6.5 - 8.5	7.97	7.92
Phenols	-	0.001	0.002	<0.001
Phosphorus	-	0.03	0.02	0.18
Potassium	-	NV	0.9	1.1
Sodium	-	NV	1.6	1.8
Sulphate	-	NV	9	5
TDS	-	NV	133	218
TKN	-	NV	0.6	3.2
Ammonia	-	NV	0.06	1.51
TSS	-	NV	4	36
Turbidity (NTU)	-	NV	1.3	22.6
Ammonia - Unionized	0.011	0.02	<0.01	<0.01
Aluminum	-	0.075	0.02	0.11
Antimony	-	0.02	0.0002	0.0004
Arsenic	-	0.005	0.0002	0.0006
Barium	-	NV	0.031	0.073
Beryllium	-	0.011	<0.0001	<0.0001
Boron	0.11	0.2	0.009	0.022
Cadmium	-	0.0001	<0.000015	0.000019
Chromium	-	0.001	<0.001	<0.001
Cobalt	-	0.0009	0.0001	0.0004
Copper	-	0.005	0.0002	0.0004
Lead	-	0.003	0.00005	0.00038
Molybdenum	-	0.04	0.0003	0.0007
Nickel	-	0.025	<0.0002	0.0005
Selenium	-	0.1	<0.001	<0.001
Silver	-	0.0001	<0.0001	<0.0001
Strontium	-	NV	0.229	0.568
Thallium	-	0.0003	<0.00005	<0.00005
Vanadium	-	0.006	0.0003	0.0012
Zinc	-	0.02	<0.005	<0.005
Field Temperature (°C)	-	NV	10.1	9.7
Field Dissolved Oxygen (mg/L)	-	NV	5.84	1.4
Field pH (units)	-	6.5 - 8.5	7.26	5.95
Field Conductivity (µs/cm)	-	NV	238	274

Notes:

- 1. All results are expressed in mg/L unless otherwise stated.
- 2. PWQO = Provincial Water Quality Objective, 1994.
- 3. Bold highlighted text indicate values exceeding PWQO.
- 4. Bold & Highlighted indicates Trigger Exceedance

Ground Water Chemistry Summary - VOC

Parameters	Units	ODWQS	MW3	MW3	MW3	MW3	MW3	MW3	MW3	MW3	MW3	MW3	MW3
			9-Jun-15	10-Sep-15	31-May-16	17-Oct-16	19-Apr-17	17-Oct-17	24-Apr-18	26-Sep-18	17-Apr-19	18-Oct-19	21-Apr-20
Acetone	µg/L	-	< 30	< 30	<30	<30	< 30	3	< 30	< 30	< 30	< 30	< 30
Benzene	µg/L	5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.2
Bromodichloromethane	µg/L	-	< 2	< 2	<2	<2	< 2	< 0.1	< 2	< 2	< 2	< 2	< 2
Bromoform	µg/L	-	< 5	< 5	<5	<5	< 5	< 0.1	< 5	< 5	< 5	< 5	< 5
Bromomethane	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	2	< 0.2	< 0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chloroethane	µg/L	-										< 3	
Chloroform	µg/L	-	< 1	< 1	<1	<1	< 1	< 0.3	< 1	< 1	< 1	< 1	< 1
Chloromethane	µg/L	-										< 2	
Dibromochloromethane	µg/L	-			<2	<2	< 2	< 0.1	< 2	< 2	< 2	< 2	< 2
Dibromoethane, 1,2- (Ethylene Dibromide)	µg/L	-	< 0.2	< 0.2	<0.2	<0.2	< 0.2	< 0.1	< 0.2	< 20	< 0.2	< 0.2	< 0.2
Dichlorobenzene, 1,2-	µg/L	200	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,3-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,4-	µg/L	5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane, 1,1-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane, 1,2-	µg/L	5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethene, cis-1,2-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethene, trans-1,2-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene, 1,1-	µg/L	14	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloromethane (Methylene Chloride)	µg/L	50	< 5	< 5	<5	<5	< 5	< 0.3	< 5	< 0.5	< 5	< 5	< 5
Dichloropropane, 1,2-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	µg/L	140	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5
Methyl Ethyl Ketone	µg/L	-	< 20	< 20	<20	<20	< 20	< 1	< 20	< 2	< 20	< 20	< 20
Methyl Isobutyl Ketone	µg/L	-	< 20	< 20	<20	<20	< 20	< 1	< 20	< 0.3	< 20	< 20	< 20
Methyl-t-butyl Ether	µg/L	-	< 2	< 2	<2	<2	< 2	< 1	< 2	< 20	< 2	< 2	< 2
Monochlorobenzene (Chlorobenzene)	µg/L	80	< 0.5	< 0.5	<0.5	0.6	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	0.7	< 0.5
Styrene	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,1,2-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,2,2-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene	µg/L	10	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	60	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorobenzene, 1,2,4-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,1-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,2-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene	µg/L	5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	µg/L	-	< 5	< 5	<5	<5	< 5	< 0.1	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	µg/L	1	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.2	< 0.2	< 0.2
Xylene, m,p-	µg/L	-	< 1.0	< 1.0	<1.0	<1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene, m,p,o-	µg/L	90			<1.1	<1.1	< 1.1	< 0.4	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Xylene, o-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	0.6

Bold and highlighted indicates exceedance
 Bold indicates detection

Ground Water Chemistry Summary - VOC

Parameters	Units	ODWQS	MW3	MW3	MW3	MW3	MW3	MW3	MW3	MW3	MW3	MW3	MW3
			13-Oct-20	15-Apr-21	13-Oct-21	12-Apr-22	12-Apr-22	16-Oct-22	26-Apr-23	11-Oct-23	29-Apr-24	8-Oct-24	2-Oct-25
Acetone	µg/L	-	< 30	< 30	< 30	< 30	< 30	< 30	< 30	<30	<30	<30	<30
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	<2	<2
Bromoform	µg/L	-	< 5	< 5	< 5	< 5	< 5	< 5	< 5	<5	<5	<5	<5
Bromomethane	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	µg/L	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2
Chloroethane	µg/L	-								<3			
Chloroform	µg/L	-	< 1	< 1	< 1	< 1	< 1	< 1	< 1	<1	<1	<1	<1
Chloromethane	µg/L	-								<2	<2	<2	<2
Dibromochloromethane	µg/L	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	<2	<2
Dibromoethane, 1,2- (Ethylene Dibromide)	µg/L	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2
Dichlorobenzene, 1,2-	µg/L	200	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,3-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,4-	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethane, 1,1-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethane, 1,2-	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethene, cis-1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethene, trans-1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene, 1,1-	µg/L	14	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Dichloromethane (Methylene Chloride)	µg/L	50	< 5	< 5	< 5	< 5	< 5	< 5	< 5	<0.5	<5	<5	<5
Dichloropropane, 1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene, cis-1,3-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene, trans-1,3-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	140	< 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	µg/L	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	<20	<2	<2	<2
Methyl Isobutyl Ketone	µg/L	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	<20	<20	<20	<20
Methyl-t-butyl Ether	µg/L	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	<2	<2
Monochlorobenzene (Chlorobenzene)	µg/L	80	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	0.5	<0.5	<0.5	1
Styrene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,2,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	µg/L	10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	60	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Trichlorobenzene, 1,2,4-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,1-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	µg/L	-	< 5	< 5	< 5	< 5	< 5	< 5	< 5	<5	<5	<5	<5
Vinyl Chloride	µg/L	1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2
Xylene, m,p-	µg/L	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1
Xylene, m,p,o-	µg/L	90	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1			
Xylene, o-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5

Bold and highlighted indicates exceedance
Bold indicates detection

Ground Water Chemistry Summary - VOC

Parameters	Units	ODWQS	MW4	MW4	MW4	MW4	MW4	MW4	MW4	MW4	MW4	MW4	MW4
			9-Jun-15	10-Sep-15	30-May-16	17-Oct-16	19-Apr-17	17-Oct-17	24-Apr-18	26-Sep-18	17-Apr-19	18-Oct-19	21-Apr-20
Acetone	µg/L	-	< 30	< 30	<30	<30	< 30	14	< 30	< 30	< 30	< 30	< 30
Benzene	µg/L	5	1.7	1.4	1.1	<0.5	0.7	0.7	0.6	0.5	0.8	0.9	1.2
Bromodichloromethane	µg/L	-	< 2	< 2	<2	<2	< 2	< 0.1	< 2	< 2	< 2	< 2	< 2
Bromoform	µg/L	-	< 5	< 5	<5	<5	< 5	< 0.1	< 5	< 5	< 5	< 5	< 5
Bromomethane	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	2	< 0.2	< 0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chloroethane	µg/L	-										4	
Chloroform	µg/L	-	< 1	< 1	<1	<1	< 1	< 0.3	< 1	< 1	< 1	< 1	< 1
Chloromethane	µg/L	-										< 2	
Dibromochloromethane	µg/L	-			<0.5	<0.5	< 2	< 0.1	< 2	< 2	< 2	< 2	< 2
Dibromoethane, 1,2- (Ethylene Dibromide)	µg/L	-	< 0.2	< 0.2	<0.2	<0.2	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorobenzene, 1,2-	µg/L	200	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,3-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,4-	µg/L	5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane, 1,1-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane, 1,2-	µg/L	5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethene, cis-1,2-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethene, trans-1,2-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene, 1,1-	µg/L	14	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloromethane (Methylene Chloride)	µg/L	50	< 5	< 5	<5	<5	< 5	< 0.3	< 5	< 0.5	< 5	< 5	< 5
Dichloropropane, 1,2-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	µg/L	140	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5
Methyl Ethyl Ketone	µg/L	-	< 20	< 20	<20	<20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Methyl Isobutyl Ketone	µg/L	-	< 20	< 20	<20	<20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Methyl-t-butyl Ether	µg/L	-	< 2	< 2	<2	<2	< 2	< 1	< 2	< 2	< 2	< 2	< 2
Monochlorobenzene (Chlorobenzene)	µg/L	80	1.7	2.3	<0.5	0.5	< 0.5	0.3	1	< 0.5	< 0.5	0.6	< 0.5
Styrene	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,1,2-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,2,2-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene	µg/L	10	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	60	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorobenzene, 1,2,4-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,1-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,2-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene	µg/L	5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	µg/L	-	< 5	< 5	<5	<5	< 5	< 0.1	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	µg/L	1	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.2	< 0.2	< 0.2
Xylene, m,p-	µg/L	-	< 1.0	< 1.0	<1.0	<1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene, m,p,o-	µg/L	90			<1.1	<1.1	< 1.1	< 0.4	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Xylene, o-	µg/L	-	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Bold and highlighted indicates exceedance
 Bold indicates detection

Ground Water Chemistry Summary - VOC

Parameters	Units	ODWQS	MW4	MW4	MW4	MW4	MW4	MW4	MW4	MW4	MW4	MW4	MW6
			13-Oct-20	15-Apr-21	13-Oct-21	12-Apr-22	16-Oct-22	26-Apr-23	11-Oct-23	29-Apr-24	8-Oct-24	2-Oct-25	15-Jun-15
Acetone	µg/L	-	< 30	< 30	< 30	< 30	< 30	< 30	<30	<30	<30	<30	< 30
Benzene	µg/L	5	0.6	1.3	1	1	0.6	0.6	1	0.8	1	0.7	< 0.5
Bromodichloromethane	µg/L	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	<2	<2	< 2
Bromoform	µg/L	-	< 5	< 5	< 5	< 5	< 5	< 5	<5	<5	<5	<5	< 5
Bromomethane	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Carbon Tetrachloride	µg/L	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2
Chloroethane	µg/L	-											
Chloroform	µg/L	-	< 1	< 1	< 1	< 1	< 1	< 1	<1	<1	<1	<1	< 1
Chloromethane	µg/L	-							<2	<2	<2	<2	
Dibromochloromethane	µg/L	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	<2	<2	
Dibromoethane, 1,2- (Ethylene Dibromide)	µg/L	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.2
Dichlorobenzene, 1,2-	µg/L	200	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Dichlorobenzene, 1,3-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Dichlorobenzene, 1,4-	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Dichloroethane, 1,1-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Dichloroethane, 1,2-	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Dichloroethene, cis-1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Dichloroethene, trans-1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Dichloroethylene, 1,1-	µg/L	14	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Dichloromethane (Methylene Chloride)	µg/L	50	< 5	< 5	< 5	< 5	< 5	< 5	<5	<5	<5	<5	< 5
Dichloropropane, 1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Dichloropropene, cis-1,3-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Dichloropropene, trans-1,3-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Ethylbenzene	µg/L	140	< 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	µg/L	-	< 20	< 20	< 20	< 20	< 20	< 20	<20	<2	<2	<2	< 20
Methyl Isobutyl Ketone	µg/L	-	< 20	< 20	< 20	< 20	< 20	< 20	<20	<20	<20	<20	< 20
Methyl-t-butyl Ether	µg/L	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	<2	<2	< 2
Monochlorobenzene (Chlorobenzene)	µg/L	80	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	<0.5	<0.5	<0.5	<0.5	< 0.5
Styrene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Tetrachloroethane, 1,1,1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Tetrachloroethane, 1,1,2,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Tetrachloroethylene	µg/L	10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Toluene	µg/L	60	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Trichlorobenzene, 1,2,4-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Trichloroethane, 1,1,1-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Trichloroethane, 1,1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Trichloroethylene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Trichlorofluoromethane	µg/L	-	< 5	< 5	< 5	< 5	< 5	< 5	<5	<5	<5	<5	< 5
Vinyl Chloride	µg/L	1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	< 0.5
Xylene, m,p-	µg/L	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<1	< 1.0
Xylene, m,p,o-	µg/L	90	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<0.5				
Xylene, o-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		<0.5	<0.5	<0.5	< 0.5

Bold and highlighted indicates exceedance
Bold indicates detection

Ground Water Chemistry Summary - VOC

Parameters	Units	ODWQS	MW6	MW6	MW6	MW6	MW6	MW6	MW6	MW6	MW6	MW6	MW6
			11-Sep-15	30-May-16	17-Oct-16	19-Apr-17	17-Oct-17	24-Apr-18	26-Sep-18	17-Apr-19	18-Oct-19	13-Oct-20	13-Oct-21
Acetone	µg/L	-	< 30	<30	<30	< 30	< 2	< 30	< 30	< 30	< 30	< 30	< 30
Benzene	µg/L	5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	-	< 2	<2	<2	< 2	< 0.1	< 2	< 2	< 2	< 2	< 2	< 2
Bromoform	µg/L	-	< 5	<5	<5	< 5	< 0.1	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	2	< 0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chloroethane	µg/L	-									< 3		
Chloroform	µg/L	-	< 1	<1	<1	< 1	< 0.3	< 1	< 1	< 1	< 1	< 1	< 1
Chloromethane	µg/L	-									< 2		
Dibromochloromethane	µg/L	-		<2	<2	< 2	< 0.1	< 2	< 2	< 2	< 2	< 2	< 2
Dibromoethane,1,2- (Ethylene Dibromide)	µg/L	-	< 0.2	<0.2	<0.2	< 0.2	< 0.1	< 0.2	< 20	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorobenzene,1,2-	µg/L	200	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene,1,3-	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene,1,4-	µg/L	5	< 0.5	<0.5	<0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane,1,1-	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane,1,2-	µg/L	5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethene, cis-1,2-	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethene, trans-1,2-	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene,1,1-	µg/L	14	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloromethane (Methylene Chloride)	µg/L	50	< 5	<5	<5	< 5	< 0.3	< 5	< 0.5	< 5	< 5	< 5	< 5
Dichloropropane,1,2-	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	µg/L	140	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5
Methyl Ethyl Ketone	µg/L	-	< 20	<20	<20	< 20	< 20	< 20	< 2	< 20	< 20	< 20	< 20
Methyl Isobutyl Ketone	µg/L	-	< 20	<20	<20	< 20	< 20	< 20	< 0.3	< 20	< 20	< 20	< 20
Methyl-t-butyl Ether	µg/L	-	< 2	<2	<2	< 2	< 2	< 2	< 20	< 2	< 2	< 2	< 2
Monochlorobenzene (Chlorobenzene)	µg/L	80	< 0.5	<0.5	<0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane,1,1,1,2-	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane,1,1,2,2-	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene	µg/L	10	< 0.5	<0.5	<0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	60	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorobenzene,1,2,4-	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane,1,1,1-	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane,1,1,2-	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene	µg/L	5	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	µg/L	-	< 5	<5	<5	< 5	< 0.1	< 5	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	µg/L	1	< 0.5	<0.5	<0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.2	< 0.2	< 0.2	< 0.2
Xylene, m,p-	µg/L	-	< 1.0	<1.0	<1.0	< 1.0	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene, m,p,o-	µg/L	90		<1.1	<1.1	< 1.1	< 0.4	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Xylene, o-	µg/L	-	< 0.5	<0.5	<0.5	< 0.5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Bold and highlighted indicates exceedance
 Bold indicates detection

Ground Water Chemistry Summary - VOC

Parameters	Units	ODWQS	MW6	MW6	MW6	MW6	MW6	MW6	MW6	MW6	MW16-I	MW16-I	MW16-I	MW16-I
			12-Apr-22	12-Apr-22	16-Oct-22	16-Oct-22	26-Apr-23	11-Oct-23	29-Apr-24	9-Jun-15	10-Sep-15	31-May-16	19-Apr-17	
Acetone	µg/L	-	< 30	< 30	< 30	< 30	< 30	<30	<30	< 30	< 30	<30	< 30	
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Bromodichloromethane	µg/L	-	< 2	< 2	< 2	< 2	< 2	<2	<2	< 2	< 2	<2	< 2	
Bromoform	µg/L	-	< 5	< 5	< 5	< 5	< 5	<5	<5	< 5	< 5	<5	< 5	
Bromomethane	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Carbon Tetrachloride	µg/L	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	< 0.2	< 0.2	<0.2	< 0.2	
Chloroethane	µg/L	-						<3						
Chloroform	µg/L	-	< 1	< 1	< 1	< 1	< 1	<1	<1	< 1	< 1	<1	< 1	
Chloromethane	µg/L	-						<2	<2					
Dibromochloromethane	µg/L	-	< 2	< 2	< 2	< 2	< 2	<2	<2			<2	< 2	
Dibromoethane, 1,2- (Ethylene Dibromide)	µg/L	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	< 0.2	< 0.2	<0.2	< 0.2	
Dichlorobenzene, 1,2-	µg/L	200	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Dichlorobenzene, 1,3-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Dichlorobenzene, 1,4-	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Dichloroethane, 1,1-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Dichloroethane, 1,2-	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Dichloroethene, cis-1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Dichloroethene, trans-1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Dichloroethylene, 1,1-	µg/L	14	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Dichloromethane (Methylene Chloride)	µg/L	50	< 5	< 5	< 5	< 5	< 5	<0.5	<5	< 5	< 5	<5	< 5	
Dichloropropane, 1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Dichloropropene, cis-1,3-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Dichloropropene, trans-1,3-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Ethylbenzene	µg/L	140	< 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	µg/L	-	< 20	< 20	< 20	< 20	< 20	<20	<2	< 20	< 20	<20	< 20	
Methyl Isobutyl Ketone	µg/L	-	< 20	< 20	< 20	< 20	< 20	<20	<20	< 20	< 20	<20	< 20	
Methyl-t-butyl Ether	µg/L	-	< 2	< 2	< 2	< 2	< 2	<2	<2	< 2	< 2	<2	< 2	
Monochlorobenzene (Chlorobenzene)	µg/L	80	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Styrene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Tetrachloroethane, 1,1,1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Tetrachloroethane, 1,1,2,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Tetrachloroethylene	µg/L	10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Toluene	µg/L	60	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Trichlorobenzene, 1,2,4-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Trichloroethane, 1,1,1-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Trichloroethane, 1,1,2-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Trichloroethylene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	
Trichlorofluoromethane	µg/L	-	< 5	< 5	< 5	< 5	< 5	<5	<5	< 5	< 5	<5	< 5	
Vinyl Chloride	µg/L	1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	< 0.5	< 0.5	<0.5	< 0.5	
Xylene, m,p-	µg/L	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	< 1.0	< 1.0	<1.0	< 1.0	
Xylene, m,p,o-	µg/L	90	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	<1.1				<1.1	< 1.1	
Xylene, o-	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5	

Bold and highlighted indicates exceedance
Bold indicates detection

Ground Water Chemistry Summary - VOC

Parameters	Units	ODWQS	MW16-I	MW16-I	MW16-I	MW16-I	MW16-I	MW16-I	MW16-I	MW16-I	MW16-I	MW16-I	MW16-I
			17-Oct-17	24-Apr-18	26-Sep-18	17-Apr-19	18-Oct-19	21-Apr-20	13-Oct-20	15-Apr-21	13-Oct-21	12-Apr-22	16-Oct-22
Acetone	µg/L	-	< 2	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
Benzene	µg/L	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	-	< 0.1	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Bromoform	µg/L	-	< 0.1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane	µg/L	-	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chloroethane	µg/L	-					< 3						
Chloroform	µg/L	-	< 0.3	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloromethane	µg/L	-					< 2						
Dibromochloromethane	µg/L	-	< 0.1	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Dibromoethane, 1,2- (Ethylene Dibromide)	µg/L	-	< 0.1	< 0.2	< 20	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorobenzene, 1,2-	µg/L	200	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,3-	µg/L	-	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,4-	µg/L	5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane, 1,1-	µg/L	-	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane, 1,2-	µg/L	5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethene, cis-1,2-	µg/L	-	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethene, trans-1,2-	µg/L	-	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene, 1,1-	µg/L	14	0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloromethane (Methylene Chloride)	µg/L	50	0.3	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dichloropropane, 1,2-	µg/L	-	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	µg/L	-	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	µg/L	-	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	µg/L	140	< 0.5	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl Ethyl Ketone	µg/L	-	< 1	< 20	< 2	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Methyl Isobutyl Ketone	µg/L	-	< 1	< 20	< 0.3	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Methyl-t-butyl Ether	µg/L	-	< 1	< 2	< 20	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Monochlorobenzene (Chlorobenzene)	µg/L	80	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	µg/L	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,1,2-	µg/L	-	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,2,2-	µg/L	-	< 0.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene	µg/L	10	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	60	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorobenzene, 1,2,4-	µg/L	-	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,1-	µg/L	-	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,2-	µg/L	-	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene	µg/L	5	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	µg/L	-	< 0.1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	µg/L	1	0.2	< 0.5	< 0.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Xylene, m,p-	µg/L	-	< 0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene, m,p,o-	µg/L	90	< 0.4	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Xylene, o-	µg/L	-	< 0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Bold and highlighted indicates exceedance
Bold indicates detection

Ground Water Chemistry Summary - VOC

Parameters	Units	ODWQS	MW16-I	MW16-I	MW16-I	MW16-I	MW16-I	MW16-I	MW17	MW17	MW17	MW17	MW20-I
			26-Apr-23	11-Oct-23	29-Apr-24	8-Oct-24	22-Oct-25	22-Oct-25	11-Sep-15	2-Jun-16	17-Oct-16	18-Oct-19	26-Apr-23
Acetone	µg/L	-	< 30	<30	<30	<30	<30	<30	< 30	<30	<30	< 30	< 30
Benzene	µg/L	5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	-	< 2	<2	<2	<2	<2	<2	< 2	<2	<2	< 2	< 2
Bromoform	µg/L	-	< 5	<5	<5	<5	<5	<5	< 5	<5	<5	< 5	< 5
Bromomethane	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	2	< 0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	<0.2	<0.2	< 0.2	< 0.2
Chloroethane	µg/L	-		<3								< 3	< 3
Chloroform	µg/L	-	< 1	<1	<1	<1	<1	<1	< 1	<1	<1	< 1	< 1
Chloromethane	µg/L	-		<2	<2	<2	<2	<2				< 2	< 2
Dibromochloromethane	µg/L	-	< 2	<2	<2	<2	<2	<2		<2	<2	< 2	< 2
Dibromoethane, 1,2- (Ethylene Dibromide)	µg/L	-	< 0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	<0.2	<0.2	< 0.2	< 0.2
Dichlorobenzene, 1,2-	µg/L	200	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Dichlorobenzene, 1,3-	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Dichlorobenzene, 1,4-	µg/L	5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Dichloroethane, 1,1-	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Dichloroethane, 1,2-	µg/L	5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Dichloroethene, cis-1,2-	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Dichloroethene, trans-1,2-	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Dichloroethylene, 1,1-	µg/L	14	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Dichloromethane (Methylene Chloride)	µg/L	50	< 5	<0.5	<5	<5	<5	<5	< 5	<5	<5	< 5	< 5
Dichloropropane, 1,2-	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Ethylbenzene	µg/L	140	< 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	µg/L	-	< 20	<20	<2	<2	<2	<2	< 20	<20	<20	< 20	< 20
Methyl Isobutyl Ketone	µg/L	-	< 20	<20	<20	<20	<20	<20	< 20	<20	<20	< 20	< 20
Methyl-t-butyl Ether	µg/L	-	< 2	<2	<2	<2	<2	<2	< 2	<2	<2	< 2	< 2
Monochlorobenzene (Chlorobenzene)	µg/L	80	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Styrene	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,1,2-	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,2,2-	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Tetrachloroethylene	µg/L	10	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Toluene	µg/L	60	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	3.8	3.8
Trichlorobenzene, 1,2,4-	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Trichloroethane, 1,1,1-	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Trichloroethane, 1,1,2-	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Trichloroethylene	µg/L	5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5
Trichlorofluoromethane	µg/L	-	< 5	<5	<5	<5	<5	<5	< 5	<5	<5	< 5	< 5
Vinyl Chloride	µg/L	1	< 0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.5	<0.5	<0.5	< 0.2	< 0.2
Xylene, m,p-	µg/L	-	< 1.0	<1	<1	<1	<1	<1	< 1.0	<1.0	<1.0	< 1.0	< 1.0
Xylene, m,p,o-	µg/L	90	< 1.1	<1.1						<1.1	<1.1	< 1.1	< 1.1
Xylene, o-	µg/L	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5

Bold and highlighted indicates exceedance
Bold indicates detection

Ground Water Chemistry Summary - VOC

Parameters	Units	ODWQS	MW20-II
			26-Apr-23
Acetone	µg/L	-	< 30
Benzene	µg/L	5	< 0.5
Bromodichloromethane	µg/L	-	< 2
Bromoform	µg/L	-	< 5
Bromomethane	µg/L	-	< 0.5
Carbon Tetrachloride	µg/L	2	< 0.2
Chloroethane	µg/L	-	< 3
Chloroform	µg/L	-	< 1
Chloromethane	µg/L	-	< 2
Dibromochloromethane	µg/L	-	< 2
Dibromoethane, 1,2- (Ethylene Dibromide)	µg/L	-	< 0.2
Dichlorobenzene, 1,2-	µg/L	200	< 0.5
Dichlorobenzene, 1,3-	µg/L	-	< 0.5
Dichlorobenzene, 1,4-	µg/L	5	< 0.5
Dichloroethane, 1,1-	µg/L	-	< 0.5
Dichloroethane, 1,2-	µg/L	5	< 0.5
Dichloroethene, cis-1,2-	µg/L	-	< 0.5
Dichloroethene, trans-1,2-	µg/L	-	< 0.5
Dichloroethylene, 1,1-	µg/L	14	< 0.5
Dichloromethane (Methylene Chloride)	µg/L	50	< 5
Dichloropropane, 1,2-	µg/L	-	< 0.5
Dichloropropene, cis-1,3-	µg/L	-	< 0.5
Dichloropropene, trans-1,3-	µg/L	-	< 0.5
Ethylbenzene	µg/L	140	< 0.5
Methyl Ethyl Ketone	µg/L	-	< 20
Methyl Isobutyl Ketone	µg/L	-	< 20
Methyl-t-butyl Ether	µg/L	-	< 2
Monochlorobenzene (Chlorobenzene)	µg/L	80	< 0.5
Styrene	µg/L	-	< 0.5
Tetrachloroethane, 1,1,1,2-	µg/L	-	< 0.5
Tetrachloroethane, 1,1,2,2-	µg/L	-	< 0.5
Tetrachloroethylene	µg/L	10	< 0.5
Toluene	µg/L	60	3.8
Trichlorobenzene, 1,2,4-	µg/L	-	< 0.5
Trichloroethane, 1,1,1-	µg/L	-	< 0.5
Trichloroethane, 1,1,2-	µg/L	-	< 0.5
Trichloroethylene	µg/L	5	< 0.5
Trichlorofluoromethane	µg/L	-	< 5
Vinyl Chloride	µg/L	1	< 0.2
Xylene, m,p-	µg/L	-	< 1.0
Xylene, m,p,o-	µg/L	90	< 1.1
Xylene, o-	µg/L	-	< 0.5

Bold and highlighted indicates exceedance

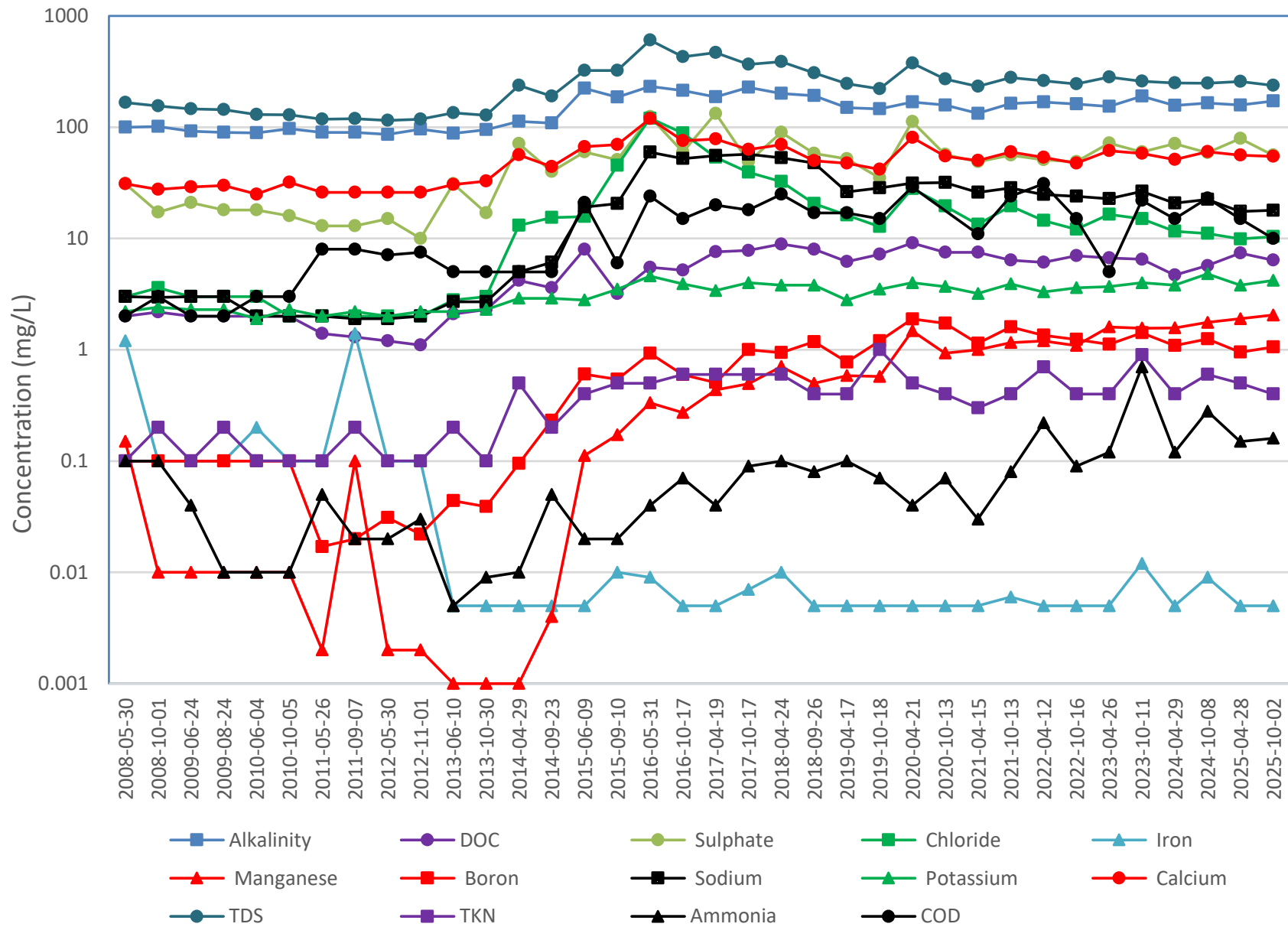
Bold indicates detection



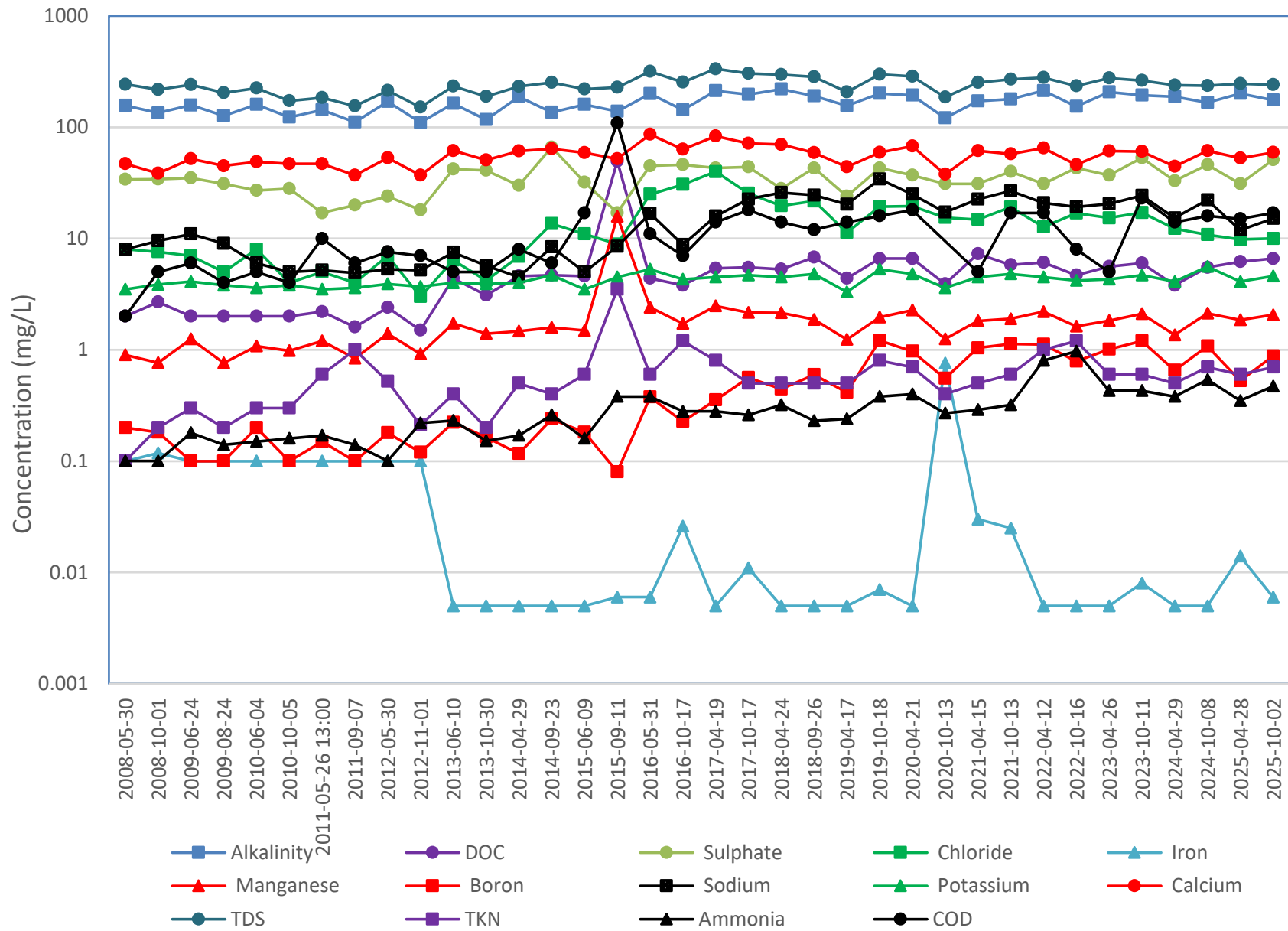
APPENDIX F

Chemistry Over Time Graphs

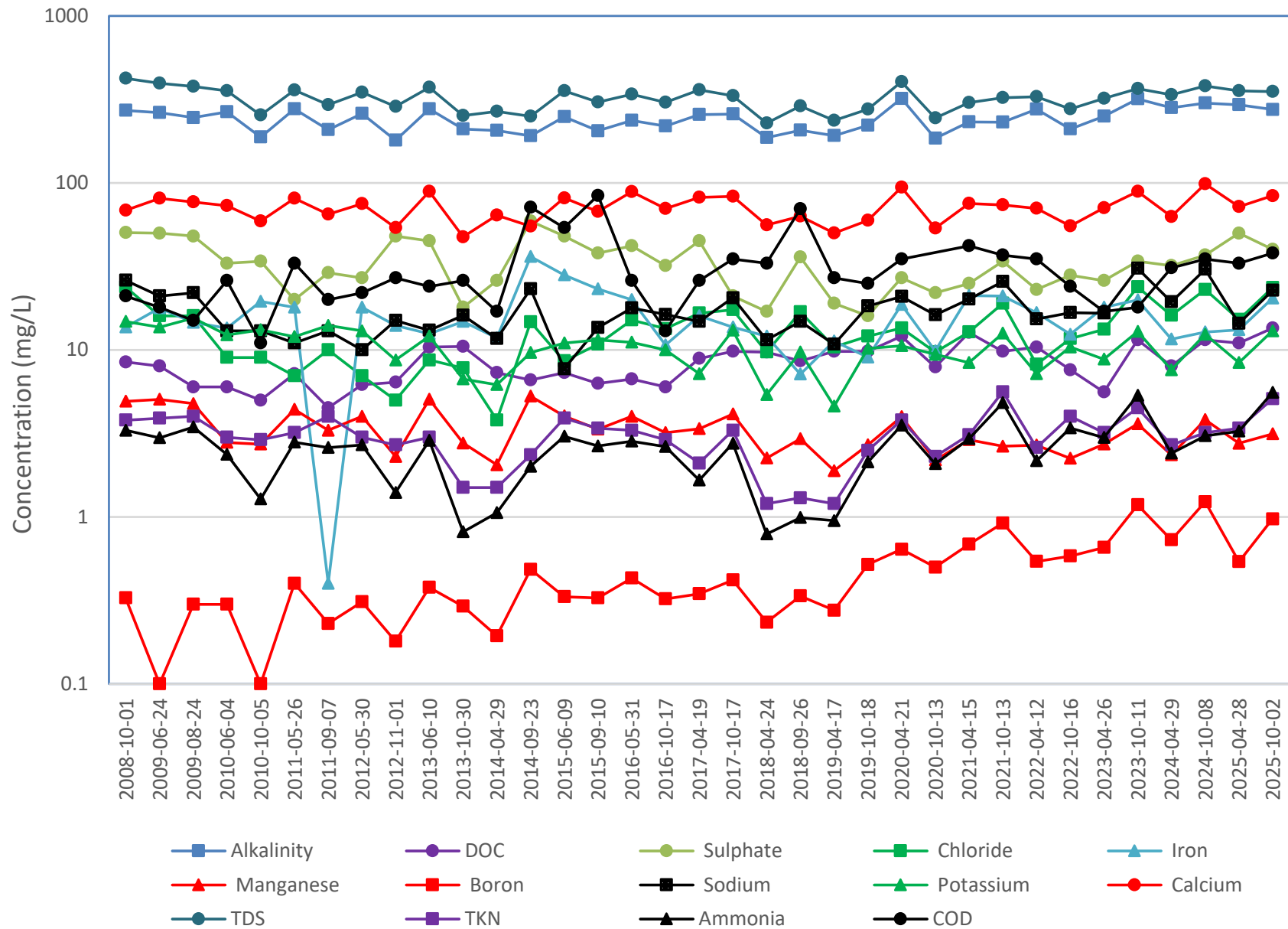
MW1



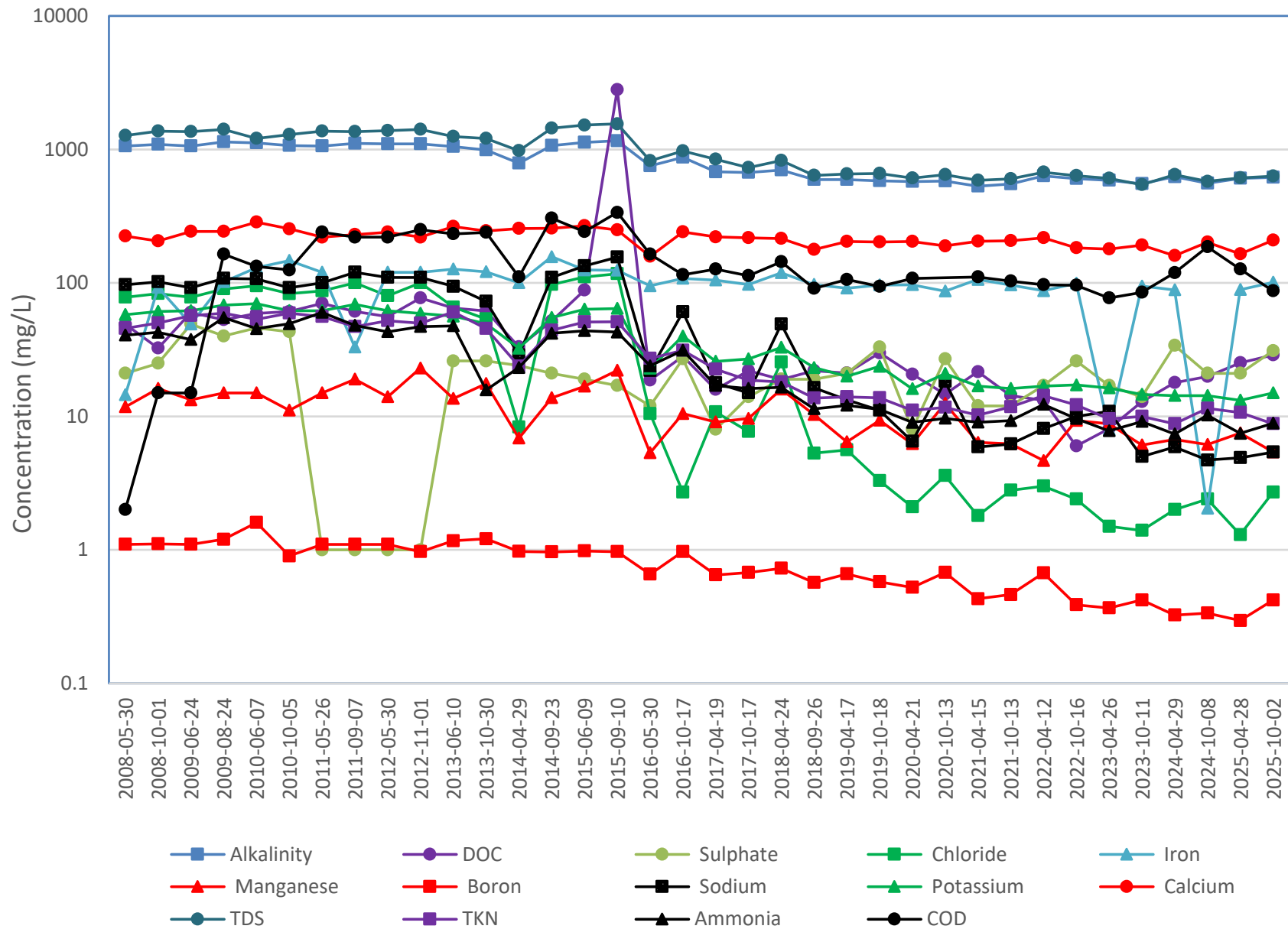
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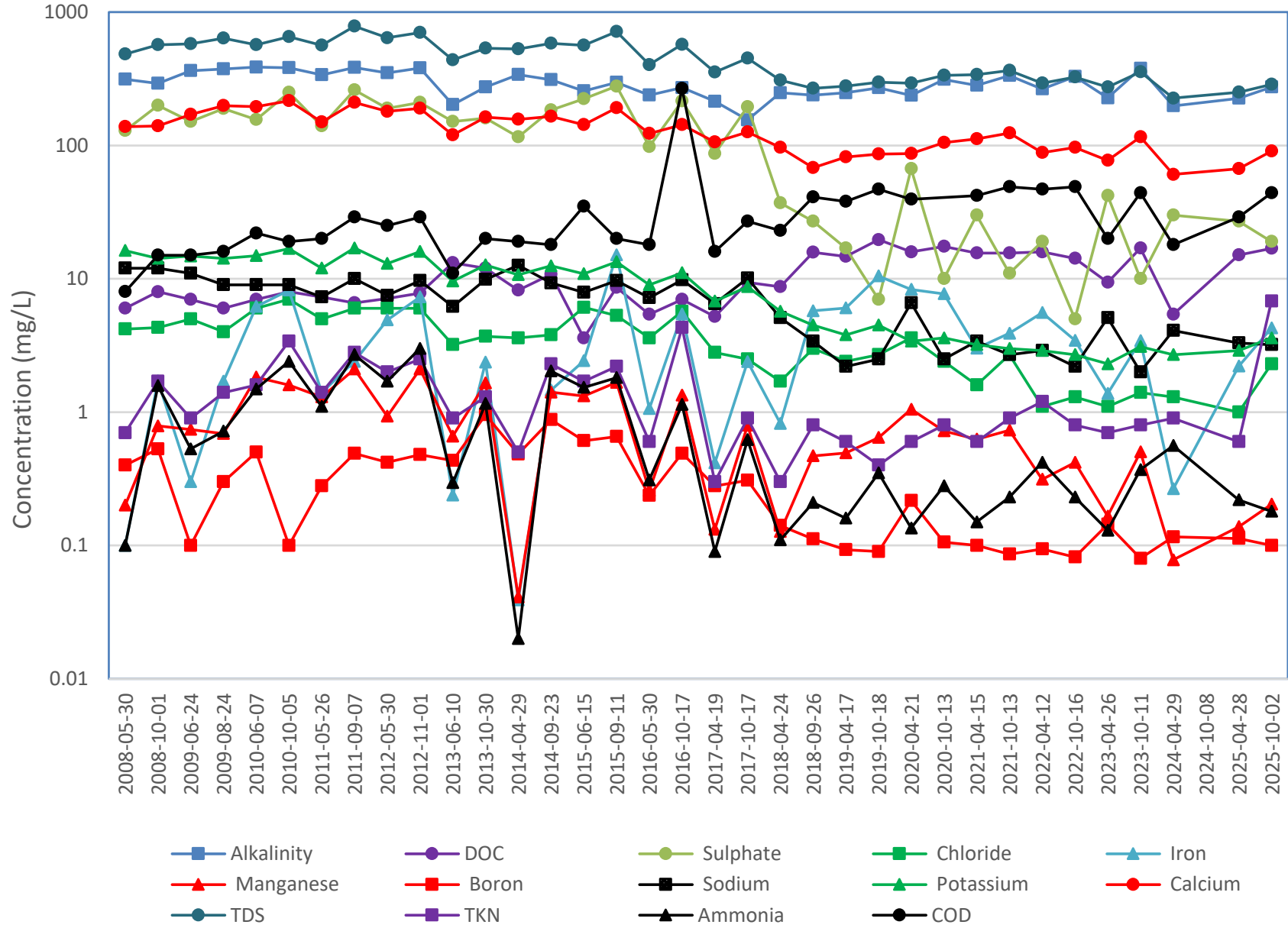
MW3



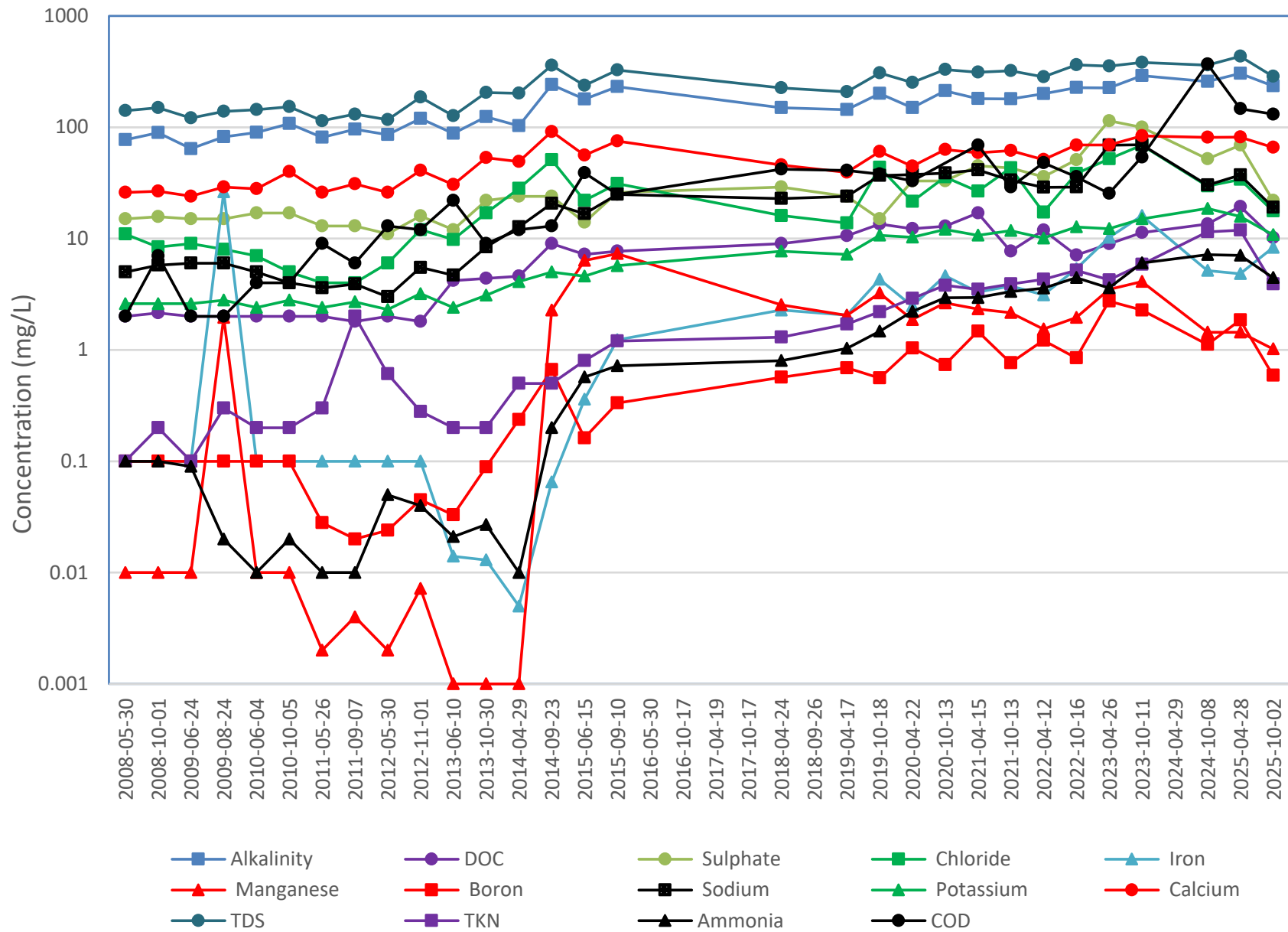
MW4



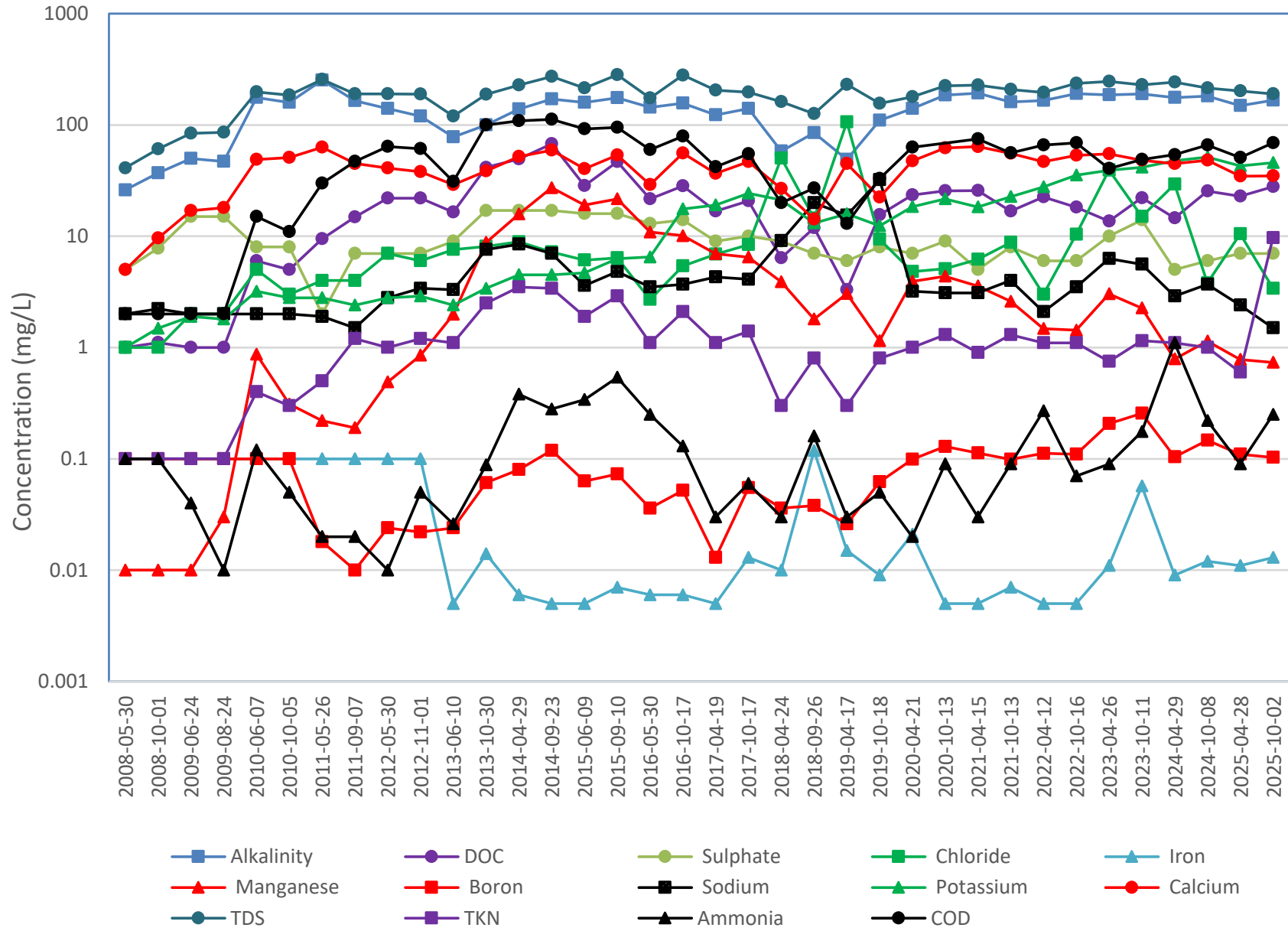
MW6



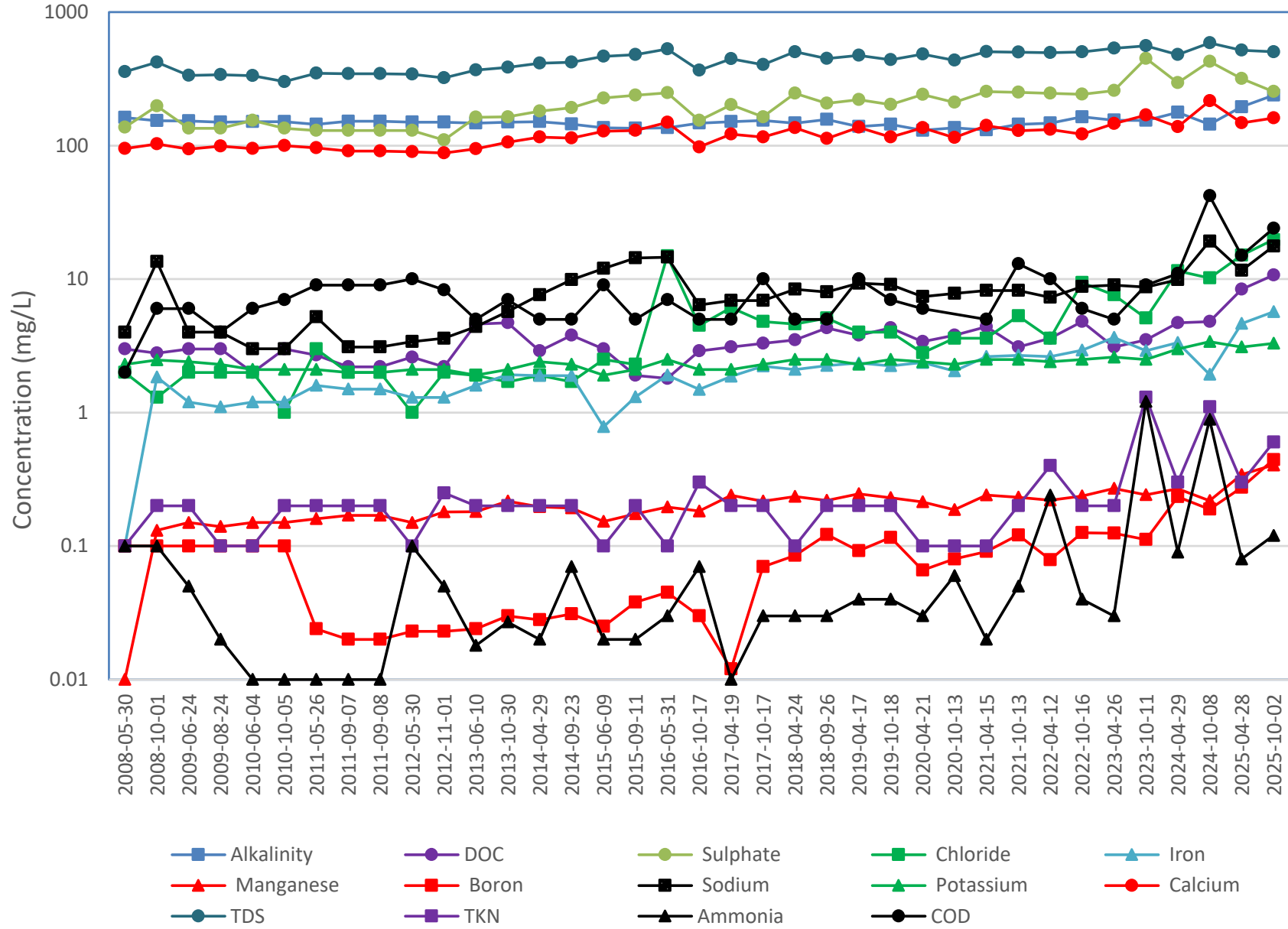
MW7



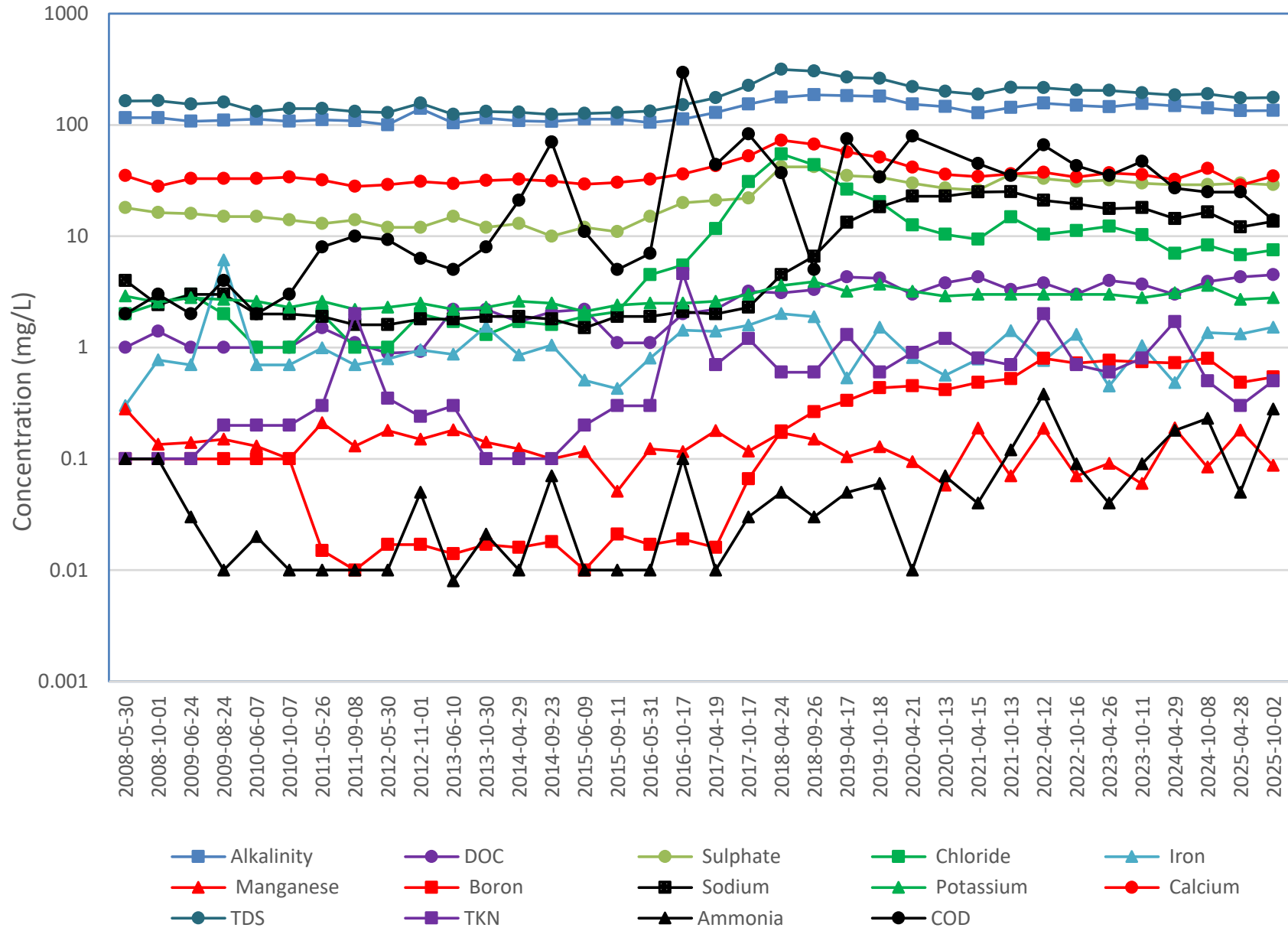
MW8



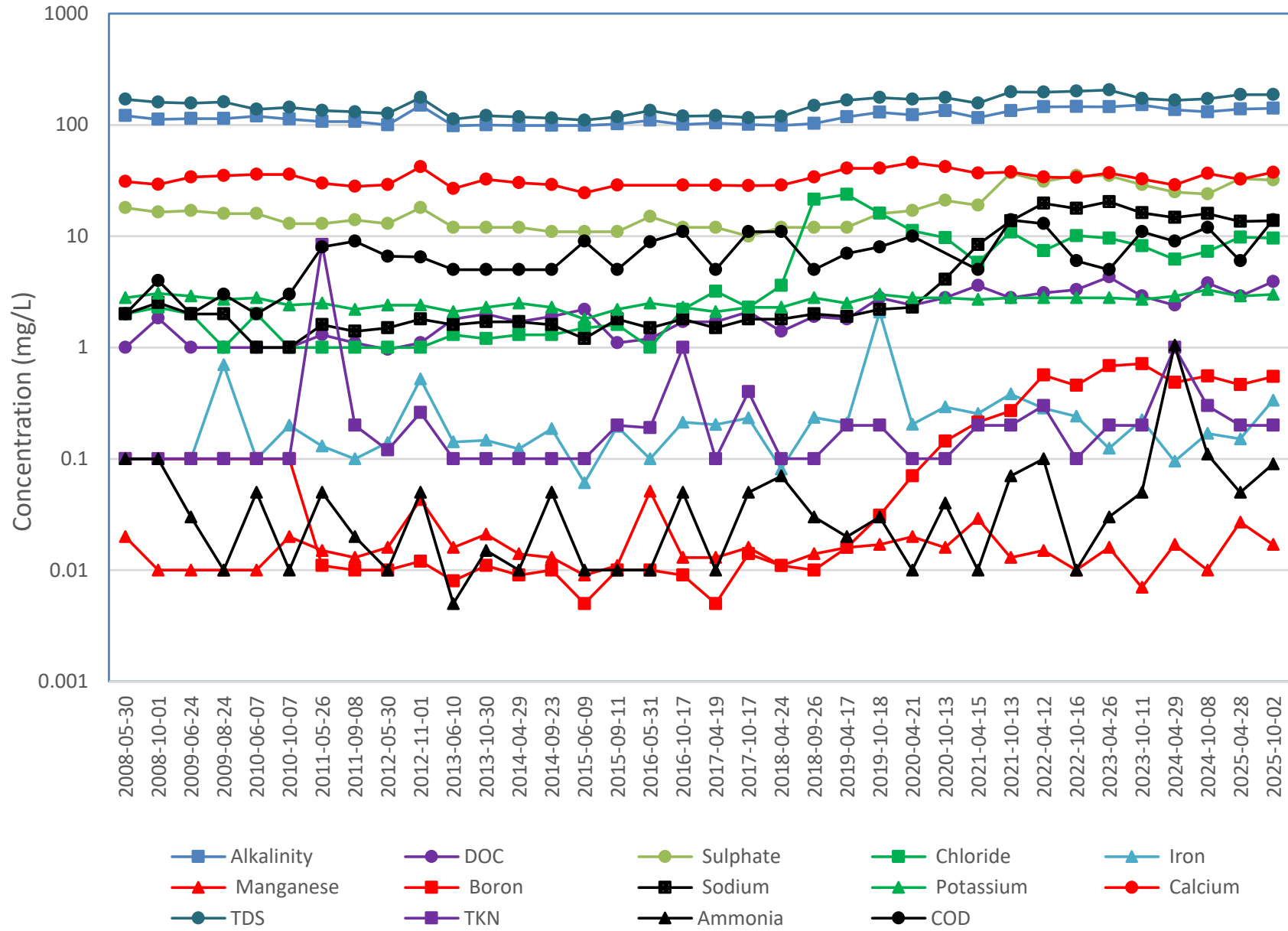
MW10



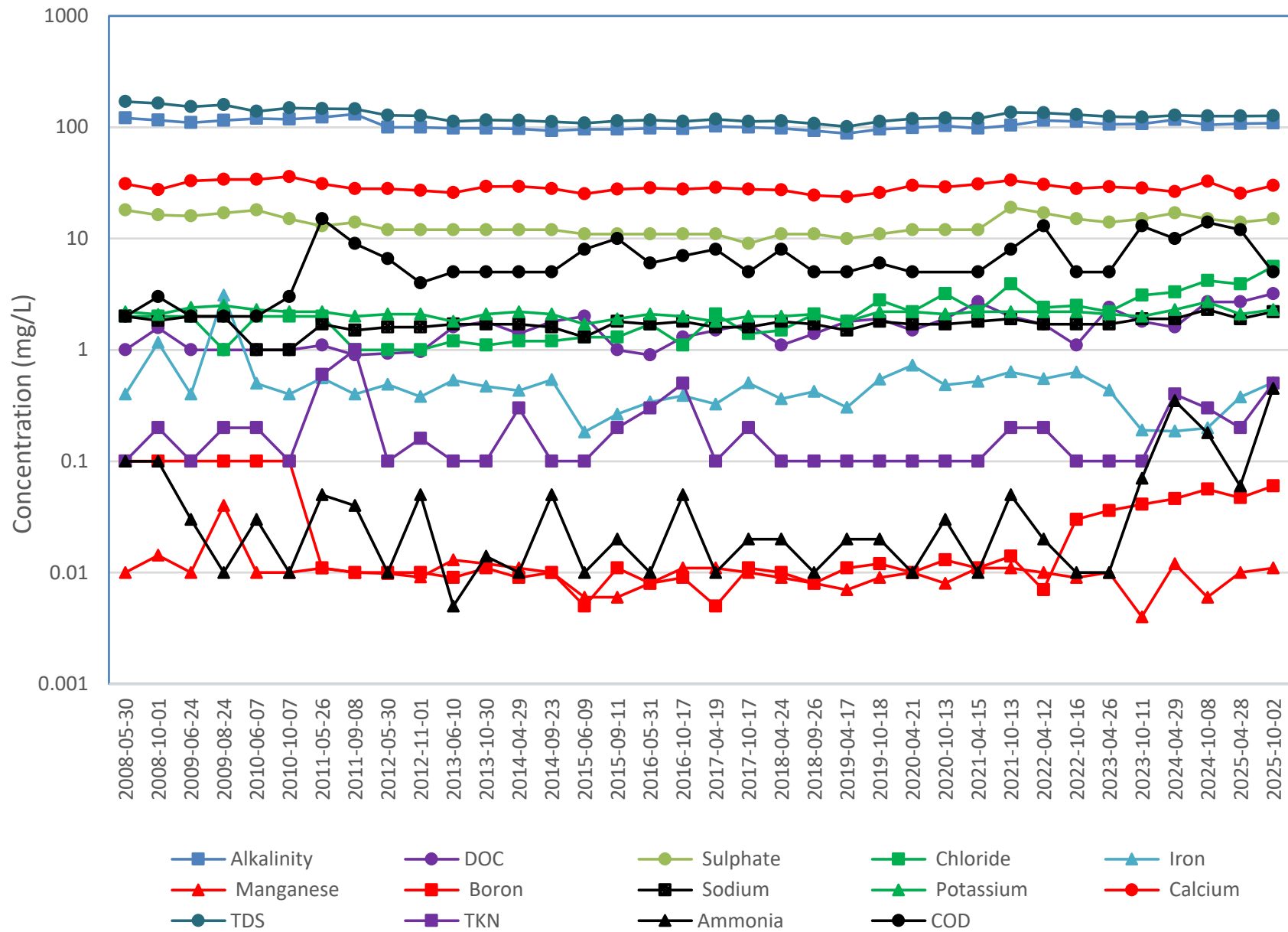
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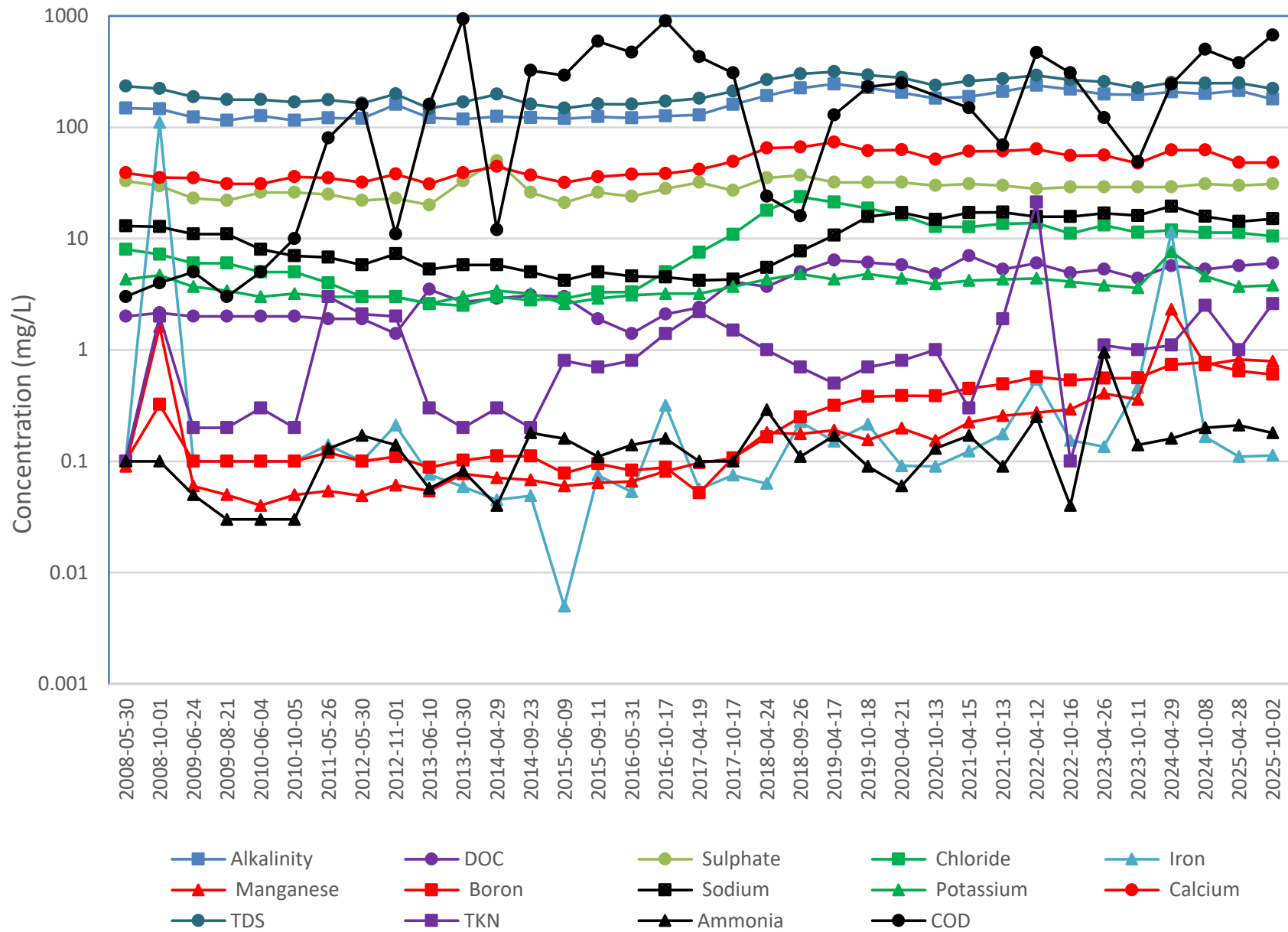
MW13



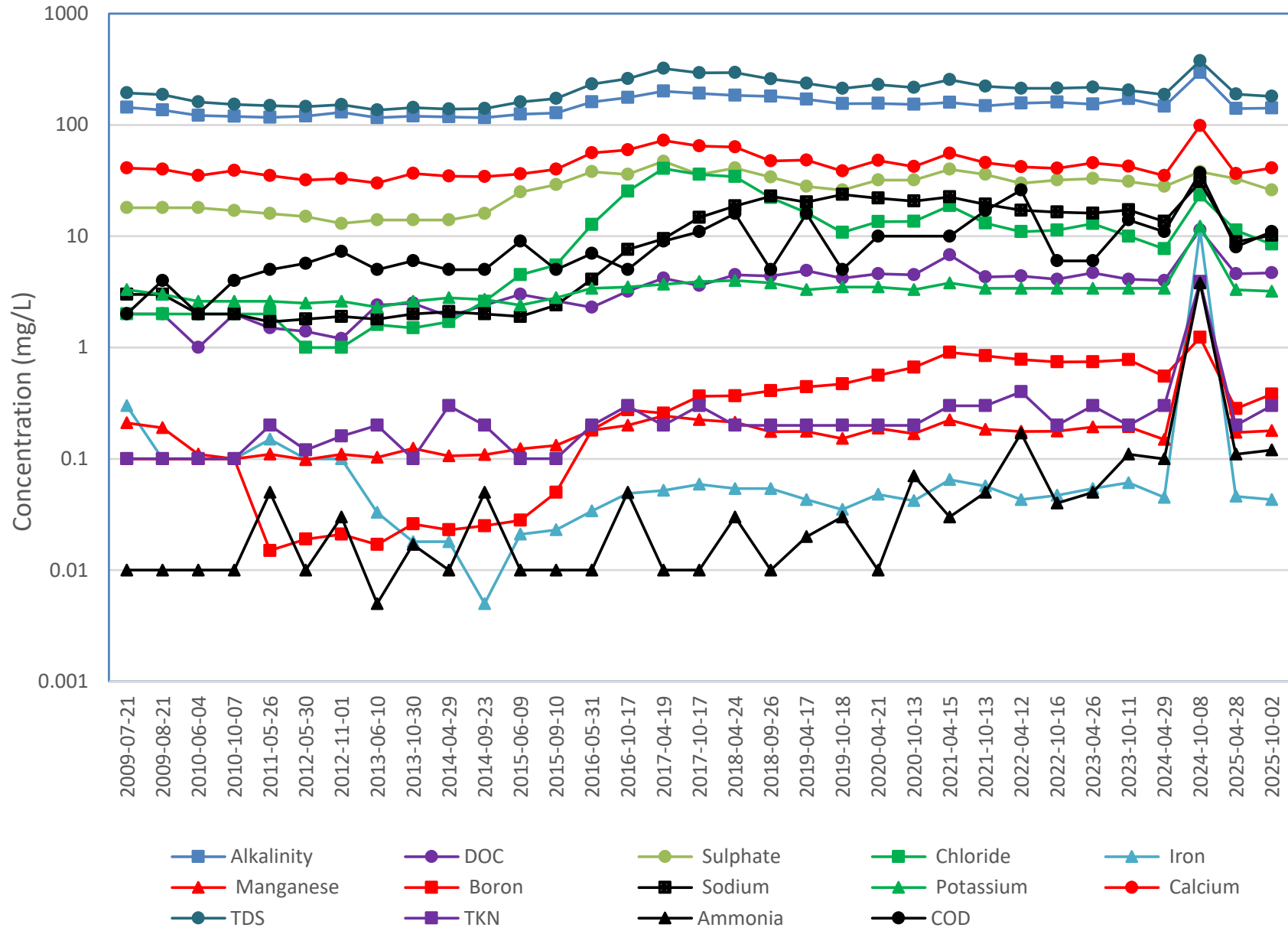
MW14



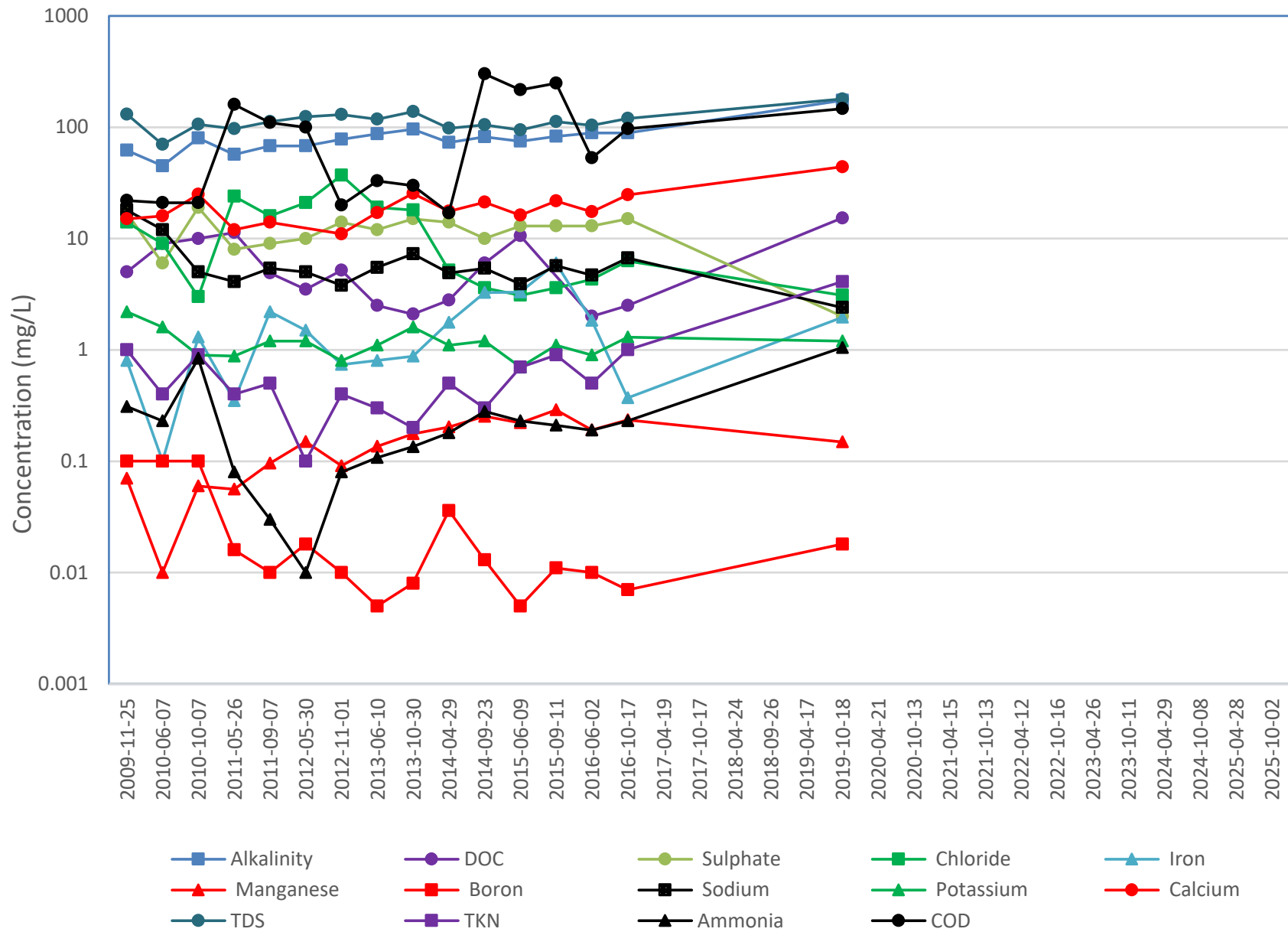
MW16



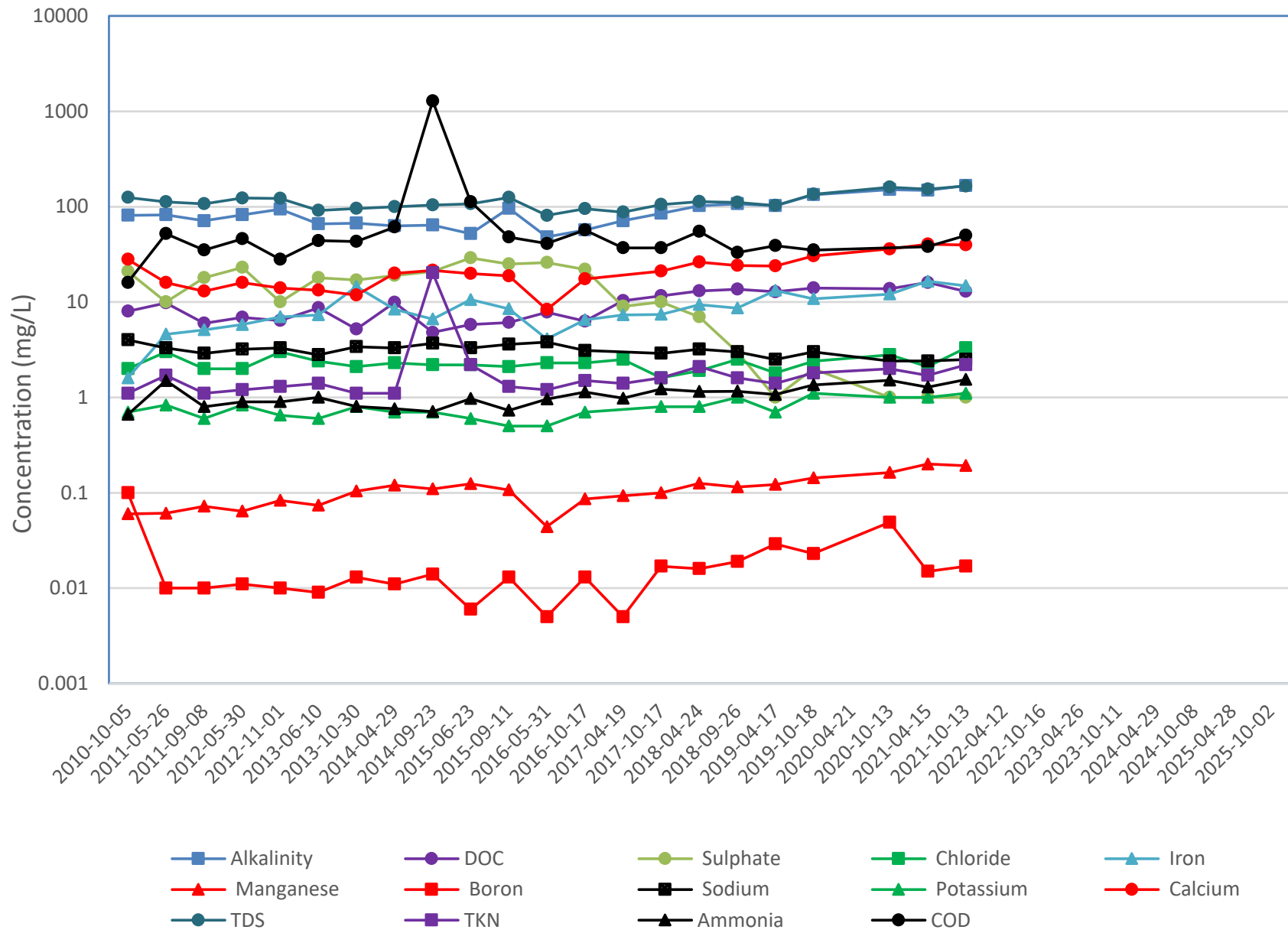
MW16-I



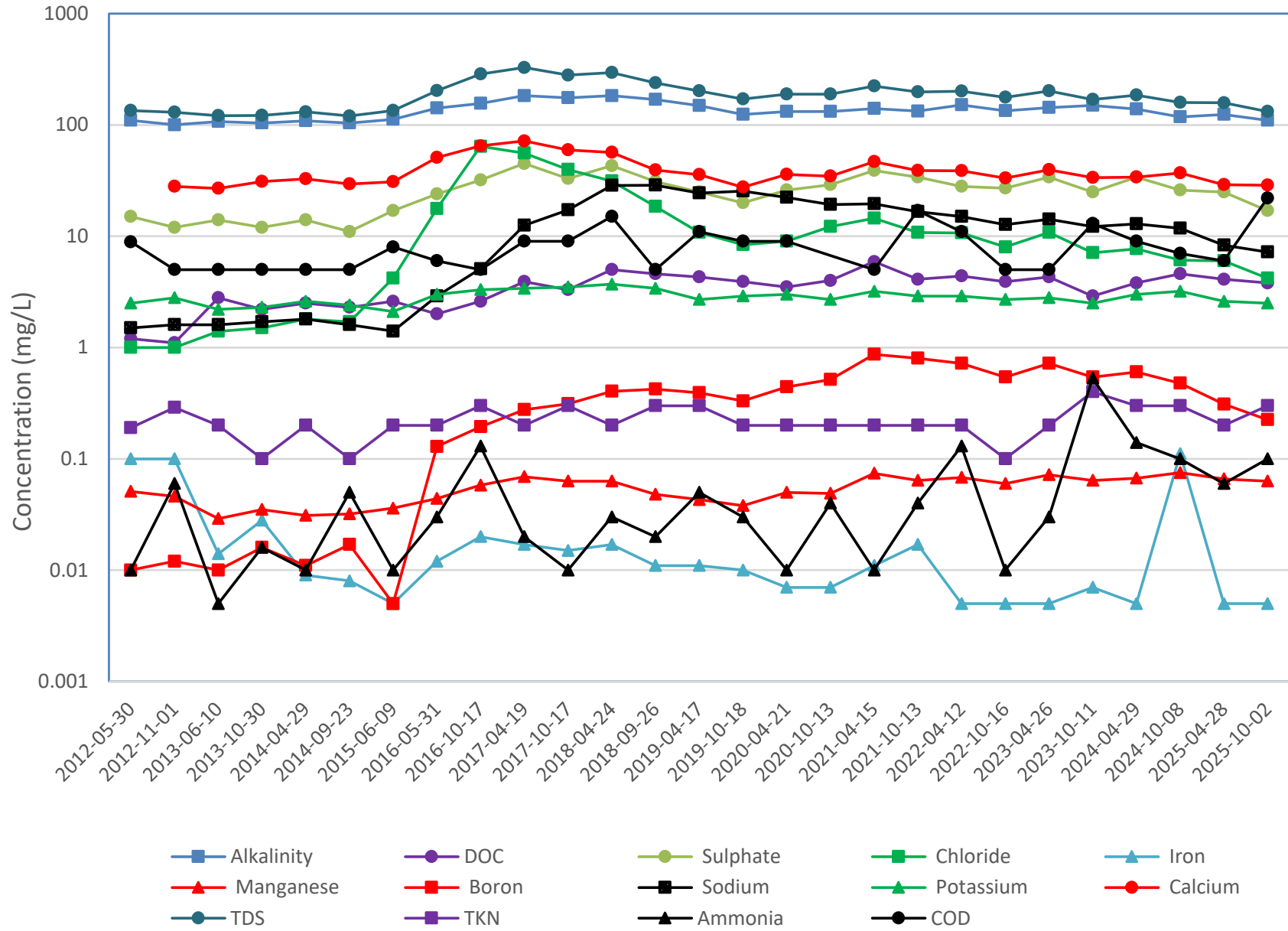
MW17



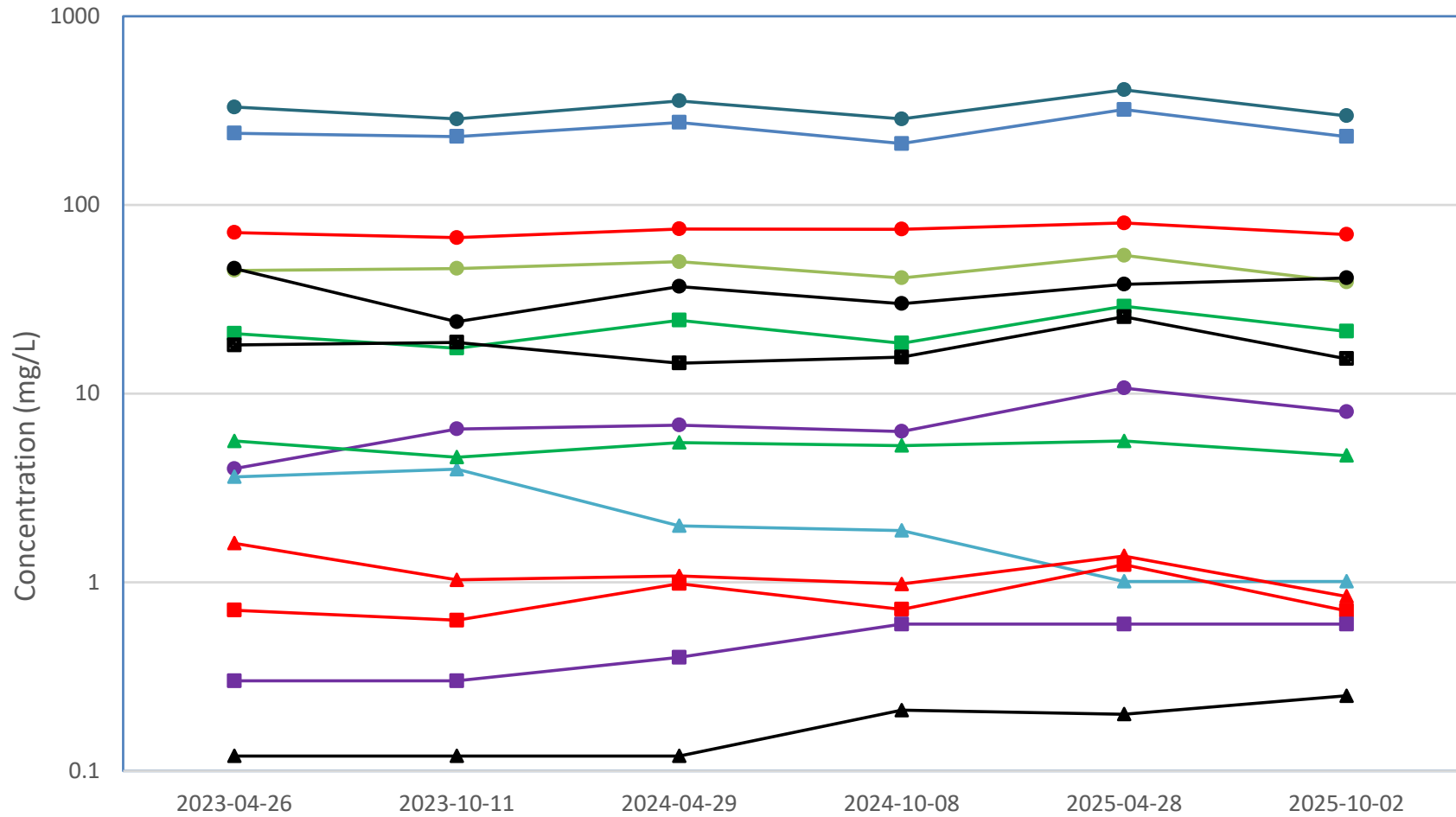
MW18



MW19

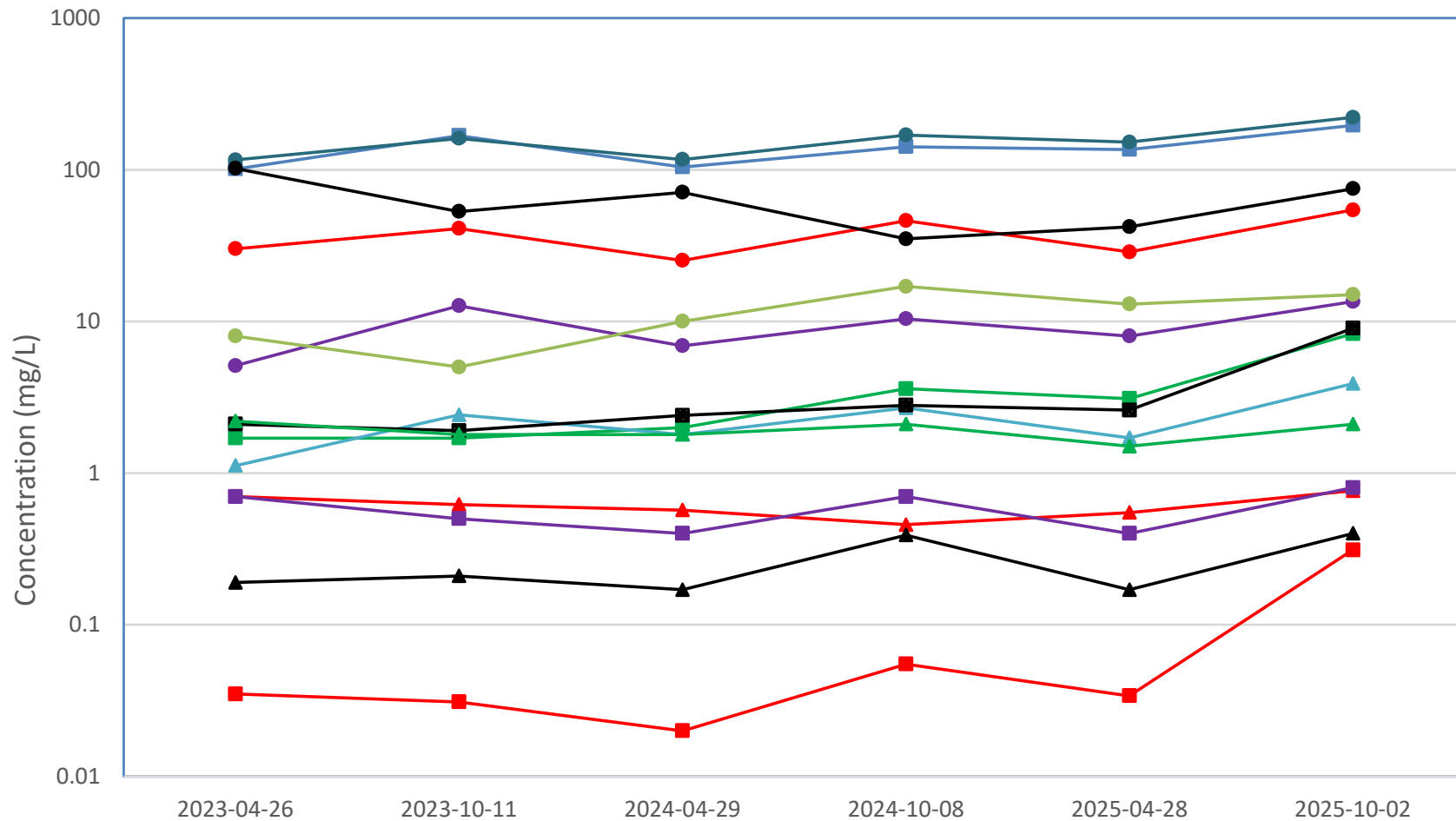


MW20-I



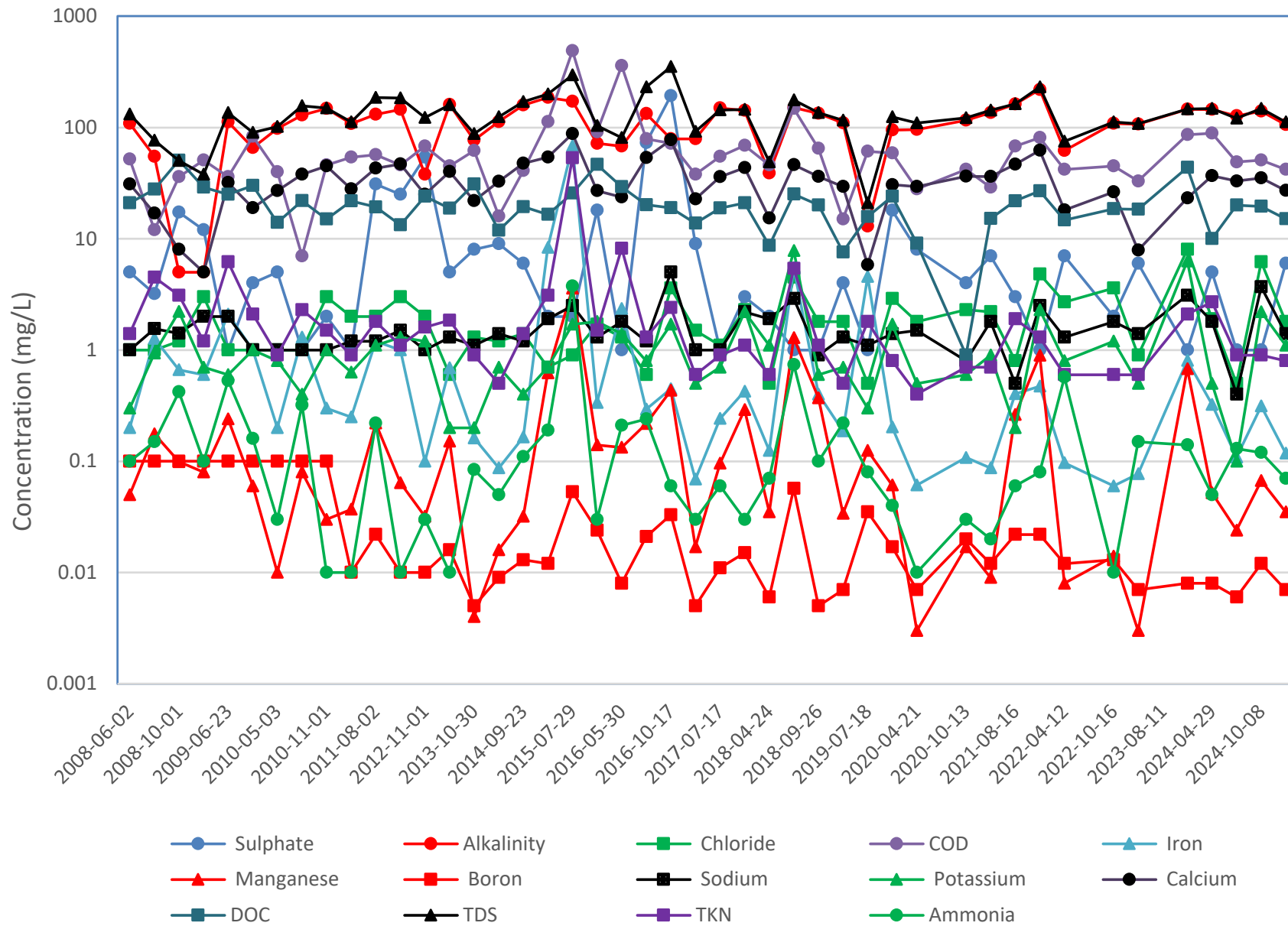
- Alkalinity
- DOC
- Sulphate
- Chloride
- Iron
- Manganese
- Boron
- TKN
- Ammonia
- COD
- TDS
- Potassium
- Calcium

MW20-II

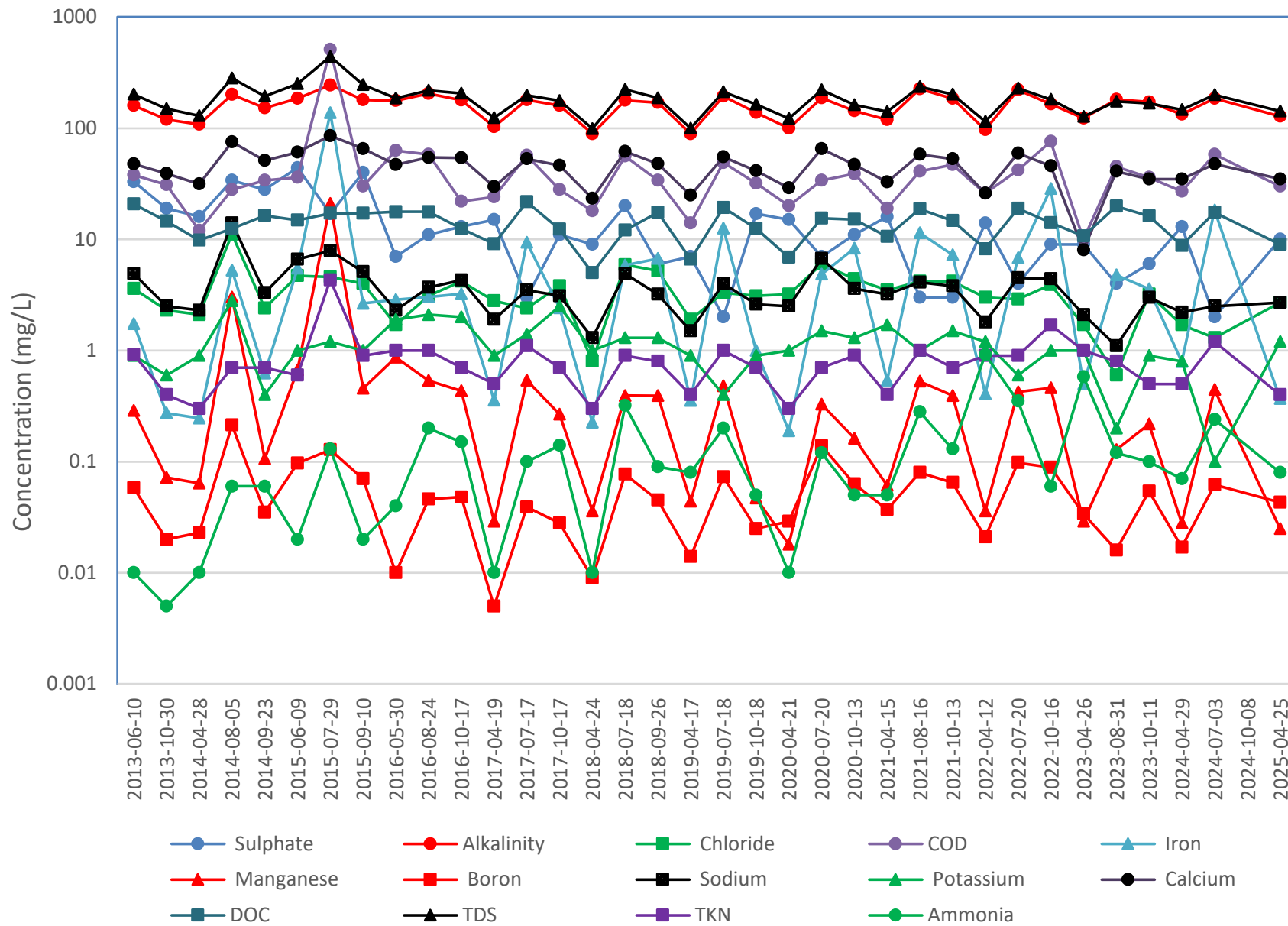


- Alkalinity
- DOC
- Sulphate
- Chloride
- Iron
- Manganese
- Boron
- Sodium
- Potassium
- Ammonia
- COD
- TDS
- TKN

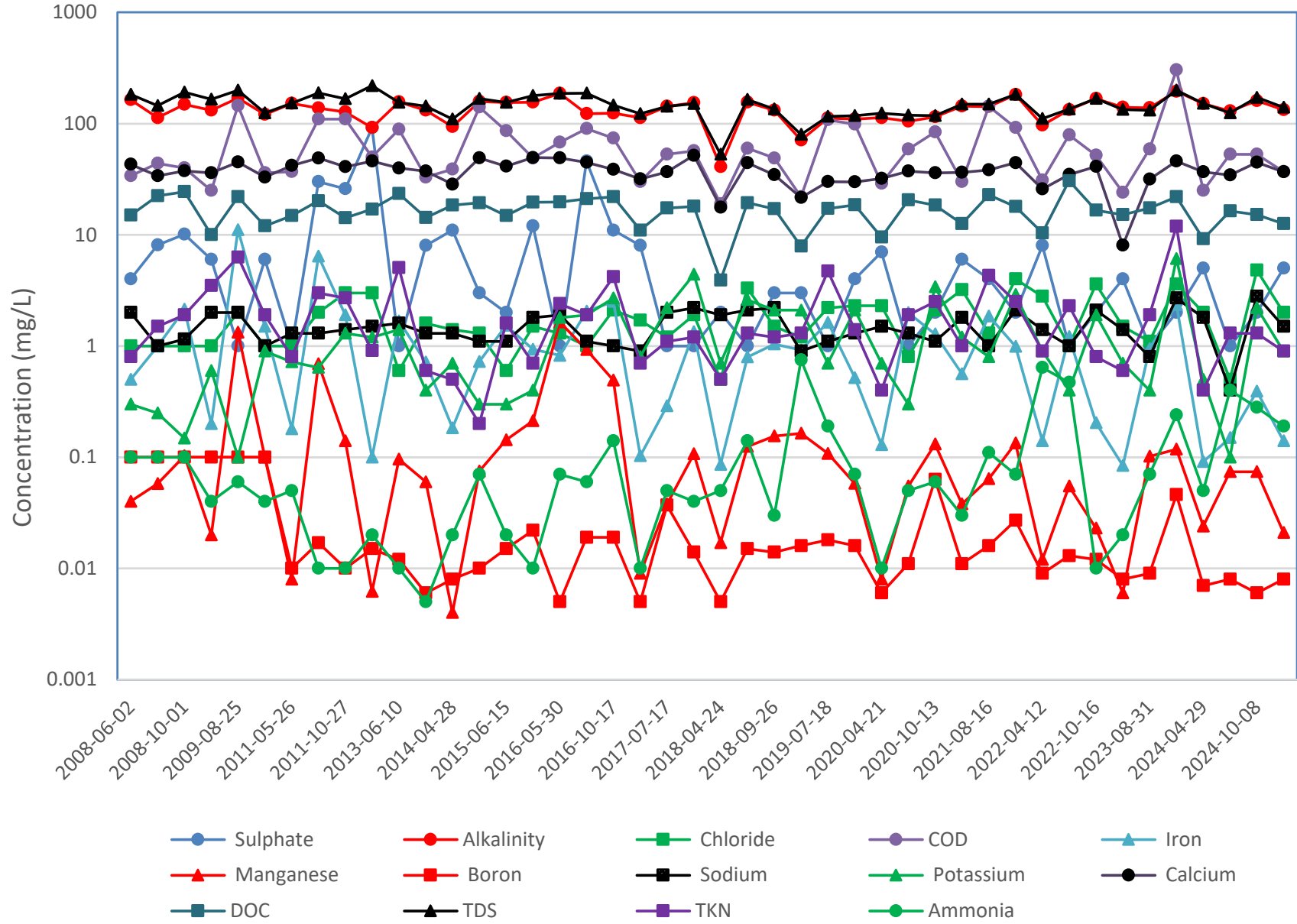
SWA



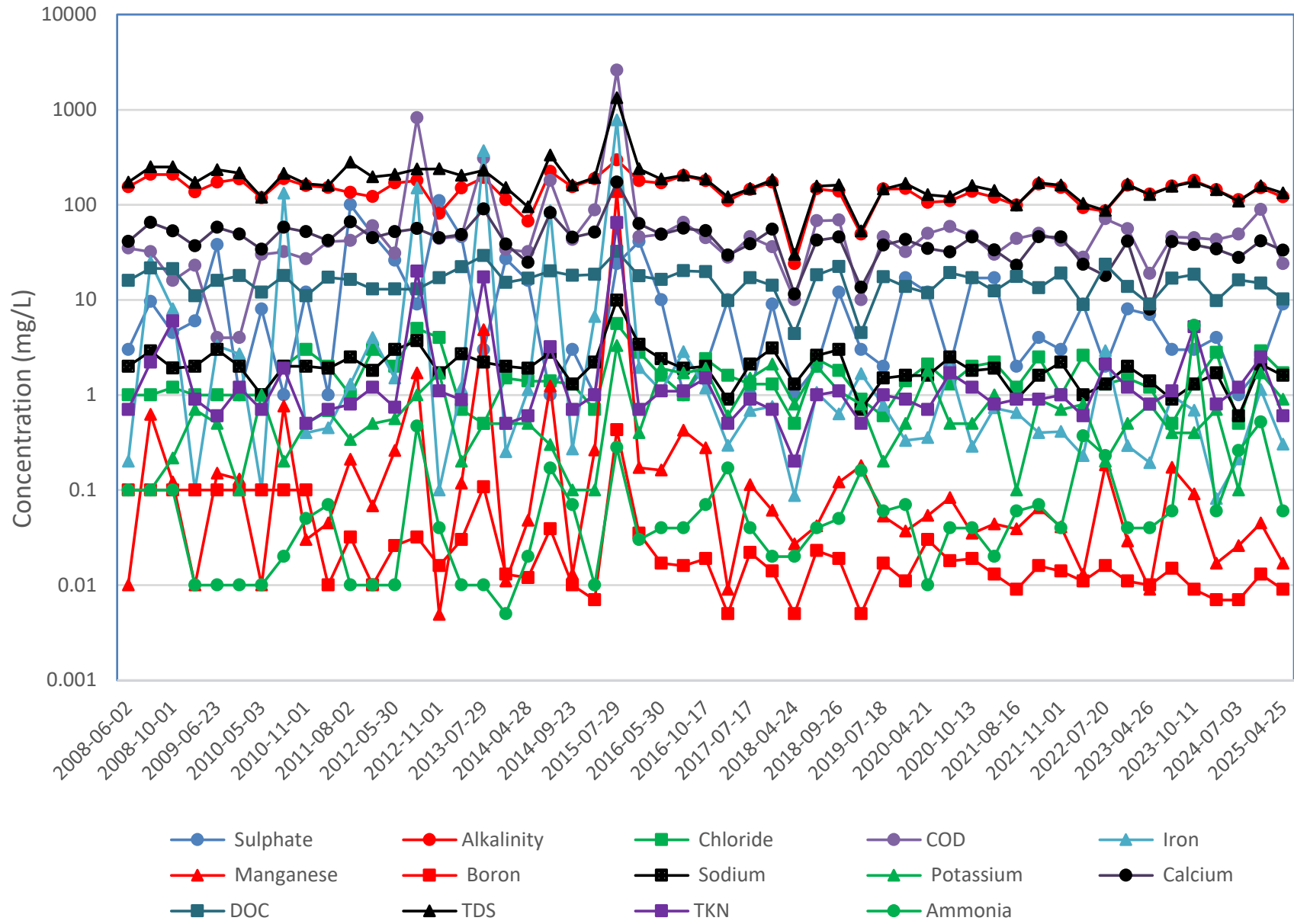
SWC2



SWD



SWF





APPENDIX G

Surface Water Photos



SW-A: April 28, 2025



SW-D: April 28, 2025



SW-C2: April 28, 2025



SW-F: April 28, 2025



SW-A: October 2, 2025



SW-C2: October 2, 2025



SW-D: October 2, 2025



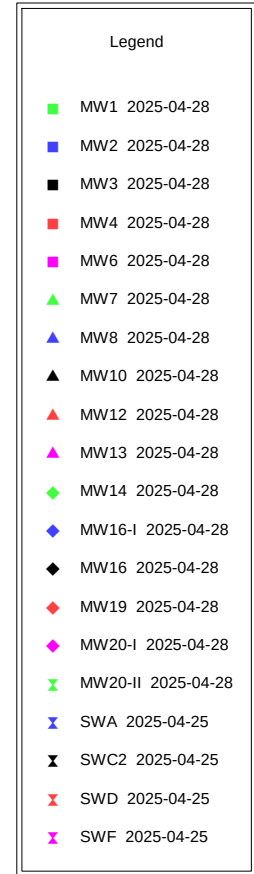
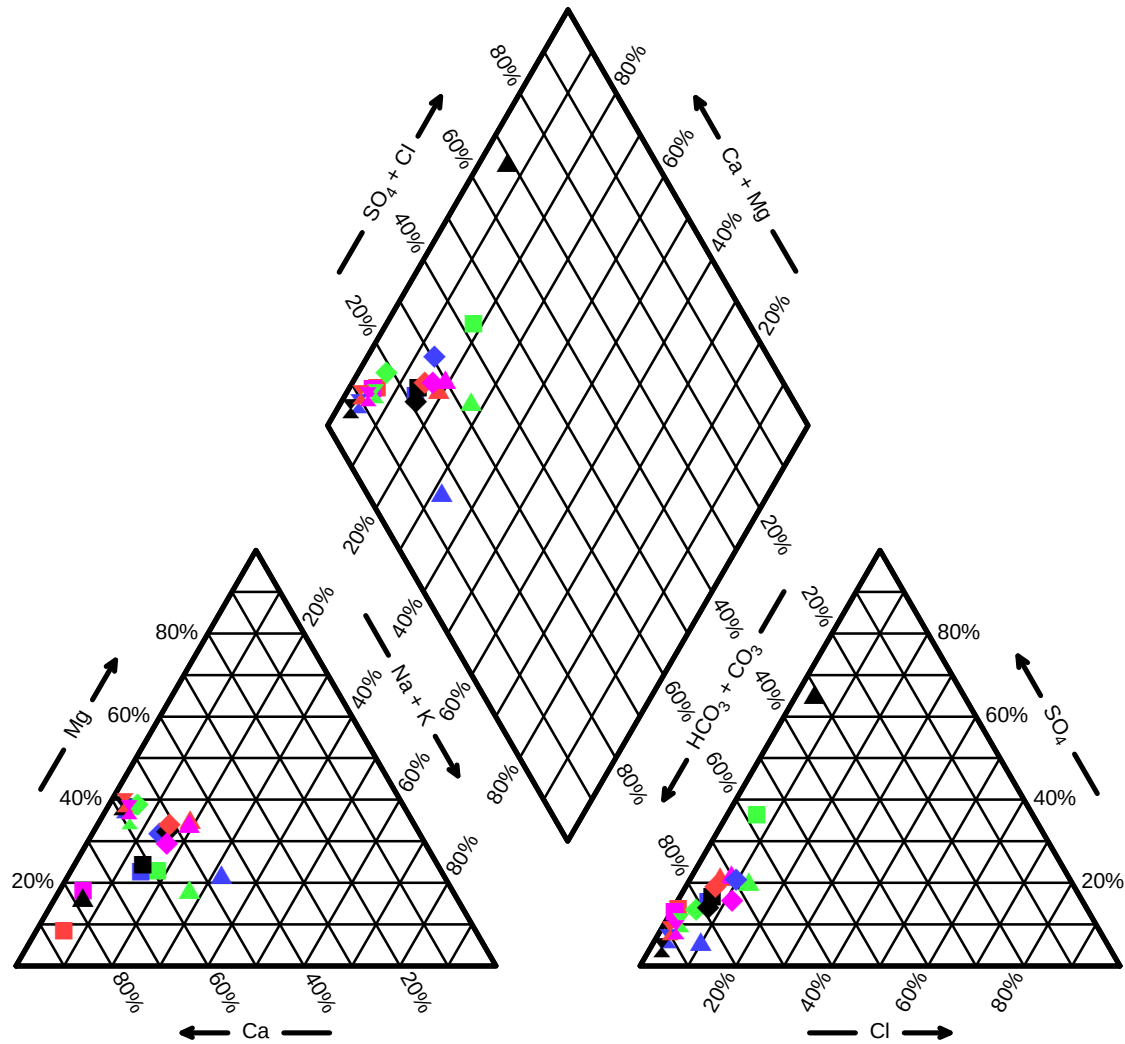
SW-F: October 2, 2025



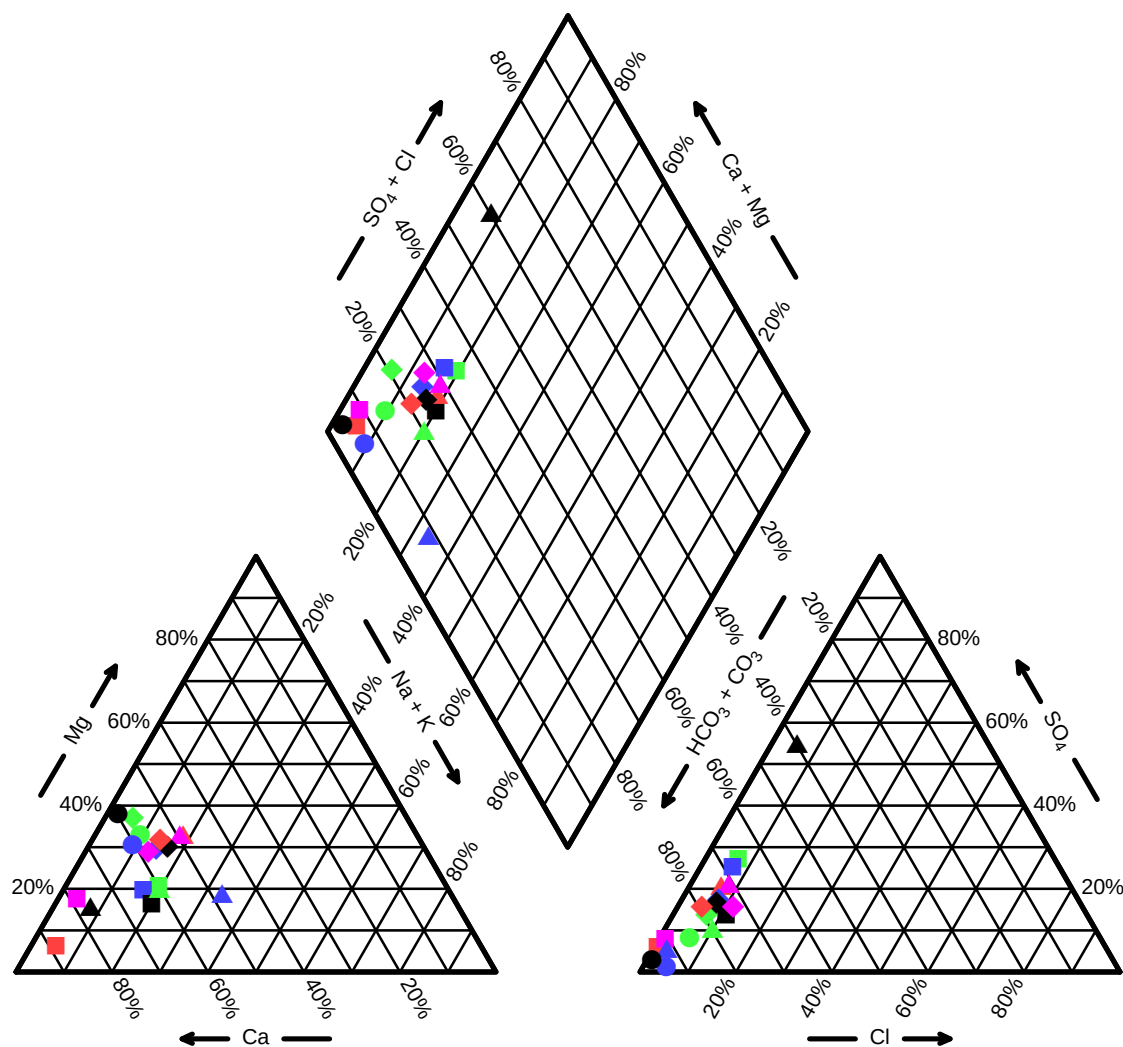
APPENDIX H

Piper Diagrams

April 2025



October 2025



Legend

- MW1 2025-10-02
- MW2 2025-10-02
- MW3 2025-10-02
- MW4 2025-10-02
- MW6 2025-10-02
- ▲ MW7 2025-10-02
- ▲ MW8 2025-10-02
- ▲ MW10 2025-10-02
- ▲ MW12 2025-10-02
- ▲ MW13 2025-10-02
- ◆ MW14 2025-10-02
- ◆ MW16-I 2025-10-02
- ◆ MW16 2025-10-02
- ◆ MW19 2025-10-02
- ◆ MW20-I 2025-10-02
- MW20-II 2025-10-02
- SWC2 2025-10-02
- SWF 2025-10-02



APPENDIX I

Site Inspection Forms

CITY OF KAWARTHA LAKES
OPERATING LANDFILL INSPECTION FORM

LANDFILL: Laxton

Inspected by: Alan Turner

Date: April 28, 2025

Time: 9:30 am

Weather Conditions: 5°C cloudy

A. GENERAL OBSERVATIONS

A.1 Landfill Site: Closed. during site visit, site is in good condition and working order.

A.2 Status of Landfill Development/Construction Activities: Waste being compiled accordingly and organized.

A.3 Tipping Face: Good condition, waste compiled.

A.4 Residential Container Station: Good condition.

A.5 Maintenance and Administration Building: N/A - closed during site visit

A.6 Weigh Scale Inspection Building: N/A - closed during site visit,
looks to be in good condition.

A.7 Reuse Centre: N/A

A.8 HHW Facility: N/A

A.9 Leaf & Yard Waste Composting Facility: Good condition, organized
with large amount composted 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? _____

closed at site visit

B.2 Are staff wearing adequate safety equipment? N/A - closed at site visit

C. LANDFILL COVER:

C.1 Any evidence of leachate seeps or erosion of landfill cover on waste disposal fill area? _____

No - good condition

C.2 Condition of North Slope? Stable, good condition

C.3 Condition of vegetation? Good condition

D. STORM WATER MANAGEMENT SYSTEM:

D.1 Is the surface water management system in good operating order? (e.g. any erosion, litter, debris of the perimeter stormwater ditches or stormwater sedimentation ponds? Are culverts free from debris? _____

N/A

E. LEACHATE COLLECTION SYSTEM

E.1 Are manholes free of litter and debris? _____

N/A

E.2 Condition of manholes/need repairs? _____

N/A

F. MAIN ENTRANCE AND INTERNAL ROADS:

F.1 Is the main entrance or internal roads in need of repair or maintenance work? _____

Good condition, fallen trees cleared.

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, some minor potholes.

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 surrounding forested area
minor amount in wetland on northwest side.

J. LANDSCAPING:

J.1 Does the landscaping (trees, shrubs, and ground cover) require maintenance work (e.g. grass cutting, replacement or vegetation)?

No - Good condition

K. SITE PERIMETER FENCING AND SIGNING:

K.1 Is the site perimeter fencing in good condition?

yes - good condition

K.2 Are the traffic and information signs in good condition?

yes - 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?

N/A - closed during site visit

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 - closed during 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 - closed during site visit.

M.3 Location and condition of medical emergency kits (eye wash stations and first aid kits):

N/A - closed during site visit.

M.4 Staff knowledge of emergency procedures/numbers?

N/A - staff not present, closed during site visit.

N. OTHER COMMENTS:

O. RECOMMENDATIONS:

CITY OF KAWARTHA LAKES
OPERATING LANDFILL INSPECTION FORM

LANDFILL: Laxton

Inspected by: Katie G

Date: Oct 2 2025

Time: 4:10

Weather Conditions: Sunny 26°C Beautiful!

A. GENERAL OBSERVATIONS

A.1 Landfill Site: Active, maintained

A.2 Status of Landfill Development/Construction Activities: Ongoing Active

A.3 Tipping Face: Slopes correctly Active

A.4 Residential Container Station: Active

A.5 Maintenance and Administration Building: Good

A.6 Weigh Scale Inspection Building: Good

A.7 Reuse Centre: N/A

A.8 HHW Facility: N/A

A.9 Leaf & Yard Waste Composting Facility: Active maintain 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? Nothing

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?

E.2 Condition of manholes/need repairs?

F. MAIN ENTRANCE AND INTERNAL ROADS:

F.1 Is the main entrance or internal roads in need of repair or maintenance work? NO

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

H. ODOURS:

H.1 Any odour problems? NO minor whiffs once in a while

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? yes, minor litter around Active area

J. LANDSCAPING:

J.1 Does the landscaping (trees, shrubs, and ground cover) require maintenance work (e.g. grass cutting, replacement or vegetation)? NO

K. SITE PERIMETER FENCING AND SIGNING:

K.1 Is the site perimeter fencing in good condition? /

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? Not inspected

M.3 Location and condition of medical emergency kits (eye wash stations and first aid kits): Not inspected

M.4 Staff knowledge of emergency procedures/numbers? Not inspected

N. OTHER COMMENTS:

O. RECOMMENDATIONS:



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	Laxton Landfill Site
Location (e.g. street address, lot, concession)	3225 Monck Rd, Woodville, ON
GPS Location (taken within the property boundary at front gate/ front entry)	671064 / 4954481
Municipality	City of Kawartha Lakes
Client and/or Site Owner	City of Kawartha Lakes
Monitoring Period (Year)	2025
This Monitoring Report is being submitted under the following:	
Certificate of Approval No.:	A321304
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:	Type Here	
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
MW15	Dry	all year
MW17 and 18	well underwater	all year
landfill gas not collected in summer		
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	Type Here	Select 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 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	RUC exceedances are noted at eastern monitoring locations, however, are more related to natural earth elements or organic sources associated with the peat soils. The City is looking to potentially acquire additional CAZ lands to the east.	
6) The site meets compliance and assessment criteria.	☐ Yes ☒ No	see section 4.2.5 of report	
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>i.</i>The site has developed stable leachate mound(s) and stable leachate plume geometry/concentrations; and <i>ii.</i>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	MW3 TDS exceedances occurred consecutively in 2025	

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:

21-Jun-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:

ort

☒ 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:	21/06/2
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)	Tributary flowing into Shadow Lake	
Distance(s)	40m	
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	If no, identify issues (Type Here):
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
some locations are not sampled when dry	Type Here	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
iron Total Phosphorus Phenols Aluminum	0.3 mg/L 0.03 mg/L 0.001 mg/L 0.075 mg/L	>100 % >100 % >100% 46%
Boron	0.318 mg/L	60%
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	These concentrations are all observed in the upstream location as well historically and are most likely attributable to the stagnant, shallow water which does not typically allow for a sediment free sample to be collected. Also natural sources within the peat could account for the elevated iron (earth element) and total phosphorus is expected to be derived from decaying vegetation in these conditions. Boron is sourced to leachate, however, it still meets CWQG of 1.5 mg/L which is a more applicable criteria given interim status of PWQO value

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, the 2025 generally results fall within the historical range for each location.
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) There is no trending that would suggest further actions are required.
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	☐ Yes ☒ No ☐ Not Applicable	If yes, list value(s) that are/have been exceeded and follow-up action taken (Type Here)

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:

21-Jun-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:	
☒ 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:	21-Jun-2026	
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Save As		Print Form