Blind River

Town of Blind River Municipal Landfill Site

ANNUAL MONITORING AND OPERATIONS REPORT – 2022

September 2023
KEC Ref: 2231

Prepared by:

KRESIN Engineering Corporation

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1.0 INTRODUCTION

The purpose of this Annual Monitoring and Operations Report for the Town of Blind River Municipal landfill site (Site) is to meet the annual reporting requirements identified in the Site Operations and Maintenance Plan (O&M Plan). The O&M Plan indicates that the Annual Operations Report should comply with the requirements of the Environmental Protection Act as legislated under Regulation 232/98. It is noted, however, that the Site and its operation are subject to Regulation 347. Copies of the Environmental Compliance Approval (ECA), formerly C of A, and subsequent amendments are included in Appendix A. A copy of the stormwater management ECA for the waste disposal site (ECA No. A-500-7134513066, issued October 26, 2022) is also provided in Appendix A.

This document reports on monitoring and operations at the Site for the 2022 operating year and was prepared with reference to the MECP's *"Technical Guidance Document, Monitoring and Reporting for Waste Disposal Sites, Groundwater and Surface Water (Nov. 2010)".* This document also addresses Annual Reporting requirements identified in the O&M Plan.

1.1 Location

The Site is located approximately 2 kilometers east of the built-up section of the Town of Blind River on the north side of Highway 17 (shown on Drawing B1). The Site is legally described as the south ½ of Lot 7, Concession 1 of Striker Township in the District of Algoma.

The coordinates of the Site, acquired through the use of a GPS surveying system (NAD83) with a horizontal accuracy of less than 5 centimeters (cm), are as follows:

	UTM Coordinates
Northing	5116641.907m
Easting	354605.951m
Zone	17T
Latitude (decimal degrees)	46.187825
Longitude (decimal degrees)	-82.884092

1.2 Waste Accepted

Under the current ECA, the Site is approved to receive domestic, commercial, non-hazardous solid industrial waste, scrap wood and brush, and iron sludge waste generated from the potable water treatment facility located at Cameco Corporation in Blind River.

Household hazardous wastes are not accepted at the Site but are collected during Household Hazardous Waste days that are held on a regular basis, historically once every 2 years. A Household Hazardous Waste Day took place in July of 2022.

The Site services a population of approximately 3,650 people along with the area industrial, commercial and institutional (ICI) Sectors. A curb side waste collection program is in place in the Town of Blind River, providing weekly refuse pick-up. The collection programs are run by a private company under contract with the Town. Waste is deposited at the Site by the contractor who collects municipal waste by residential/commercial direct-haul.

1.3 Ownership and Key Personnel

The Town of Blind River owns the Site. Key personnel and their respective contact details are included in Table 1.

TABLE 1: LANDFILL SITE KEY PERSONNEL	
Contact	**Contact Details**
Town of Blind River - Primary Contact	Chris Zagar Town of Blind River, Director of Public Works 11 Hudson Street, P.O. Box 640 Blind River, ON P0R 1B0 Phone: 705-356-2601 Fax: 705-356-7343 Email: Chris.Zagar@blindriver.ca
Blind River Landfill Site Operator	GFL Environmental Inc. 9 Industrial Park Road East Blind River, ON P0R 1B0 Phone: 705-356-4118
Competent Environmental Practitioner	Chris Kresin, M. Sc. (Eng.), P.Eng Kresin Engineering Corporation 536 Fourth Line East Sault Ste. Marie, ON P6A 6J8 Phone: 705-949-4900 Fax: 705-949-9965 Email: info@kresinengineering.ca

1.4 Description and Development of the Waste Disposal Site

Information obtained from Town sources (both written records and verbal accounts) indicates that the landfill site, which services the urban and rural areas of the Town of Blind River, has been receiving municipal wastes since about 1970.

The Site operates under authority of the original ECA No. A7138701 dated November 1980. It stipulates the following conditions:

1. Total site area is 2 ha (further defined by an attached sketch);
2. Site to accept domestic, commercial and “other” (limited to wood scrap and brush) wastes; and
3. C of A to be registered on title.

The original C of A was amended on two (2) occasions;

1. April 1994: added “non-hazardous solid industrial wastes and iron sludge” as allowable wastes for disposal at the Site; and
2. January 2000: added “the use of sawdust as interim cover” for a two (2) year period.

The Site is operated by the Contractor named above, who also provides waste collection services under one contract with the Town. Duties of the landfill site operator include:

1. Collect and dispose of residential municipal waste from curb side;
2. Collect and dispose of commercial and institutional municipal waste as well as waste from municipal parks;
3. Collect and dispose of municipal waste from several 4 and 6 cubic yard tip dumpsters located throughout the Town;
4. Bulldoze waste and apply cover as required by the Town and the Ministry of the Environment, Conservation and Parks;
5. Coordinate the establishment of marshalling areas, designated waste and disposal areas and recycling areas with the site attendant;
6. Designating, signing and maintaining all waste areas in coordination with the site attendant; and
7. Provide monthly reports of volumes of waste collected.

Placement of landfill cover material generally occurs following each day that the Site is operational. The landfill site operator employs a large sheepsfoot landfill compactor to compact waste in-situ, to apply cover material and to shape the Site topography as required.

A landfill attendant is on Site at all times during operating hours in order to observe the work on behalf of the Contractor for the purpose of ensuring the Contractor's compliance with the Contract. Attendant duties also include:

1. Stop and check all vehicles entering the Site to determine amounts and types of material to be deposited and ensure that waste is deposited in designated areas;
2. Ensure that only waste collected in the Town of Blind River is deposited in the landfill site;
3. Enforce, collect and complete waybills for all applicable landfill tipping fees;
4. Collect data on a daily basis of all volumes and types of material deposited and record same on forms provided by the Town;
5. Ensure that all waste disposed of meets criteria and regulations of the Ministry of the Environment, Conservation and Parks and all other applicable government regulations;
6. Ensure proper backfill procedures are used;
7. Monitor and supervise pest control services; and
8. Perform other duties of a minor nature that may be required from time to time.

Entry to the Site is from the south and fill activities in 2022 occurred in the raised section of the landfill site as well as various piles around the perimeter of the raised section as shown on Drawing B2. An attendant's shelter and areas to dispose of materials to be diverted are situated at the termination of the main access road, just outside of the approved fill area.

The Site operates as a natural attenuation site, relying on naturally occurring physical, chemical and biological processes to reduce concentrations of contaminants below Ministry of the Environment, Conservation and Parks (MECP) limits prior to reaching the property boundaries of the Site. The Town has used the area fill method of landfilling at the Site, gradually increasing the height of the Site throughout its operating life. The area of fill ranges in elevation from a high of approximately 211 meters above sea level, at the center of the active fill area, to a low of approximately 200 meters above sea level at the toe of the fill area. The approximate elevation found on the north side of Highway 17 at a grouping of monitoring wells is 191 meters above sea level.

In July 2004 an O&M Plan for the Site was developed. The Plan described the approach to operating the Site such as landfill capacity and waste characterization, surface and groundwater management, landfill development and operations, control and maintenance, monitoring and reporting, contingency plans as well as a closure plan.

A Hydrogeological/Engineering report for the Site was completed in September of 2002 and included in the appendices of the O&M Plan discussed above. The report was completed to address MECP's requirement outlined in a 2002 order issued to the Town that a hydrogeological study be completed. The hydrogeological investigation included monitoring well installation and groundwater sampling in order to determine source leachate strength, leachate transport through the Site and impact of leachate at the property boundary.

Figure 1 presents a conceptual site model of the Site. As stated in the MECP Technical Guidance document, "*A conceptual site model is a three-dimensional picture of site conditions that conveys what is known or suspected about the sources, releases and release mechanisms, contaminant fate and transport, exposure pathways, potential receptors, and risks. The conceptual site model is based on the information available at any given point in time and will evolve as more information becomes available*".

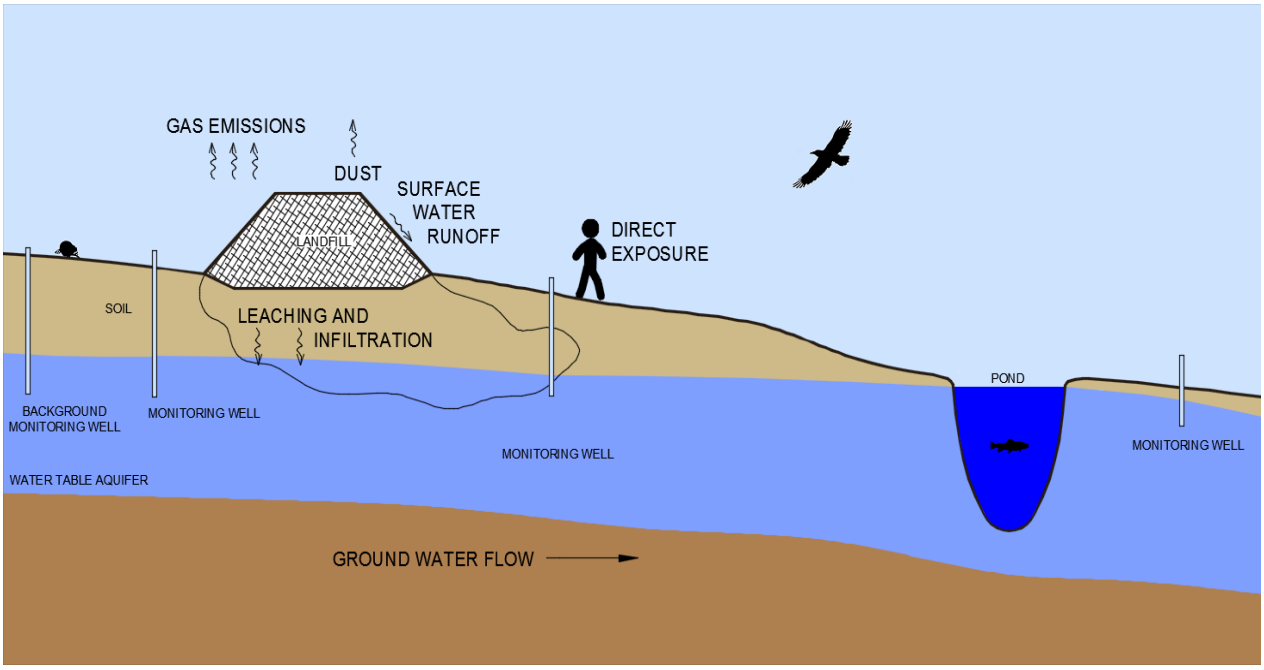


Figure 1 – Conceptual Site Model

1.5 Monitoring and Reporting Program Objectives and Requirements

As stated in the O&M Plan, this report should comply with requirements of Regulation 232/98. Regulation 232/98 "Landfilling Sites" made under the EPA outlines the requirements for Annual Operations Reports for landfill sites in Ontario. The regulation requires that:

The owner and the operator of a landfilling site shall ensure that,

(a) within three months after each anniversary of the date on which waste was first accepted at the site, an annual report is prepared respecting the operation of the landfilling site, including a summary of results from monitoring programs; and
(b) all of the reports are retained until at least two years after the site is closed.

Further to the regulation, the MECP Landfill Standard Guideline states that an Annual Operations Report should include the following information:

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 quantity of any leachate removed, or treated and discharged, from the site during each operating week, for sites with leachate collection.
g. A summary of the weekly, maximum daily and total annual quantity (by weight where weigh scales are provided at the site, otherwise by estimated volume as received) of waste received at the site.
h. A summary of any public complaints received by the owner and the responses made.
i. A discussion of any operational problems encountered at the site and corrective action taken; and
j. An update of the cost estimate for financial assurance and the amount which has been provided to the Director, in the case of a privately-owned site.

1.6 Assumptions and Limitations

The conclusions and recommendations presented in this report were based on the conditions observed on the specific dates and at the locations described.

While the findings, conclusions and recommendations documented in this report have been prepared in a manner consistent with the level of care and skill normally exercised by the members of the environmental science and engineering profession, this report is neither intended nor is it able to provide a totally comprehensive review of the past or present environmental conditions at the subject

property.

2.0 PHYSICAL SETTING

2.1 Geology and Hydrogeology

From the 2002 Hydrogeological Investigation report:

> *"The 8.68 hectare (21.4 acre) landfill is located in a former gravel pit in the Precambrian Shield on the north shore of Lake Huron (north channel). The site is characterized by undulating terrain with relatively thin overburden and occasional rock outcrops. Lakes and poorly drained wetlands are common. Leachate is observed to collect in shallow topographic depressions on the south and east sides of the site."*

Also:

> *"According to the Northern Ontario Engineering Geology Terrain Study (VanDine 1979; Blind River Sheet NTS 41J/SE), local terrain conditions are described as till with ground moraine as the dominant landform (outwash plain is the subordinate landform). Bedrock underlies a drift veneer, local relief is moderate, and terrain is undulating to rolling."*

The area is suspected to have a high water table and the overburden in the area of the Site can be, but is typically not a local source of drinking water. The coarse-grained (sand and gravel) overburden enables the downward flow of water and contaminants and consequently provides limited protection to the overburden aquifer from surface sources of contamination.

The Site is situated in an area of relatively flat topography sloping gradually to the south toward Lake Huron. The terrain to the east and northeast of the landfill site is of higher elevations with the groundwater interpreted as flowing to the northwest, west and south, eventually discharging into Lake Huron.

2.2 Surface Water Features

The fill are is located hear a topographic divide from which surface water flows in a southwesterly direction toward Highway 17 and, ultimately, Lake Huron.

Several surface water features are located in the vicinity of the site, including an area approximately 180m southwest of the fill area where surface water pools and has historically been shown to be leachate impacted expressed groundwater. Additional features at greater distance southwest from the fill area include an excavated pit that likely intercepted the water table and marsh areas adjacent to Highway 17 (north and south of the highway). These features, and others, are included in the monitoring program described in Section 3.0.

3.0 DESCRIPTION OF MONITORING PROGRAM

The Site O&M Plan outlines the monitoring program requirements, as described in the following subsections.

3.1 Monitoring Locations

Groundwater

A groundwater monitoring network consisting of fourteen (14) monitoring wells is currently in-place at the landfill site. Monitoring wells MW1-02, MW2-02, MW3-02, MW4-02, MW5-02 and MW6-02 were installed in May 2002 while MW1-03, MW2-03 and MW3-03 were installed in October 2003. In December of 2015, MW2-03 and MW3-03 were both decommissioned and replaced with two (2) wells, MW2-15 and MW3-15, installed a short distance away from the original locations. MW1-15 and MW4-15 were also installed in 2015, just north of the fill area. MW1-17 and MW2-17 were installed close to King's Highway 17 in July 2017 south of the fill area. MW1-20 was installed in September of 2020 on the south side of King's Highway 17, approximately 370m west of the landfill access road.

Monitoring well locations are shown on Drawing B3 of Appendix B and UTM coordinates for each monitoring well are located in Table 2. Reference elevations for each location are included in Table 3. Copies of borehole logs and a photo inventory of the monitoring wells are included in Appendix C.

TABLE 2:
MONITORING WELL LOCATIONS

Monitoring Well ID	Zone	Northing	Easting
MW1-02	17T	5116863 m	354710 m
MW2-02	17T	5116559 m	354549 m
MW3-02	17T	5116320 m	354311 m
MW4-02	17T	5116302 m	354373 m
MW5-02	17T	5116688 m	354428 m
MW6-02	17T	5116313 m	354304 m
MW1-03	17T	5116320 m	354227 m
MW2-03	17T	5116416 m	354507 m
MW3-03	17T	5116243 m	354657 m
MW1-15	17T	5116691 m	354544 m
MW2-15	17T	5116420 m	354504 m
MW3-15	17T	5116239 m	354656 m
MW4-15	17T	5116709 m	354648 m
MW1-17	17T	5116259 m	354764 m
MW2-17	17T	5116276 m	354482 m

TABLE 2: MONITORING WELL LOCATIONS			
Monitoring Well ID	**Zone**	**Northing**	**Easting**
MW1-20	17T	5116246 m	354326 m

Monitoring well conditions and monitoring well construction details are also included in Table 3.

TABLE 3:
BLIND RIVER LANDFILL – MONITORING WELL DETAILS

Monitoring Well ID	Top of Casing Elevation (m)	Well Stick-Up (m)	Ground Elevation (m)	Total Depth & Elevation (m)	Screened Interval & Elevation (m)	Well Position	Well Condition	Hydro-stratigraphic Unit Screened
MW1-02	199.622	0.919	198.709	5.204 (194.424)	2.156-5.204 (197.502-194.424)	Up-gradient (Background)	Good	Compact silty sand & gravel/Very dense till
MW2-02	200.887	0.719	200.168	6.409 (194.478)	3.361-6.409 (197.526-194.478)	Downgradient (Source)	Good; steel casing needs new lock	Soft alluvium/Soft organics
MW3-02	191.521	0.92	190.583	4.27 (186.313)	1.222-4.27 (189.361-186.313)	Downgradient	Good	Loose to compact sand/Sand & gravel
MW4-02	192.208	0.782	191.426	4.967 (187.241)	1.919 - 4.967 (190.289 - 187.241)	Downgradient	Good	Loose sand/Compact sand & gravel
MW5-02	198.172	0.796	197.376	4.63 (193.542)	3.106-4.63 (195.066-193.542	Downgradient	Good	Dense sand & gravel
MW6-02	192.005	0.797	191.208	7.428 (184.577)	5.904-7.428 (186.101-184.577)	Downgradient	Good	Compact sand & gravel
MW1-03	191.62	1.037	190.583	3.504 (188.116)	1.980-3.504 (189.640-188.116	Downgradient	Lid of steel casing is broken; well cap is cracked	Loose sand/Compact sand
MW2-03	Decommissioned							

TABLE 3:
BLIND RIVER LANDFILL – MONITORING WELL DETAILS

Monitoring Well ID	Top of Casing Elevation (m)	Well Stick-Up (m)	Ground Elevation (m)	Total Depth & Elevation (m)	Screened Interval & Elevation (m)	Well Position	Well Condition	Hydro-stratigraphic Unit Screened
MW3-03	Decommissioned							
MW1-15	200.582	0.857	199.725	6.745 (193.837)	3.697-6.745 (196.885-193.837)	Cross-gradient	Good	Clay/Silty sand/Coarse sand
MW2-15	198.754	1.035	197.719	3.01 (195.744)	1.486-3.01 (197.268-195.744)	Downgradient	Good; steel casing loose in ground	Medium-grained sand/Silty sand/Medium to coarse sand
MW3-15	199.292	0.745	198.547	5.245	2.197-5.245 (197.095-194.047)	Cross-gradient	Good; steel casing needs new lock	Silty sand/ Fine to medium sand/Boulders/Silty sand/Fine to medium sand
MW4-15	204.423	0.843	203.580	5.463 (198.96)	2.415-5.463 (200.008-198.960)	Cross-gradient	Good	Medium to coarse sand/Silty sand/Fine to medium sand
MW1-17	199.887	0.853	199.034	3.058 (196.829)	1.534-3.058 (198.353-196.829)	Cross-gradient	Good	Cobbles/Gravel/ Fine dry to wet sand
MW2-17	194.034	0.757	194.034	5.177 (189.614)	2.129-5.177 (192.662-189.614)	Downgradient	Good	Medium wet sand
MW1-20	194.884	0.850	194.034	8.399 (186.485)	5.351-8.399 (189.533-186.485)	Downgradient	Good	Silty sand/Wet

- Screened interval lengths and hydrostratigraphic information were taken directly from borehole logs.
- Screened interval depths were calculated using 2015, 2017 and 2020 ground elevations. All remaining information was collected from the October 2021 monitoring field logs.
- Total depth (from top of casing) elevations and screened elevations are shown in brackets. Depths are in meters below ground surface.
- Total depth and screened elevations for MW3-02 were taken from the borehole log. Based on current measurements, it is assumed that this well contains a significant amount of material.

Surface Water

In order to assess for potential impacts on surface water in the vicinity of the Site, a surface water sample is collected twice annually from water that pools near the southwest limit of fill (SW1). In 2018, two (2) additional pooling water locations were identified using aerial photography. Both locations are similarly southwest of the fill, directly south (SW2) and west (SW3) of the solar panel field adjacent to the west of the Site. During the 2022 reporting period, areas of surface water ponding located south of the fill area (SW4 and SW5), a background surface water sampling location (SW6) and a downgradient surface water sampling location (SW7) were included as part of the Site's monitoring program.

The surface water locations are shown on Drawing B3 of Appendix B and characteristics of the locations are described in Table 4.

TABLE 4:
SURFACE WATER LOCATIONS

ID	Zone	Northing	Easting	Location Type	Sample Type
SW1	17T	5116445m	354503m	Permanent/Lentic	Downstream
SW2	17T	5116391m	354259m	Permanent/Lentic	Downstream
SW3	17T	5116483m	354146m	Permanent/Lentic	Downstream
SW4	17T	5116466m	354708m	Permanent/Lentic	Downstream
SW5	17T	5116464m	354559m	Permanent/Lentic	Downstream
SW6	17T	5116918m	354748m	Permanent/Lentic	Upstream
SW7	17T	5116288m	353683m	Permanent/Lentic	Downstream

3.2 Monitoring Frequency

Groundwater sampling events have generally occurred twice annually since 2002, the year that the groundwater monitoring network was established, and surface water sampling began in 2004.

3.3 Field and Laboratory Parameters and Analysis

Groundwater

Groundwater samples are collected and analyzed for parameters listed in Column 1 (comprehensive list) and Column 2 (indicator list) of Schedule 5 of the MECP Landfill Standards. Samples collected from MW1-20 were also analyzed for parameters listed under Column 3 of Schedule 5 (surface water comprehensive list) of the MECP landfill standards. In addition to parameters listed in the referenced Schedules, groundwater samples were analyzed for total cyanide, fluoride, organic nitrogen and hardness during the 2022 reporting period.

Pesticides listed under Schedule 24 of Ontario Regulation 170/03 have also been analyzed for periodically during sampling events.

Following their collection, water samples are packaged and shipped for analysis in accordance with instructions from the laboratory.

Field measurements include pH, temperature, dissolved oxygen and conductivity.

Surface Water

Surface water samples are collected and analyzed for parameters listed in Column 3 of Schedule 5 (comprehensive list) of the MECP Landfill Standards. In addition to the parameters listed in the referenced Schedule, surface water samples were also analyzed for dissolved manganese, dissolved zinc, hardness and DOC during the 2022 reporting period.

Field measurements include pH, temperature, dissolved oxygen and conductivity.

3.4 Certificate of Approval Requirements

The current C of A No. A7138701 for the Site does not stipulate monitoring program requirements; therefore, reference is made to ECA No. A-500-7134513066, Regulation 232/98 and the MECP Landfill Standard Guideline document in this regard.

3.5 Monitoring Procedures and Methods

Sample collection is conducted by KEC staff in accordance with KEC's "Groundwater Monitoring and Sampling Protocol", and "Surface Water Monitoring and Sampling Protocol", both attached in Appendix D of this report.

3.6 Standard Operating Procedures

Standard operating procedures followed during the 2022 spring and fall sampling events is attached in Appendix D of this report.

3.7 Record Keeping and Field Notes

All relevant information collected in support of this monitoring report is maintained and kept at the KEC office located in Sault Ste. Marie, ON. Copies of the monitoring well record sheets from the 2022 spring and fall sampling event are included in Appendix E of this report.

3.8 Sampling Methods

Groundwater

Prior to purging, static water levels are measured using a water level tape at each monitoring well location and recorded on a monitoring well record sheet. Water levels and well depth measurements are taken from the top of the PVC casing of each monitoring well. Water levels are recorded prior to removing the dedicated sampling equipment.

Prior to collecting groundwater samples, each monitoring well is purged to remove the stagnant water within the well to allow the sampling of fresh groundwater to occur. Three (3) well casing volumes are removed (or purged dry for slow inflow monitors) using a dedicated inertial lift D-25 foot valve and polyethylene tubing.

Groundwater samples are collected using disposable sampling gloves, dedicated sampling equipment and suitable sample bottles provided by the analyzing laboratory. Depending on the parameter to be analyzed, the appropriate preservative is placed in the bottle by the laboratory prior to shipping. Groundwater samples to be analyzed for metals are field filtered using a 0.45 μm groundwater filter.

Following collection, groundwater samples are placed into coolers with ice, sample identification and chain of custody forms and shipped via local ground transportation services to ALS Environmental located in Thunder Bay, ON for analysis.

Surface Water

Surface water samples are collected using disposable sampling gloves and suitable sample bottles provided by the analyzing laboratory. Similarly to the groundwater samples, depending on the parameters to be analyzed for, the appropriate preservative is placed in the bottles by the accredited laboratory prior to shipping. Samples are collected using a sample bottle (rinsed three times per location) to transfer surface water to laboratory sampling containers. Surface water samples to be analyzed for dissolved metals are field filtered using a 0.45 μm filter

Following collection, surface water samples are placed into coolers with ice, sample identification and chain of custody forms and shipped via local ground transportation services to ALS Environmental located in Thunder Bay, ON for analysis.

3.9 Quality assurance for Sampling and Analysis

The quality assurance and quality control (QA/QC) program includes field duplicates, laboratory prepared trip blanks and field-prepared blanks. In addition, the testing laboratory also implements a QA/QC program that involves spiking blank samples and introducing surrogate compounds at known concentrations for analysis.

A groundwater duplicate sample and field-prepared blank were collected during the May and September 2022 sampling events. A laboratory-prepared trip blank and volatile organic compound (VOC) matrix spike were also included during each sampling event. Blank and duplicate samples are analyzed for parameters listed under Column 1 (spring) and Column 2 (fall) of Schedule 5 or the MECP Landfill Standards.

Ion Balance

Table 5 and 6 present a summary of ion balance calculations completed by the testing laboratory for each monitoring well during the sampling events. Ion balance calculations may be used to evaluate the accuracy of the laboratory's analysis of chemically stable waters by assessing the cation/anion balance within the sample. In the case of landfill leachate, ions do not necessarily balance due to the possible presence of leached metals that may become dissolved in the water samples.

The laboratory uses a series of criteria to assess the accuracy of the analysis, the first being the assessment of the anion sum. Should the anion sum for a sample be less than 3.0 meq/L and the cation sum minus the anion sum is within +/- 0.2 meq/L, the ion balance is considered acceptable. The second criterion involves the assessment of anion sums greater than or equal to 3.0 meq/L. If the anion sum for

a sample is greater than or equal to 3.0 meq/L, and the cation sum - anion balance is less than 10%, the ion balance is considered acceptable in stable waters.

TABLE 5: ION BALANCE SUMMARY MAY 2022

Sample Location	Anion Sum <3 meq	Anion Sum ≥3 meq	Cation Sum (meq)	Assessment Criteria	
				Cation-Anion Sum (for Anions <3 meq)	Ion Balance (%)
MW1-02	1.81		2.18	**0.37**	
MW2-02		39.4	34.6		-6.5
MW3-02		6.55	6.45		-0.8
MW4-02		4.01	4.15		1.7
MW5-02	1.22		1.14	-0.08	
MW6-02		5.27	6.56		**10.9**
MW1-03		14.1	15.6		5.1
MW1-15		18.4	16.8		-4.6
MW2-15	0.3		0.31	0.01	
MW3-15	0.73		0.76	0.03	
MW4-15	0.88		0.85	-0.03	
MW1-17	2.64		2.92	**0.28**	
MW2-17	1.76		1.62	-0.14	
MW2-17 (Duplicate)	1.66		1.64	-0.02	
MW1-20		22.4	26.1		7.5
SW1		8.91	8.74		-1
SW2	2.56		2.75	0.19	3.5
SW3	DRY				
SW4		6.59	6.13		-3.6
SW5		3.82	3.67		-2
SW6	0.66		0.72	0.06	
SW7		9.94	10.2		1.3

Bold and shaded values exceed laboratory criteria for ion balance acceptability.

TABLE 6: ION BALANCE SUMMARY SEPTEMBER 2022					
Sample Location	**Anion Sum <3 meq**	**Anion Sum ≥3 meq**	**Cation Sum (meq)**	**Assessment Criteria**	
				Cation-Anion Sum (for Anions <3 meq)	**Ion Balance (%)**
MW1-02	1.69		1.84	0.15	
MW2-02		35	40.7		7
MW3-02		5.9	6.44		4
MW4-02		3.25	3.55		4
MW5-02	1.06		1.12	0.06	
MW6-02		4.77	4.98		2
MW1-03		17.1	16.7		-1
MW1-15		15.8	19		9
MW2-15	DRY				
MW3-15	0.49		0.54	0.05	
MW4-15	0.87		1.06	0.19	
MW1-17	2.24		2.48	**0.24**	
MW2-17	1.44		1.64	0.2	
MW2-17 (Duplicate)	1.44		1.68	**0.24**	
MW1-20		25.7	25.3		-1
SW1		9.08	10.3		6
SW2		4.66	5.61		6
SW3	DRY				
SW4		5.28	6.2		8
SW5		7.84	7.13		-5
SW6	0.88		1.15	**0.27**	
SW7		13.3	12.8		-2

Bold and shaded values exceed laboratory criteria for ion balance acceptability.

Interference or presence of a non-measured component was noted by the laboratory as potentially causing ion balances to exceed acceptable criteria. It has been noted by the laboratory that significant concentrations of ions (not considered as part of the ion balance calculation) will cause an apparent imbalance within a sample.

3.10 Supplemental Monitoring: Sediment, Benthic and/or Toxicity Monitoring

No supplemental monitoring is conducted at the Site.

3.11 Operational Monitoring

There is currently no operational monitoring (e.g. monitoring of engineered controls) performed at the site.

4.0 OVERVIEW – MONITORING RESULTS

During the 2015 spring sampling event, KEC staff reported that both MW2-03 and MW3-03 were in poor condition and should be decommissioned and replaced with new monitoring wells being installed in the

same general locations. Accordingly, two new wells (MW2-15 and MW3-15) were installed in December 2015 along with MW1-15 and MW4-15. Sampling commenced at these locations during the spring 2016 event.

On January 31, 2016 the MECP (Sault Ste. Marie office) forwarded a Technical Support Section Memo produced by an MECP hydrogeologist which contained comments and recommendations based on the review of the 2015 annual monitoring report and 2016 water quality result for the Site. The recommendations included the installation of monitoring wells at a depth that shall intercept the leachate groundwater plume at three (3) locations by March 31, 2018. Accordingly, two new wells were installed on July 12, 2017 onsite south of the historical fill area (MW1-17) and onsite between MW4-02 and MW3-03 (MW2-17). In September of 2020, a monitoring well was installed offsite (across King's Highway 17) south of MW4-02 and MW6-02.

4.1 Historical Data

A summary of historical ranges of selected parameter concentrations for all groundwater and surface water monitoring locations are shown in Table 7.

TABLE 7:
HISTORICAL RANGES OF SELECTED PARAMETERS

Parameter (mg/L)	Iron	Manganese	Alkalinity	Chloride	DOC	pH	TDS
ODWS	**0.3**	**0.05**	**500**	**250**	**5**	**6.5-8.5**	**500**
MW1-02	ND-46	0.003-7.09	1-170	0.63-729	ND-16	6.45-7.75	110-2260
MW2-02	ND-198	0.362-3.37	800-1650	65-305	19-732	6.42-7.67	1000-2580
MW3-02	ND-7.5	0.0155-0.706	188-379	31.9-126	10.3-24.8	7.38-8.49	282-722
MW4-02	ND-165	0.241-1.85	87.6-263	21.8-134	4.3-614	6.68-8.17	184-820
MW5-02	ND-1.2	ND-0.88	38.7-242	0.131-73.2	1.1-33	6.59-7.90	59-385
MW6-02	ND-52	0.208-1.33	100-245	43.1-69	7-20	6.47-8.07	285-440
MW1-03	1.43-31	0.0266-0.885	12.6-257	0.087-628	2.8-39.1	3.10-7.99	140-1300
MW2-03	0.306-120	0.019-1.6	9-147	0.63-1.7	2-27	5.92-6.51	50-385
MW3-03	0.019-0.81	0.0028-0.0417	2.9-180	4.38-23.7	1.7-13	5.38-6.30	32-240
MW1-15	0.697-10.8	2.83-4.55	794-893	66.9-88.7	10.3-34.3	6.65-7.45	878-1200
MW2-15	0.027-0.134	0.0041-0.0377	9.8-25.1	ND-1.73	2.33-10.7	5.69-6.24	28-172
MW3-15	0.409-5.98	0.23-1.37	14.4-70.8	4.95-12.7	2.72-22.9	6.12-6.78	123-685
MW4-15	0.291-6.9	0.135-1.03	35.2-49.6	0.84-2.32	1.6-7.5	6.11-7.25	68-340
MW1-17	0.246-15.3	0.00765-1.04	44.7-134	8.9-27.7	12.2-30.9	6.41-7.13	151-2340
MW2-17	ND-0.156	ND-0.0076	38.2-72	2.53-100	1.4-8.7	6.54-7.58	121-448
MW1-20	0.061-21.3	0.0163-6.73	76.1-79.4	0.77-863	2.63-14.4	6.64-7.49	162-1700
SW1	0.18-19.6	0.082-0.768	198-678	29.6-238	16-28.2	7.08-8.38	282-1050
SW2	0.498-2.8	0.43	112-239	9.64-34.4	NT	7.61-8.4	135-305
SW3	1.36-5.83	NT	24.3-30.5	7.34-24.1	NT	6.35-6.97	80-86
SW4	22.3-23.8	0.0904	230-283	32.8-45.3	NT	8.14-8.3	297-320
SW5	11.1-16	0.544	168-376	16.4-52.3	NT	7.98-8.34	213-434
SW6	1.39-2.18	1.43	32.2-47.3	0.44-1.27	NT	7.49-7.7	54-54.5
SW7	4.18-5.83	0.295	107-167	231-404	NT	7.67-8.01	609-749

ODWS – Ontario Drinking Water Standards
ND – Not Detected; NT – Not Tested DOC – Dissolved Organic Carbon; TDS – Total Dissolved Solids

4.2 Data Quality Evaluation

The groundwater and surface water analyses were completed by ALS Environmental in Thunder Bay, Ontario. The laboratory is accredited to ISO/IEC 17025:2005 (E). Certificates of analysis from the accredited laboratory are included in Appendix F for the current reporting period.
QA/QC data was assessed by calculating the relative percent difference (RPD) for field duplicate samples. A field duplicate was collected at MW2-17 during the spring and fall sampling events. Parameter concentrations for the duplicates were found to be similar to the original, with the exception of those summarized in Table 8 below. Parameter concentrations greater than or equal to 5 times the laboratory method detection limit (MDL) with a RPD of less than or equal to 20 percent (between original and duplicate sample) were deemed acceptable. Parameter concentrations less than or equal to 5 times the MDL with a concentration difference less than or equal to the MDL were deemed acceptable.

TABLE 8:
QUALITY ASSURANCE/QUALITY CONTROL EVALUATION

Monitoring Location	Sampling Event	Parameter	QA/QC Evaluation	
			Parameter Concentration ≥5x MDL and RPD > 20%	Parameter Concentration <5x MDL and Difference >MDL
MW2-17	Spring 2022	TSS	✘	
		TDS	✘	
		Ammonia	✘	
		Chloride	✘	
		Organic Nitrogen	✘	
		TKN	✘	
		Total Phosphorus	✘	
		DOC	✘	
		Phenols	✘	
MW2-17	Fall 2022	TKN	✘	
		Organic Nitrogen	✘	
		COD	✘	

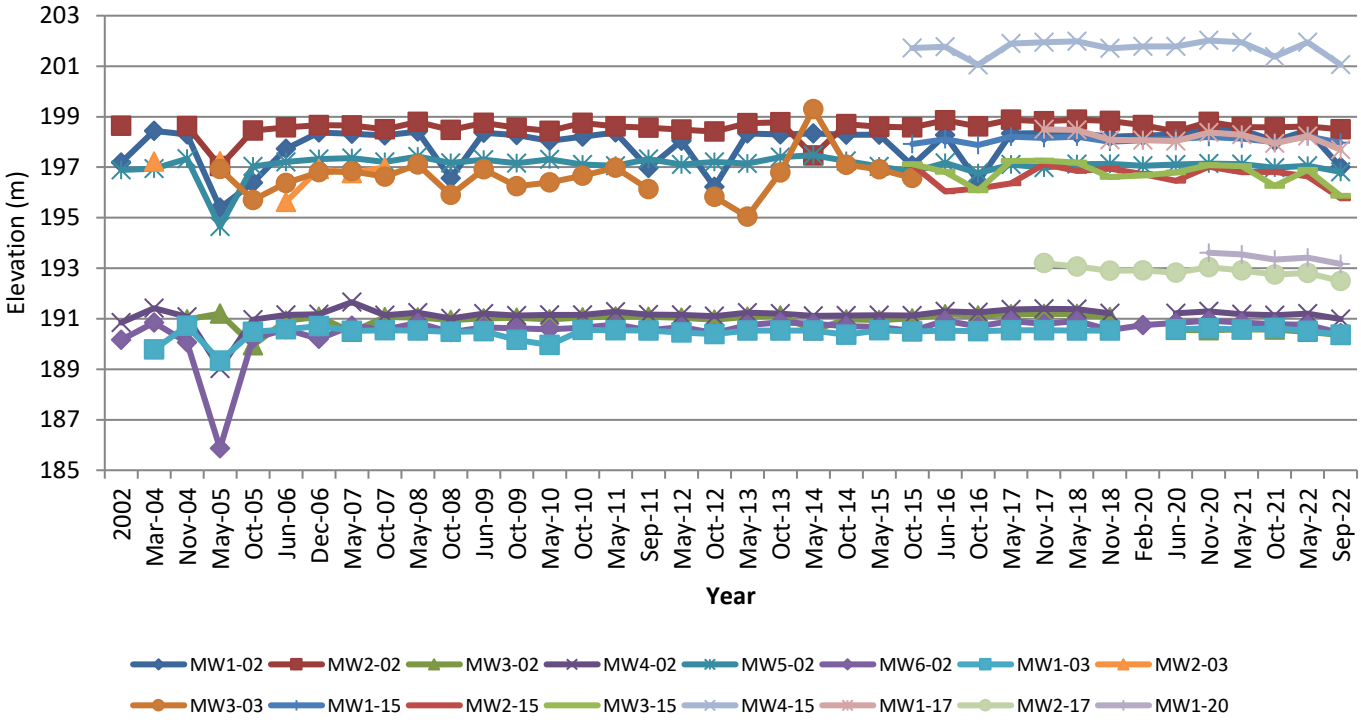
TSS – Total Suspended Solids; TDS – Total Dissolved Solids; TKN - Total Kjeldahl Nitrogen; DOC – Dissolved Organic Carbon; COD – Chemical Oxygen Demand

Results not satisfying the requirements of the QA/QC evaluation should be interpreted with caution. Regarding the evaluation results shown in Table 8, it is generally understood and accepted that the variability of field sample duplicates is significantly more than what is observed with Laboratory Sample Duplicates.

4.3 Groundwater Flow Monitoring

Water levels appear to be relatively stable historically. In cases it appears that groundwater levels determined during different seasons (spring/fall) show the effects of drought/wet conditions at or prior to the time of the sampling events. Water levels are presented graphically in Chart 1 and in Table G.24 attached in Appendix G of this report.

Chart 1
Town of Blind River Landfill Site
Groundwater Elevations



Drawings B4, B5 and B6 of Appendix B presents the water table profiles developed as well as interpreted groundwater contours based on water tables elevations established during the 2022 spring and fall sampling events. Groundwater contours, interpreted for both 2022 sampling events suggest that flow is to the northwest, west and southwest.

4.4 Groundwater Quality Monitoring

A review of the groundwater quality data summarized in Table G.1 through G.16 (Appendix G) reveals that Ontario Drinking Water Quality Standards (ODWS) are commonly exceeded for iron, manganese and DOC in most wells including MW1-02 (background well).

1. Samples from MW2-02 (source well) have historically contained volatile organic compounds (VOCs) including: benzene, toluene (2002 and June 2006), 1,4-dichlorobenzene and chlorobenzene. During the 2021 spring and fall sampling events, benzene was detected above ODWS and 1,4-dichlorobenzene was detected below ODWS. Pesticides (carbaryl and

benzo(a)pyrene) have been detected historically at this location but at levels below ODWS.

2. The pesticide carbaryl was detected at boundary well MW4-02 in October 2005.

3. Benzo(a)pyrene was detected at boundary well MW6-02 in October 2005 along with benzene at MW1-03 during the same sampling event.
4. Pesticides did not exceed ODWS during any sampling event from 2006-2008 and 2012, therefore analysis for these parameters has not been carried out since.

The following comments are drawn from a review of the 2022 analytical data:

MW1-02

No parameters exceeded ODWS during the 2022 spring or fall sampling events.

MW2-02

During the 2022 spring and fall sampling events, ODWS were exceeded for alkalinity, iron, manganese, sodium, TDS, DOC and benzene. Chloride also exceeded ODWS during the fall sampling event.

MW3-02

During the 2022 spring and fall sampling events, manganese and DOC exceeded ODWS at this location. Iron also exceeded ODWS during the spring sampling event.

MW4-02

Iron, manganese and DOC exceeded ODWS during the 2022 spring and fall sampling events.

MW5-02

No parameters exceeded ODWS during the 2022 spring and fall sampling events.

MW6-02

Iron, manganese and DOC exceeded the 2022 spring and fall sampling events at this location.

MW1-03

During the 2022 spring and fall sampling events, ODWS were exceeded for chloride, iron, manganese, sodium, TDS and DOC.

MW1-15

ODWS were exceeded for alkalinity, iron, manganese, TDS and DOC during the 2022 spring and fall sampling events.

MW2-15

During the 2022 spring sampling event, pH was found to be below the acceptable ODWS range. This location was dry during the fall sampling event.

MW3-15

Iron and manganese exceeded ODWS during the 2022 spring and fall sampling events. During the spring sampling event, DOC also exceeded ODWS and pH was below the acceptable ODWS range.

MW4-15

During the 2022 spring and fall sampling events, iron and manganese exceeded ODWS.

MW1-17

Iron, manganese and DOC exceeded the 2022 spring and fall sampling events at this location.

MW2-17

No parameters exceeded ODWS during the 2022 reporting period.

MW1-20

Chloride, iron, manganese, sodium, TDS and DOC exceeded ODWS during the spring and fall sampling events at this location.

4.4.1 Reasonable Use Assessment

MECP's Reasonable Use policy applies to groundwater at property boundaries and typically to parameters with aesthetic and health-related concentrations in the ODWS. The calculation of Reasonable Use (RU) concentrations is developed based on the relationship:

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

where: C_m is the maximum allowable concentration at the property boundary;
C_b is the background concentration;
C_r is the ODWS concentration; and,
x is a factor - 0.5 for aesthetic parameters, and 0.25 for health-related parameters.

The RU concentrations are developed to assess the potential impact to groundwater beneath adjacent properties. As such, monitoring wells are typically located downgradient from and near property boundaries.

RU concentrations were developed using MW1-02 as the background well, for parameters for which ODWS have been established and that are identified in Schedule 5 (Column 1 – comprehensive list) of the MECP's Landfill Standards. The Standards state that the background concentration of a contaminant

in groundwater is the median value of a minimum of 5 samples collected from a location not impacted by human activity. The RU concentrations were developed using the sampling results from 18 sampling events (spring), 18 sampling events (fall) and 1 sampling event (winter) at the background monitor (MW1-02).

A summary of parameters exceeding RU concentrations during the 2022 spring and fall sampling events is presented in Table 9.A. Groundwater RU exceedances for the 2022 sampling events are tabulated graphically on Drawing B7 of Appendix B.

TABLE 9.A:
PARAMETERS EXCEEDING RU CRITERIA IN 2021

Monitoring Location	May 2022	September 2022
MW1-02 – Background	-	-
MW2-02 – Source	Alkalinity, Barium, Boron, Chloride, Iron, Manganese, Sodium, TDS, Benzene, DOC	Alkalinity, Barium, Boron, Chloride, Iron, Manganese, Sodium, TDS, Benzene, DOC
MW3-02 – Boundary	Iron, Manganese, pH, TDS, DOC	Alkalinity, Manganese, pH, TDS, DOC
MW4-02 – Boundary	Iron, Manganese, DOC	Iron, Manganese, pH, DOC
MW5-02 – Intermediate	pH	pH
MW6-02 – Boundary	Iron, Manganese, DOC	Iron, Manganese, pH, DOC
MW1-03 – Boundary	Barium, Chloride, Iron, Manganese, pH, Sodium, TDS, DOC	Barium, Chloride, Manganese, Iron, Sodium, TDS, DOC
MW1-15 – Intermediate	Alkalinity, Arsenic, Iron, Manganese, TDS, Benzene, DOC	Alkalinity, Boron, Iron, Manganese, TDS, DOC
MW2-15 – Intermediate	pH	NA
MW3-15 – Boundary	Iron, Manganese, pH, DOC	Iron, Manganese
MW4-15 – Intermediate	Iron, Manganese	Iron, Manganese
MW1-17 – Boundary	Iron, Manganese, DOC	Iron, Manganese, DOC
MW2-17 – Boundary	-	-
MW1-20 - Boundary	Barium, Chloride, Iron, Manganese, Sodium, TDS, DOC	Barium, Chloride, Iron, Manganese, Sodium, TDS, DOC

Health-related parameters that were identified as having exceeded the RU Criteria during the spring and fall sampling events were barium, boron and benzene at MW2-02 (source well) and barium at MW1-03 and MW1-20. Benzene also exceeded RU Criteria at MW1-15 during the spring sampling event.

Table 9.B presents a summary of RU concentrations and analytical results for the parameters identified in Schedule 5 (Column 1 – comprehensive list) of the MECP's Landfill Standards for the spring 2022 sampling event.

Table 9.C presents a summary of RU concentrations and analytical results for the parameters identified in Schedule 5 (Column 2 – indicator list) of the MECP's Landfill Standards for the fall 2022 sampling event.

Groundwater quality trending charts are included in Appendix H. Concentrations of critical contaminants such as vinyl chloride and toluene, were only analyzed for at the source well and were found at levels that are orders of magnitude less than the RU Criteria established using historical data. Chloride which is considered a critical contaminant exceeded RU Criteria at the source well during the 2021 spring and fall sampling events.

With respect to the parameters identified in Tables 9.A as exceeding RU criteria:

1. With reference to the analytical results summarized in Tables G.1 to G.16, alkalinity is found to generally vary linearly (increase) with bicarbonate and calcium levels. Leachate related process that may increase alkalinity include the dissolution of calcium carbonate and the introduction of carbon dioxide through the decomposition process. Alkalinity may be a reliable leachate indicator parameter in this case.

2. Barium and boron can be found in groundwater and/or surface water due to leaching and erosion of sedimentary rocks if present beneath the sampled area. Both barium and boron are health-related parameters and in some cases can be reliable indicators of leachate-related impacts from landfill activities in sampled groundwater and/or surface water. Barium and boron appear to be elevated at MW2-02 (source well) during the spring and fall sampling events but not at MW1-02 (background monitor), therefore these parameters may be reliable indicators in this case.

3. Chloride is considered a critical contaminant and can be used as a reliable indicator of leachate impact on groundwater and/or surface water. In this case, chloride may be a reliable indicator, however, as exceedances are shown in boundary monitors MW1-03 and MW1-20 located adjacent to the Highway, impacts may also be related to winter highway salting activities.

4. Iron and manganese are usually present in landfill leachate, either waste derived or dissolved from soil particles, and are often mobile under anaerobic conditions, such as those typically present near landfills. Where natural background levels are elevated (in comparison to ODWS), these parameters are not reliable indicators. Data from the background monitor (MW1-02) reveals that iron and manganese have historically exceeded ODWS, however, these parameters did not exceed ODWS during the 2022 sampling events.

5. Sodium is often found naturally in groundwater. Elevated levels may be natural or caused by the infiltration of surface water contaminated by road salt or landfill leachate. Sodium does not appear to be naturally elevated in water samples collected from the background monitoring well, therefore, it may be a reliable indicator in this case.

6. Total Dissolved Solids is a measure of the quantity of dissolved material in water and can provide an indication of general impact. Review of the analytical results reveals that chemical constituents are generally present at higher levels in down gradient wells with higher TDS than in MW1-02.

7. Benzene is a volatile hydrocarbon that can generally be found in petroleum products such as gasoline. When benzene is identified in landfill leachate, it is usually waste derived. Historical data from the background monitor (MW1-02) reveals concentrations below ODWS.

8. DOC is an indicator of the presence of organic matter/chemicals in leachate. DOC appears to be naturally elevated in historical water samples collected from the background monitoring well. Accordingly, DOC may not be a reliable indicator in this case.

Table 9.B presents a summary of RU concentrations and analytical results for the parameters identified in Schedule of the MECP's Landfill Standards for the 2022 spring sampling event.

TABLE 9.B: SUMMARY OF RU CRITERIA AND ANALYTICAL RESULTS – MAY 2022

Parameter	Guideline/Monitoring Well (mg/L)																
	ODWS (Cr)	MW1 -02 (Cb)	R.U. Criteria (Cm)	MW1-02 (BG)	MW2-02 (source)	MW3-02	MW4-02	MW5-02	MW6-02	MW1-03	MW1-15	MW2-15	MW3-15	MW4-15	MW1-17	MW2-17	MW1-20
VOCs																	
1,4 Dichlorobenzene - H	0.005	0.0005	*0.001625*	ND	0.00104	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene - H	0.001	0.0005	*0.000625*	ND	**0.00263**	ND	ND	ND	ND	**0.00104**	ND	ND	ND	ND	ND	ND	ND
Dichloromethane – H	0.05	0.0005	*0.012875*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene – A	0.024	0.0003	*0.01215*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride – H	0.002	0.0005	*0.000875*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Metals																	
Arsenic – H	0.01	0.001	*0.0070*	0.00037	ND	0.00028	0.00021	0.0002	0.00085	ND	**0.0097**	0.00012	0.00027	0.00055	0.00103	0.00044	0.0027
Barium – H	1	0.012	*0.2589*	0.0124	**0.423**	0.0198	0.0664	0.00762	0.189	**0.285**	0.158	0.00756	0.00618	0.00712	0.0252	0.0113	**0.347**
Boron – H	5	0.024	*1.2688*	0.018	**2.06**	0.309	0.068	ND	0.114	0.29	1.06	ND	0.193	0.011	0.024	ND	ND
Cadmium – H	0.005	0.0001	*0.0013*	0.0000091	ND	0.0000118	ND	0.0000128	ND	ND	ND	0.0000094	0.0000095	ND	0.0000116	0.0000064	ND
Chromium – H	0.05	0.00084	*0.0131*	0.00056	ND	0.00081	ND	0.00408	0.00063	ND	ND	ND	0.00067	ND	0.00202	0.00069	ND
Copper – A	1	0.003	*0.5015*	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Iron – A	0.3	0.05	*0.1750*	0.02	**62.9**	**0.467**	**5.33**	ND	**18.9**	**10.3**	**7.51**	0.081	**2.02**	**0.591**	**3.92**	0.014	**21.3**
Lead – H	0.01	0.001	*0.0033*	ND	ND	ND	ND	ND	ND	ND	ND	0.000103	0.000285	0.000111	0.0011	ND	ND
Mercury – H	0.001	0.001	*0.0010*	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0000073	ND	ND	ND	ND
Magnesium	-	6.13	-	8.07	79.8	16.1	9.79	3.98	15.2	14.1	65.7	0.505	1.18	2.63	5.3	5.32	48.7
Manganese – A	0.05	0.054	*0.0539*	0.0169	**0.427**	**0.458**	**0.414**	0.00076	**1.07**	**0.362**	**2.83**	0.00517	**0.642**	**0.158**	0.433	0.00056	**6.73**
Nickel	-	NT	-														
Potassium	-	1.59	-	1.65	173	26.8	8.02	0.985	5.88	36.9	3.59	0.335	0.362	0.66	1.16	0.774	2.09
Sodium – A	20	6.18	*103.09*	6.91	**246**	33.9	31.5	3.3	25.8	**251**	49.1	1.78	7.72	3.34	33.6	6.27	**265**
Zinc - A	5	0.009	*2.50545*	0.0017	ND	0.0092	ND	0.0065	0.0025	ND	ND	0.0022	0.0097	0.0039	0.0121	ND	ND
General Chemistry																	
Alkalinity – OG	500	74.7	*287.175*	79.3	**1650**	277	126	48.8	198	225	**827**	9.8	23	37	80	71.3	74.6
Ammonia	-	0.026	-	0.0341	141	0.198	0.424	0.0244	2.01	1.68	0.479	0.02	0.018	0.068	0.459	0.035	2.33
BOD_5	-	2	-	ND	9.9	ND	3.1	ND	6.7	ND	ND	ND	ND	ND	4.3	<3.3	<5.0
Chloride – A	250	0.87	*125.4325*	0.86	**229**	36.3	51.6	1.05	46.9	**338**	66.9	1.24	6.19	0.84	15.4	4.91	**742**
COD	-	10	-	49	284	64	51	14	59	85	153	53	64	22	66	16	73
Cond. (us/cm)	-	170	-	170	3670	639	426	117	533	1640	1610	36	73.4	81.4	271	162	2720
DOC – A	5	3.11	*4.0025*	3.11	**82.1**	**18.2**	**6.7**	3.35	**13.9**	**22**	**23.1**	2.93	**5.88**	2.78	**20.9**	2.46	**13.3**
Nitrate – H	10	0.157	*2.6189*	0.102	ND	0.021	ND	0.154	ND	ND	ND	0.516	0.03	0.124	0.092	0.058	ND
Nitrite – H	1	0.02	*0.2650*	ND	ND	0.01	ND	ND	0.014	ND	0.027	ND	ND	ND	ND	ND	ND
Sulphate – A	500	12.2	*256.1425*	9.29	1.39	ND	1.34	9.52	ND	2.43	0.66	1.77	4.27	4.95	29	9.32	ND
TDS – A	500	170	*336*	168	**1790**	**393**	298	89	333	**895**	**1050**	37	123	75	317	236	**1700**
TKN	-	0.32	-	0.3	163	1.07	1.19	0.137	2.29	2.33	3.44	0.607	0.503	0.467	4.2	3.16	3.11
pH	6.5-8.5	7.02	*6.75-7.75*	7.61	7.17	**8.2**	7.45	**7.82**	7.7	**7.99**	7.14	**6.1**	6.4	7.25	7.13	7.21	7.35
Total Phosphorus	-	0.391	-	0.858	0.657	0.0662	0.308	0.0456	0.405	0.242	1.61	0.268	0.477	0.324	0.87	4.1	6.5

Notes: *A – Aesthetic, H –Health Related, OG – Operational Guideline, Cb – median value of all previous sampling events; ND – Not Detected, NT-Not Tested; Bold/shaded values exceed RU criteria.*

Table 9.C presents a summary of RU concentrations and analytical results for the parameters identified in Schedule of the MECP's Landfill Standards for the 2022 fall sampling event.

TABLE 9.C: SUMMARY OF RU CRITERIA AND ANALYTICAL RESULTS – SEPTEMBER 2022

Parameter	Guideline/Monitoring Well (mg/L)																
	ODWS (Cr)	MW1 -02 (Cb)	R.U. Criteria (Cm)	MW1-02 (BG)	MW2-02 (source)	MW3-02	MW4-02	MW5-02	MW6-02	MW1-03	MW1-15	MW2-15	MW3-15	MW4-15	MW1-17	MW2-17	M1-20
VOCs																	
1,4 Dichlorobenzene - H	0.005	0.0005	*0.001625*	NT	0.91	NT	NT	NT	NT	NT	NT	DRY	NT	NT	NT	NT	NT
Benzene - H	0.001	0.0005	*0.000625*	NT	**2.63**	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Dichloromethane – H	0.05	0.0005	*0.012875*	NT	ND	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Toluene – A	0.024	0.0003	*0.01215*	NT	ND	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Vinyl Chloride – H	0.002	0.0005	*0.000875*	NT	ND	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Dissolved Metals																	
Arsenic – H	0.01	0.001	*0.007*	NT	ND	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Barium – H	1	0.012	*0.259*	0.0270	**0.423**	0.0346	0.0613	0.0221	0.178	**0.331**	0.208		0.0162	0.0156	0.0547	0.0107	0.326
Boron – H	5	0.024	*1.268*	0.017	**2.07**	0.355	0.118	ND	0.107	0.318	**1.34**		0.081	0.010	0.033	ND	0.011
Cadmium – H	0.005	0.0001	*0.001325*	NT	ND	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Chromium – H	0.05	0.00084	*0.01313*	NT	ND	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Copper – A	1	0.003	*0.5015*	NT	ND	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Iron – A	0.3	0.05	*0.1750*	0.017	**62.2**	0.097	**3.93**	0.014	**11.6**	**11.3**	**10.8**		**0.409**	**6.09**	**15.3**	ND	**20.4**
Lead – H	0.01	0.001	*0.00325*	NT	ND	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Mercury – H	0.001	0.001	*0.001*	NT	ND	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Magnesium	-	6.13	-	6.75	78.6	17	9.14	4.19	15.1	17.5	82.5		1.03	4.52	8.83	6.38	47.6
Manganese – A	0.05	0.054	*0.0520*	0.0134	**0.345**	**0.248**	**0.333**	0.00096	**0.716**	**0.426**	**3.75**		**0.23**	**1.03**	**0.835**	ND	**6.48**
Nickel	-	NT	-	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Potassium	-	1.59	-	1	186	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Sodium – A	20	6.18	*103.09*	5.9	**248**	35	27.9	3.41	26.9	**277**	58.4		6.53	3.49	17.1	4.2	**303**
Zinc - A	5	0.009	*2.5045*	0	0.011	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
General Chemistry																	
Alkalinity – OG	500	74.7	*287.35*	87.3	**1640**	**296**	**138**	49.5	196	195	**820**		14.4	44.3	94.7	69.5	79.4
Ammonia	-	0.026	-	ND	147	0.12	0.76	ND	1.12	1.31	1.33		ND	0.521	1.15	0.026	2.52
BOD_5	-	2	-	ND	8.1	ND	ND	ND	ND	ND	3.2		ND	ND	ND	ND	ND
Chloride – A	250	0.87	*125.435*	0.91	**287**	31.9	33.9	1.1	54	**490**	83.3		4.95	1.4	21.1	2.53	**863**
COD	-	10	-	16	250	61	22	ND	39	101	98		27	18	110	74	120
Cond. (us/cm)	-	170	-	169	2960	555	326	110	456	1600	1360		55.9	94.6	228	150	2360
DOC – A	5	3.11	*4.055*	3.2	**73.7**	**19.4**	**8.12**	1.96	**11.1**	**17.6**	**23.7**		2.72	2.89	**24.9**	2.22	**10.9**
Nitrate – H	10	0.157	*2.6178*	0.085	0.10	<0.020	<0.020	0.091	0.072	<0.10	<0.10		0.048	0.048	0.068	0.057	<0.10
Nitrite – H	1	0.02	*0.2650*	NT	ND	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT
Sulphate – A	500	12.2	*256.1*	10.4	ND	0.49	ND	9.74	ND	2.6	ND		5.15	4.69	3.69	10.2	ND
TDS – A	500	170	*335*	162	**1390**	**372**	215	79	325	**975**	**949**		129	81	186	140	**1620**
TKN	-	0.32	-	0.181	164	1.14	1	0.057	1.63	3.09	2.47		0.266	0.718	2.15	1.12	3.4
pH	6.5-8.5	7.02	*6.76-7.76*	7.75	7.1	**8.49**	**8.17**	**7.89**	**8.01**	7.45	7.02		6.78	6.84	7.02	7.58	7.49
Total Phosphorus	-	0.391	-	NT	0.228	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT

Notes: *A – Aesthetic, H –Health Related, OG – Operational Guideline, Cb – median value of all previous sampling events; ND – Not Detected, NT-Not Tested; Bold/shaded values exceed RU criteria.*

4.4.2 Geochemical Facies

Median concentrations of major ions were calculated using historical data for each groundwater monitoring location. A Piper diagram (Figure 2) was developed in order to identify waters which are geochemically similar in composition and thus may be identified as being from the same source or as being impacted by the same anthropogenic activity (e.g. landfilling). The ions used to develop the Piper diagram are: chloride, magnesium, sodium, potassium, calcium, sulphate, carbonate and bicarbonate. Data is available for each ion at each monitoring well.

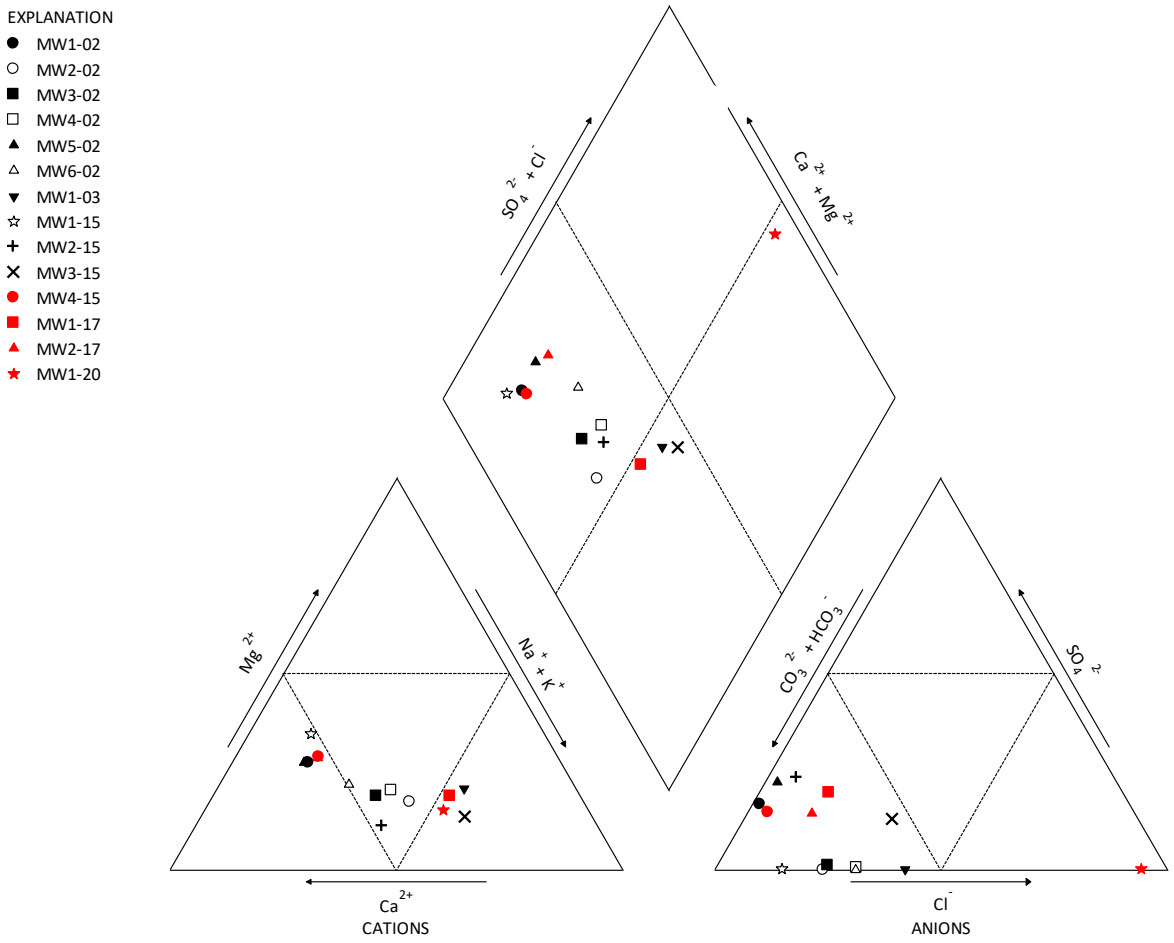


Figure 2: Monitoring Well Piper Diagram

The central diamond of the Piper diagram reveals a calcium-bicarbonate type grouping of wells similar to the source monitor (MW2-02) and a grouping similar to the background well (MW1-02). Three wells display either mixed water types, with one (MW1-20) clearly chloride type.

Similarly to historical reports, the clustering and relative positions of the data points shown on the Piper diagram suggests that the leachate impacted groundwater progressing in a southwesterly direction may

be constrained between MW1-03 and MW3-15. The possible impact of highway salting on wells adjacent to the highway (especially MW1-20) is also revealed.

4.4.3 Leachate Characterization

Landfill leachates are typically strong, having TDS levels in the thousands of mg/L and complex mixtures of numerous contaminants that may have either leached from waste material or formed as a result of related reactions/processes. TDS levels at the Site have historically been shown to range from a low of 28mg/L at MW2-15 to a high of 2,580mg/L and MW2-02 (source well).

Representative ranges of typical contaminants found in landfill leachate are presented in Table 10.A, along with median values encountered at each of the monitoring well locations. The representative ranges in the table are associated with mature landfill sites (greater than 10 years old).

TABLE 10.A: COMPARISON OF MEDIAN MW CONCENTRATIONS TO RANGES OF TYPICAL LEACHATE PARAMETERS

Parameter	Monitoring Well (mg/L)														
	MW1-02 Background	MW 2-02 Source	MW 3-02	MW 4-02	MW 5-02	MW 6-02	MW 1-03	MW 1-15	MW 2-15	MW 3-15	MW 4-15	MW 1-17	MW 2-17	MW 1-20	Representative Range in Leachate
Potassium	1.59	**150.5**	30	11.25	1.36	3.96	28.6	3.905	0.305	0.417	0.661	1.16	0.841	1.965	50-400
Sodium	6.18	**168**	42.3	27.75	3.685	33.55	55.8	57.8	2.745	9.31	3.38	34.1	6.635	265	100-200
Calcium	20.6	**193**	64.75	31.45	14	53.95	28.65	**198.5**	2.92	4.01	9.42	16.65	18.2	**141**	100-400
Magnesium	6.13	**52.6**	16.4	9.555	4.085	14.5	14.6	**81.35**	0.412	1.18	3.11	6.565	5.94	41.1	50-200
Chloride	0.87	**228**	56.5	38.2	0.95	53.6	79.3	83.75	0.655	8.05	1.24	14.4	7.64	**742**	100-400
Sulphate	12.2	1.5	3.62	1	11.7	0.3	1.045	1.785	3.305	4.26	5.58	**25.1**	10.3	3	20-50
Alkalinity	74.7	**1260**	**296**	144	49.65	**205**	190	**842**	12.45	23	39.1	104	65	76	200-1,000
Iron	0.05	**72.1**	0.3	3.985	0.02	18.05	6.335	7.59	0.08	1.4	0.908	3.555	0.013	**20.4**	20-200
Nitrate	0.157	0.07	0.107	0.02	0.105	0.1	0.03	0.04	0.092	0.048	0.14	0.069	0.071	0.1	5-10
Ammonia-N	0.026	**78.8**	0.37	0.873	0.02	1.28	1.37	0.324	0.02	0.16	0.442	0.888	0.028	1.93	20-40
COD	10	**226**	63	26	10	42	85.4	**107.5**	53.5	77	33	**177.5**	96.5	84	100-500
Conductivity	170	2930	760	410	125	547.5	646.5	1625	36.1	77	95.2	272	163.5	2410	NP
TDS	170	1390	470	286.5	100	346	400	988.5	43.5	182	81	317	152.5	1610	5,000-40,000

Notes:
1. *Representative Ranges from "Integrated Solid Waste Management, Tchobangolous,1993".*
2. *Representative Range for TDS from "The Fate of Landfill Leachate in Waste Water Treatment Plants and in Groundwater at Attenuation Landfills, MOEE, 1994".*
3. *Bolded and shaded values fall within or above the representative range.*
4. *NP – Not Provided*

The representative ranges of typical contaminants found in landfill leachate are presented in Table 10.B and Table 10.C, along with the concentrations encountered at each of the monitoring well locations during the 2022 spring and fall sampling events. The representative ranges in the tables are associated with mature landfill sites (greater than 10 years old).

TABLE 10.B: SUMMARY OF TYPICAL LEACHATE PARAMETERS – MAY 2022

Parameter	Monitoring Well (mg/L)															
	ODWS	MW 1-02 (BG)	MW 2-02 (Source)	MW 3-02	MW 4-02	MW 5-02	MW 6-02	MW 1-03	MW 1-15	MW 2-15	MW 3-15	MW 4-15	MW 1-17	MW 2-17	MW 1-20	Representative Range in Leachate
Potassium		1.65	**173**	26.8	8.02	0.985	5.88	36.9	3.59	0.335	0.362	0.66	1.16	0.774	2.09	50-400
Sodium	200	6.91	**246**	33.9	31.5	3.3	25.8	**251**	49.1	1.78	7.72	3.34	33.6	6.27	**265**	100-200
Calcium		23.4	**191**	58.5	29.4	12.9	59.9	39.1	**174**	3.39	3.55	8.64	14.4	17.8	**183**	100-400
Magnesium		8.07	**79.8**	16.1	9.79	3.98	15.2	14.1	**65.7**	0.505	1.18	2.63	5.3	5.32	48.7	50-200
Chloride	250	0.86	**229**	36.3	51.6	1.05	46.9	**338**	66.9	1.24	6.19	0.84	15.4	4.91	**742**	100-400
Sulphate	500	9.29	1.39	ND	1.34	9.52	ND	2.43	0.66	1.77	4.27	4.95	**29**	9.32	ND	20-50
Alkalinity	500	79.3	**1650**	**277**	126	48.8	198	**255**	**827**	9.8	23	37	80	71.3	74.6	200-1,000
Iron	0.3	0.02	**62.9**	0.467	5.33	ND	18.9	10.3	7.51	0.081	2.02	0.591	3.92	0.014	**21.3**	20-200
Nitrate	10	0.102	ND	0.021	ND	0.154	ND	ND	ND	0.516	0.03	0.124	0.092	0.058	ND	5-10
Ammonia-N		0.0341	**141**	0.198	0.424	0.0244	2.01	1.68	0.479	0.02	0.018	0.068	0.459	0.035	2.33	20-40
COD		49	**284**	64	51	14	59	85	**153**	53	64	22	66	16	73	100-500
Conductivity		170	3670	639	426	117	533	1640	1610	36	73.4	81.4	271	162	2720	NP
TDS	500	168	1790	393	298	89	333	895	1050	37	123	75	317	236	1700	5,000-40,000

Notes:
1. *Representative Ranges from "Integrated Solid Waste Management, Tchobangolous,1993".*
2. *Representative Range for TDS from "The Fate of Landfill Leachate in Waste Water Treatment Plants and in Groundwater at Attenuation Landfills, MOEE, 1994"*
3. *ND- Not Detected, NT- No Test, NP – Not Provided*
4. *Bolded and shaded values fall within or above the representative range*

TABLE 10.C: SUMMARY OF TYPICAL LEACHATE PARAMETERS – SEPTEMBER 2022

Parameter	Monitoring Well (mg/L)															
	ODWS	MW 1-02 (BG)	MW 2-02 (Source)	MW 3-02	MW 4-02	MW 5-02	MW 6-02	MW 1-03	MW 1-15	MW 2-15	MW 3-15	MW 4-15	MW 1-17	MW 2-17	MW 1-20	Representative Range in Leachate
Potassium		NT	**186**	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT	50-400
Sodium	200	5.9	**248**	35	27.9	3.41	26.9	**277**	58.4		6.53	3.49	17.1	4.2	**303**	100-200
Calcium		20	**163**	55.5	26.1	12.1	49.1	43.1	**191**		3.22	10.4	19.3	18.3	**158**	100-400
Magnesium		6.75	**78.6**	17	9.14	4.19	15.1	17.5	**82.5**		1.03	4.52	8.83	6.38	47.6	50-200
Chloride	250	0.91	**287**	31.9	33.9	1.1	54	490	83.3		4.95	1.4	21.1	2.53	**863**	100-400
Sulphate	500	10.4	ND	0.49	ND	9.74	ND	**2.6**	1520		5.15	**4.69**	3.69	10.2	ND	20-50
Alkalinity	500	87.3	**1640**	**296**	138	49.5	196	195	**820**	DRY	14.4	44.3	94.7	69.5	79.4	200-1,000
Iron	0.3	0.017	**62.2**	0.097	3.93	0.014	11.6	11.3	10.8		0.409	6.09	15.3	ND	**20.4**	20-200
Nitrate	10	0.085	0.1	ND	ND	0.091	0.072	ND	ND		0.048	0.048	0.068	0.057	ND	5-10
Ammonia-N		ND	**147**	0.12	0.76	ND	1.12	1.31	1.33		ND	0.521	1.15	0.026	2.52	20-40
COD		16	**250**	61	22	ND	39	**101**	98		27	18	**110**	74	**120**	100-500
Conductivity		169	2960	555	326	110	456	179	1360		55.9	94.6	228	150	2360	NP
TDS	500	162	1390	372	215	79	325	975	949		129	81	186	140	1620	5,000-40,000

Notes:
1. *Representative Ranges from "Integrated Solid Waste Management, Tchobangolous,1993".*
2. *Representative Range for TDS from "The Fate of Landfill Leachate in Waste Water Treatment Plants and in Groundwater at Attenuation Landfills, MOEE, 1994"*
3. *ND- Not Detected, NT- No Test, NP – Not Provided*
4. *Bolded and shaded values fall within or above the representative range*

Review of the data in Tables 10.A, 10.B and 10.C coupled with the observed TDS levels, suggests that the landfill is producing moderately strong leachate.

4.5 Surface Water Quantity Monitoring

Surface water flow measurements are not taken as part of the annual sampling events.

4.6 Surface Water Quality Monitoring

The surface water monitoring program evaluates the potential that landfill leachate and/or surface runoff from the Site may be impacting down gradient surface waters.

Previous assessments have concluded that:

1. Historic monitoring results for surface water samples collected southwest of the waste disposal site have demonstrated consistent water quality since 2004.

2. PWQO are commonly exceeded in surface water samples for boron, chromium, iron, zinc and phenols, in water ponding near the toe of the landfill at SW1 (formerly SW). PWQO have historically been exceeded for boron, chromium, iron and phenols at SW2 and for chromium, iron and phenols at SW3.

During the 2022 reporting period, areas of surface water ponding located south of the fill area (SW4 and SW5), a background surface water sampling location (SW6) and a downgradient surface water sampling location (SW7) were included as part of the Site's monitoring program.

Analytical results are summarized in Tables G.17 to G.19 of Appendix G and copies of laboratory certificates of analysis are presented in Appendix F. Surface water quality trends are also included in Charts H.7 – H.10 of Appendix H. The data in Table 11 presents a comparison of concentrations of surface water constituents to PWQO, Canadian Water Quality Guidelines (CWQG) and criteria listed under MECP's *Table A: Assessment Criteria for Waste Disposal Sites, Monitoring and Reporting for Waste Disposal Sites, Groundwater and Surface Water – Technical Guidance Document, 2010*. The following observations are made on review of the results.

Spring 2022

- PWQO for phosphorus and phenols were exceeded at all sampled surface water locations.
- PWQO for boron was exceeded at SW1 and SW4.
- The PWQO and CWQG were exceeded for cadmium at SW1, iron at SW2, lead at SW1 and SW5 and zinc at SW1.
- CWQG were exceeded for copper at SW1 and for un-ionized ammonia and copper at SW4 and SW5.
- The alternative assessment criteria (AAC) and CWQG were exceeded for un-ionized ammonia at SW1 and for chloride at SW7.
- Iron exceeded PWQO, AAC and CWQG at SW1, SW4, SW5, SW6 and SW7.

Fall 2022

- With the exception of SW2, phenols exceeded PWQO at all sampled surface water locations. Phenols also exceeded CWQG at SW5.
- PWQO for phosphorus was exceeded at all sampled surface water locations.
- Boron exceeded PWQO at SW1, SW4 and SW5.

- The alternative assessment criteria (AAC) and CWQG were exceeded for un-ionized ammonia at SW1 and for chloride at SW7 and for chloride at SW7.
- Iron exceeded PWQO and CWQG at SW2 and PWQO, AAC and CWQG at SW1, SW4, SW5, SW6 and SW7.
- Lead exceeded PWQO, AAC and CWQG at SW4 and SW6.

Surface water PWQO exceedances for the 2022 sampling events are tabulated graphically on Drawing B8 of Appendix B.

TABLE 11: SELECTED SURFACE WATER QUALITY DATA COMPARED WITH PWQO – SPRING 2022											
	Sampling Location and Concentration										
Parameter	**PWQO**	**Alternative Assessment Criteria**	**Units**	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**	**SW6**	**SW7**	**MW1-02 (Background Median)**
Chloride		180 (120)	mg/L	48.4	11.7	DRY	32.8	16.4	0.44	**(231)**	0.87
Sulfate		100	mg/L	8.56	ND		ND	0.33	ND	5.1	12.2
Phosphorus	0.01		mg/L	**0.223**	**0.0282**		**0.215**	**0.106**	**0.0822**	**0.109**	0.391
Un-ionized Ammonia		0.1 (0.019)	mg/L	**(0.2201)**	0.0005		**(0.0793)**	**(0.0326)**	0	0.0004	0.0001
pH		6.0-9.0		8.32	8.18		8.14	7.98	7.49	8.01	7.02
Arsenic	0.005	0.15 (0.005)	mg/L	0.00099	0.0005		0.00102	0.00106	0.0011	0.00064	0.001
Barium		2.3	mg/L	0.126	0.0182		0.109	0.0736	0.0131	0.0589	0.012
Boron	0.2	3.55 (1.5)	mg/L	**0.631**	0.152		**0.26**	0.177	ND	0.034	0.024
Cadmium	0.0001	0.00021 (0.00006*)	mg/L	**(0.000102)**	0.0000087		0.0000376	0.000053	0.0000205	0.0000437	0.0001
Chromium		0.064	mg/L	0.00233	0.00053		0.00124	0.00125	0.00071	0.00116	0.00084
Iron	0.3	1 (0.3)	mg/L	**(17)***	**(0.498)**		**(22.3)***	**(11.1)***	**(1.39)***	**(5.83)***	0.05
Lead	0.001	0.002 (0.001)	mg/L	**(0.00182)**	0.000092		0.000554	**(0.00105)**	0.000357	0.000381	0.001
Phenols	0.001	0.04 (0.004)	mg/L	**0.0018**	**0.0012**		**0.0017**	**0.0014**	**0.002**	**0.0013**	1.85
Zinc	0.02	0.089 (0.0177**)	mg/L	**(0.0292)**	ND		0.0173	0.0091	0.0041	0.0156	0.009
Copper	0.005	0.0069 (0.002)	mg/L	**(0.0036)**	ND		**(0.0025)**	**(0.003)**	0.0014	0.0019	0.003
Nitrate		(13)	mg/L	0.999	ND		0.046	ND	ND	ND	0.157
Nitrite		(0.06)	mg/L	ND	ND		0.013	ND	ND	ND	0.02

( ) Standard in bracket applies to Canadian Water Quality Guideline criteria

Alternative assessment criteria from "*Table A: Assessment Criteria for Waste Disposal Sites Monitoring and Reporting for Waste Disposal Sites, Groundwater and Surface water – Technical Guidance Document, MOE, 2010*"

Bold and grey shaded values exceed PWQO; Bold and bracketed values exceed Canadian Water Quality Guidelines; Grey shaded * values exceed PWQO and Table A criteria; Grey shaded and bracketed values exceed PWQO and Canadian Water Quality Guidelines; Grey shaded, bracketed * values exceed PWQO, Table A and Canadian Water Quality Guidelines; Bold yellow shaded bracket values exceed Table A and Canadian Water Quality Guidelines.

Multiple PWQO exist where interim (revised) values are available based on the Hardness as CaCO3 (mg/L) result (i.e. cadmium, copper and lead)

ND – Not Detected; NT – Not Tested

TABLE 11: SELECTED SURFACE WATER QUALITY DATA COMPARED WITH PWQO – FALL 2022											
				Sampling Location and Concentration							
Parameter	**PWQO**	**Alternative Assessment Criteria**	**Units**	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**	**SW6**	**SW7**	**MW1-02 (Background Median)**
Chloride		180 (120)	mg/L	81	34.4	DRY	45.3	52.3	1.27	**(404)**	0.87
Sulfate		100	mg/L	14.3	ND		6.63	3.26	3.04	6	12.2
Phosphorus	0.01		mg/L	**0.161**	**0.0203**		**0.187**	**0.265**	**0.202**	**0.521**	0.391
Un-ionized Ammonia		0.1 (0.019)	mg/L	**(0.379)**	0.0004		**(0.4128)**	**(0.2243)**	0.0002	0.0061	0.0001
pH		6.0-9.0		8.38	8.4		8.30	8.34	7.70	7.67	7.02
Arsenic	0.005	0.15 (0.005)	mg/L	ND	ND		0.0025	0.0018	0.00249	0.00106	0.001
Barium		2.3	mg/L	0.101	0.0388		0.102	0.127	0.0474	0.0753	0.012
Boron	0.2	3.55 (1.5)	mg/L	**0.8**	**0.38**		**0.39**	**0.36**	0.015	0.053	0.024
Cadmium	0.0001	0.00021 (0.00008*)	mg/L	ND	ND		ND	ND	0.0000718	0.0000094	0.0001
Chromium		0.064	mg/L	ND	ND		ND	ND	0.00247	0.00155	0.00084
Iron	0.3	1 (0.3)	mg/L	**(3.7)***	**(0.74)**		**(23.8)***	**(16)***	**(2.18)***	**(4.18)***	0.05
Lead	0.001	0.002 (0.001)	mg/L	ND	ND		**(0.00228)***	ND	**(0.00208)***	0.000452	0.001
Phenols	0.001	0.04 (0.004)	mg/L	**0.0021**	ND		**0.003**	**(0.0065)**	**0.0015**	**0.0015**	1.85
Zinc	0.02	0.089 (0.027**)	mg/L	ND	ND		ND	ND	0.0114	0.0075	0.009
Copper	0.005	0.0069 (0.002)	mg/L	ND	ND		ND	ND	**(0.0023)**	0.0017	0.003
Nitrate		(13)	mg/L	0.169	ND		ND	ND	ND	ND	0.157
Nitrite		(0.06)	mg/L	0.1	ND		ND	ND	ND	ND	0.02

( ) Standard in bracket applies to Canadian Water Quality Guideline criteria

Alternative assessment criteria from "*Table A: Assessment Criteria for Waste Disposal Sites Monitoring and Reporting for Waste Disposal Sites, Groundwater and Surface water – Technical Guidance Document, MOE, 2010*"

Bold and grey shaded values exceed PWQO; Bold and bracketed values exceed Canadian Water Quality Guidelines; Grey shaded * values exceed PWQO and Table A criteria; Grey shaded and bracketed values exceed PWQO and Canadian Water Quality Guidelines; Grey shaded, bracketed * values exceed PWQO, Table A and Canadian Water Quality Guidelines; Bold yellow shaded bracket values exceed Table A and Canadian Water Quality Guidelines.

Multiple PWQO exist where interim (revised) values are available based on the Hardness as CaCO3 (mg/L) result (i.e. cadmium, copper and lead)

ND – Not Detected; NT – Not Tested

4.7 Gas Pressures and Composition

Gas pressures and composition data is not currently collected at the Site.

4.8 Supplemental Monitoring

No supplemental monitoring is performed at the Site.

4.9 Control Systems Monitoring

The current environmental control systems in place at the Site are the application of cover material as well as proper grading of the fill area of the landfill.

5.0 ASSESSMENT, INTERPRETATION AND DISCUSSION

Section 5.0 provides an assessment, interpretation and discussion regarding the potential impact from the landfill on groundwater and surface water features considering information collected during the 2022 groundwater and surface water sampling program, as well as a review of historical data. The effectiveness of the monitoring program, remedial measures in place, site features, control measures/systems in place and operating conditions at the landfill site are also assessed.

5.1 Groundwater Flow Interpretation

Interpretations presented in previous assessments indicate that groundwater within the overburden aquifer at the Site flows toward the northwest and southwest, eventually discharging into Lake Huron. Groundwater contours interpreted from water table elevations determined during the 2022 spring and fall sampling events are shown on Drawings B5 and B6, of Appendix B. The 2022 contours support the historical interpretations regarding groundwater flow direction; it is suspected that a groundwater divide restricts flow in the northwesterly and westerly directions.

Goffco Limited identified a hydraulic conductivity (K) of $1.0x10^{-6}$ m/s (clean sand) in their 2003 report titled “Hydrogeological Investigation – Town of Blind River Landfill”. The porosity of the soils is assumed to be in the range of 30% based on previous hydrogeological assessments on similar material.

Based on the identified hydraulic conductivity and porosity, an estimated lateral gradient for the Site was developed in order to calculate groundwater flow velocities for the spring and fall sampling events. Drawing B4 of this report was referenced in order to determine the groundwater gradient according to the 2022 spring and fall sampling events.

For the spring sampling event, the hydraulic gradient between MW2-02 and MW6-02 was calculated to be 0.025 m/m. Using the identified hydraulic conductivity and porosity, the estimated groundwater flow velocity was calculated to be 2.66 meters/year (m/yr). Gradient and velocity values associated with the fall sampling event are 0.026 m/m and 2.73 m/y.

At the vertical gradient of 0.03 observed during the fall 2022 sampling event at the nested monitoring well locations MW3-02 and MW6-02, the groundwater velocity was determined to be 0.32 m/yr at a hydraulic conductivity of 1 order of magnitude less than that used for the lateral gradient calculation.

At the calculated horizontal and vertical groundwater velocities, precipitation (or leachate) reaching the underlying groundwater system is expected to travel for decades before reaching the Highway 17 right-of-way (ROW) and eventually discharging to Lake Huron.

5.2 Groundwater and Surface Water Quality

The Tables in Appendix G present summaries of analytical results from analyses of the groundwater and surface water samples collected during the reporting period and previous years. ODWS and PWQO are noted where they exist. The comments below have been developed following review of the latest set of groundwater and surface water analytical data.

1. The Site appears to be producing moderately strong leachate;

2. During the spring sampling event, no parameters exceeded ODWS or RU criteria at MW1-02 (background);

3. ODWS were exceeded for alkalinity, iron, manganese, sodium, TDS, DOC and benzene during the 2022 spring and fall sampling events at MW2-02 (source). Chloride also exceeded ODWS at this location during the fall sampling event. RU concentrations were exceeded for alkalinity, barium, boron, chloride, iron, manganese, sodium, TDS, benzene and DOC during the spring and fall sampling events;

4. During the spring sampling event, PWQO were exceeded for phosphorus (at all sampled surface water locations); phenols (at all sampled surface water locations); boron (SW1, SW4); cadmium (SW1); iron (SW2. SW4, SW5, SW6, SW7); lead (SW1, SW5); and, zinc (SW1).

5. Surface water AAC were exceeded during the spring sampling event for un-ionized ammonia (SW1); iron (SW1, SW4, SW5, SW6, SW7); and, chloride (SW7);

6. CWQG were exceeded during the spring for cadmium (SW1), iron (SW2), lead (SW1, SW5); copper (SW1, SW4); un-ionized ammonia (SW1); chloride (SW7); and, zinc (SW1);

7. During the fall sampling event, PWQO were exceeded for phosphorus (at all sampled surface water locations); phenols (at all sampled surface water locations); boron (SW1, SW4, SW5); iron (at all sampled surface water locations); and, lead (SW4, SW6);

8. AAC were exceeded during the fall sampling event for un-ionized ammonia (SW1); chloride (SW7); iron (SW1, SW4, SW5, SW6, SW7); and, lead (SW4, SW6);

9. During the fall sampling event CWQG were exceeded for phenols (SW5); un-ionized ammonia (SW1); chloride (SW7); iron (at all sampled surface water locations); and, lead SW4, SW6).

10. SW3 was dry during the 2022 spring and fall sampling events;

11. Water quality of SW1, located southwest of the fill area, appears to have been impacted by leachate throughout the period that data is available.

12. Beginning in 2023, water quality monitoring should be carried out four times annually, as required under ECA No. A-500-7134513066.

Groundwater and surface water quality trend plots are included in Appendix H of this report. While no significant trends are apparent in data from individual monitoring wells:

1. Concentrations of iron and manganese are typically higher at MW6-02, MW1-03 and MW4-02;

2. Concentrations of DOC, TDS and chloride are typically greatest at MW1-03, followed by MW6-02 and MW4-02. Although data is limited, concentrations of these parameters appear to be similar to or greater at MW1-20 than those observed at MW1-03;

3. With the exception of the fall 2020 sampling event where MW1-02 shows elevated levels of certain parameters, for reasons unknown, MW1-02 and MW5-02 consistently plot as the lowest concentrations for the selected parameters mentioned above.

5.2.1 Leachate Generation Rate

It is anticipated that, locally, the entire water surplus would infiltrate into the groundwater system. Based on an annual infiltration of 250mm (per MECP guidance) through 2.0 hectares (approved fill area), it is estimated that 13.7m^3/day of leachate may be produced at the Site.

5.3 Waste Disposal Site Gas impacts

Landfill gas is not currently monitored; however, it is expected that the anticipated small quantities of methane gas produced will not impact adjacent properties. The existing cover at the Site does not show signs of failure. There appears to be ample vegetation growth on all outer slopes as well as historic dumping areas within the current landfill.

5.4 Effectiveness of Engineered Controls

There are no engineered control systems currently in place at the Site.

5.5 Adequacy of the Monitoring Program

The groundwater and surface water monitoring program appear to adequately characterize current conditions at the Site, however, to further assess the extent of leachate migration, the Town has been corresponding with the MECP regarding additional monitoring locations.

5.6 Assessment of the Need for Implementation of Contingency Measures

A trigger mechanisms and contingency plan is currently being finalized for the Site, however, to further assess the results from the analysis of groundwater collected at the site, a list of trigger parameters and concentrations was developed starting in 2015 and continued during the 2022 reporting period.

5.6.1 Trigger Mechanisms Assessment

A list of groundwater trigger parameters was established as being those parameters where the ratio between the median concentrations in leachate and background water quality is 10 or greater. The source (leachate) monitor constructed at the Site is identified as MW2-02 while the background monitor is identified as MW1-02. The ratios of concentrations in groundwater from these two (2) active monitoring wells were determined in identifying the trigger parameters (as shown in Tables 12.A and 12.B).

Site-specific groundwater trigger concentrations, developed based on MECP's RU Policy were established for each of the trigger parameters identified in Table 12.A and 12.B, as the 75th percentile RU values. The trigger concentrations were calculated using the 10 most recent sampling results. The trigger concentrations are also shown in Table 12.A and 12.B.

The assessment of groundwater trigger mechanisms reveals:

1. Trigger concentration for DOC was exceeded at MW3-02, MW4-02, MW6-02, MW1-03, MW1-15, and MW1-17 and MW1-20 during the 2022 spring and fall sampling events. DOC also exceeded trigger concentrations at MW3-15 during the spring sampling event;

2. During both spring and fall sampling events, iron exceeded trigger concentrations at MW4-02, MW1-03, MW1-15, MW3-15, MW4-15, MW1-17 and MW1-20. Tigger concentrations for iron were also exceeded at MW3-02 during the spring sampling event;

3. MW1-03 and MW1-20 exceeded trigger concentrations for chloride, barium and sodium during the spring and fall sampling events; and,

4. Alkalinity exceeded trigger concentrations at MW1-15 during the spring and fall sampling events and at MW3-02 during the fall sampling event.

As proposed in the Site's Trigger Mechanism and Contingency Plan, in addition to the assessment described above, groundwater quality near the point of discharge to surface water (MW1-20) was assessed considering compliance with background concentrations as well as PWQO or the CWQG, whichever is more recently published (as shown in Table 13).

To address the noted trigger concentration exceedances, the Town is pursuing the establishment of a contaminant attenuation zone (CAZ).

TABLE 12.A: GROUNDWATER TRIGGER MECHANISM ASSESSMENT

Parameter	Ratio to Background MW2-02	Trigger Conc. (mg/L)	2022 Spring Sampling Event Monitoring Well Results (mg/L)												
			MW 1-02	MW 3-02*	MW 4-02*	MW 5-02	MW 6-02*	MW 1-03*	MW 1-15	MW 2-15	MW 3-15*	MW 4-15	MW 1-17*	MW 2-17*	MW 1-20
Alkalinity	16.87	287	79.3	277	126	48.8	198	225	**827**	9.8	23	37	80	71.3	74.6
Barium	37.50	0.259	0.0124	0.0198	0.0664	0.00762	0.189	**0.285**	0.158	0.00756	0.00618	0.00712	0.0252	0.0113	**0.347**
Boron	62.5	1.269	0.018	0.309	0.068	ND	0.114	0.29	1.06	ND	0.193	0.011	0.024	ND	ND
Chloride	262.07	125.43	0.86	36.3	51.6	1.05	46.9	**338**	66.9	1.24	6.19	0.84	15.4	4.91	**742**
Iron	1442	0.175	0.02	**0.467**	**5.33**	ND	**18.9**	**10.3**	**7.51**	0.081	**2.02**	**0.591**	**3.92**	0.014	**21.3**
Sodium	27.18	103.09	6.91	33.9	31.5	3.3	25.8	**251**	49.1	1.78	7.7	3.34	33.6	6.27	**265**
DOC	19.23	4	3.11	**18.2**	**6.7**	3.35	**13.9**	**22**	**23.1**	2.93	**5.88**	2.78	**20.9**	2.46	**13.3**

*Denotes a boundary well
Grey shaded values exceed Trigger Concentrations
NA – Not Available; ND – Not Detected; NT – Not Tested

TABLE 12.B: GROUNDWATER TRIGGER MECHANISM ASSESSMENT

Parameter	Ratio to Background MW2-02	Trigger Conc. (mg/L)	2022 Fall Sampling Event Monitoring Well Results (mg/L)												
			MW 1-02	MW 3-02*	MW 4-02*	MW 5-02	MW 6-02*	MW 1-03*	MW 1-15	MW 2-15	MW 3-15*	MW 4-15	MW 1-17*	MW 2-17*	MW 1-20
Alkalinity	16.87	288.13	87.3	**296**	138	49.5	196	**195**	**820**	DRY	14.4	44.3	94.7	69.5	79.4
Barium	37.50	0.259	0.027	0.0346	0.0613	0.0221	0.178	**0.3331**	0.208		0.0162	0.0156	0.0547	0.0107	**0.326**
Boron	62.5	1.268	0.017	0.355	0.118	ND	0.107	0.318	**1.34**		0.081	0.01	0.033	ND	0.011
Chloride	262.07	125.44	0.91	31.9	33.9	1.1	54	**490**	83.3		4.95	1.4	21.1	2.53	**863**
Iron	1442	0.175	0.017	0.097	**3.93**	0.014	**11.6**	**11.3**	10.8		**0.409**	**6.01**	**15.3**	ND	**20.4**
Sodium	27.18	103.09	5.9	35	27.9	3.41	26.9	**277**	58.4		6.53	3.49	17.1	4.2	**303**
DOC	19.23	4.06	3.2	**19.4**	**8.12**	1.96	**11.1**	**17.6**	**23.7**		2.72	2.89	**24.9**	2.22	**10.9**

*Denotes a boundary well
Grey shaded values exceed Trigger Concentrations
NA – Not Available; ND – Not Detected; NT – Not Tested

TABLE 13: WETLAND MONITORING WELL COMPARISON TO SURFACE WATER TRIGGER PARAMETERS

Parameter	ODWS (mg/L)	SW6 (mg/L)		PWQO (mg/L)	CWQG (mg/L)	MW1-20 (mg/L)	
		SPRING	FALL			SPRING	FALL
Un-ionized Ammonia		0	0.0002		0.019	0.001	0.0009
pH		7.49	7.70	6.5 – 8.5	6.5 - 9	7.35	7.49
Chloride	250	0.44	1.27		120	**742**	**863**
Fluoride	1.5	NT	NT		0.12	ND	ND
Total Phosphorus		0.0822	0.202	0.01		**6.5**	NT
Cyanide	0.2	NT	NT	0.005		ND	ND
Arsenic	0.025	0.011	0.00249	0.005	0.005	**0.0204**	**0.0304**
Barium	1	0.0131	0.0474			0.79	0.956
Boron	5	ND	0.015	0.2	1.5	ND	ND
Cadmium	0.005	0.0000205	0.000718	0.0001	0.00006*/0.00008*	**0.000417**	**0.000591**
Copper	1	0.0014	0.0023	0.001	0.002	**0.154**	**0.189**
Iron	0.3	1.39	2.18	0.3	0.3	**90.6**	**111**
Lead	0.01	0.000357	0.00208	0.001	0.001	**0.0554**	**0.0734**
Zinc	5	0.0041	0.0114	0.02	0.0177*/0.027*	**0.163**	**0.195**
Phenols		0.002	0.0015	0.001	0.004	0.0015	NT

* Dependent on hardness value (mg/L as CaCO3); Metals reported for MW1-20 are total metals (mg/L)
ND – Not Detected; NT – Not Tested
Bold and shaded values exceed trigger
Trigger parameters are those described in Schedule 3 or the ECA; Trigger values are considered PWQO/CWQG values.

During the spring and fall sampling events, trigger concentrations were exceeded at MW1-20 for chloride, arsenic, cadmium, copper, iron, lead and zinc. Trigger concentrations were also exceeded for total phosphorus during the spring sampling event.

5.6.2 Surface Water Trigger Assessment

A list of surface water trigger parameters was established as those parameters listed under Column 3 or Schedule 5 of the MECP Landfill Standards.

As specified in the Trigger Mechanisms and Contingency Plan developed for the site, trigger concentrations are equivalent to the 75th percentile values calculated using the 10 most recent background surface water quality sample results from the upstream sampling locations (SW6). As data is only available for two sampling events at SW6, trigger concentrations may not accurately represent background conditions.
Established trigger concentrations for the 2022 reporting period are shown in Table 14.A and Table 14.B.

TABLE 14.A: SURFACE WATER TRIGGER MECHANISMS ASSESSMENT –MAY 2022

Parameter	Trigger Concentration Using SW6 (mg/L)	Concentrations (mg/L)						
		SW1	SW2	SW3	SW4	SW5	SW6	SW7
Alkalinity	32.2	**365**	**112**	DRY	**283**	**168**	32.2	**167**
Ammonia	0..0076	**9.2**	**0.0117**		**11.9**	**5.07**	0.0076	**0.0202**
Un-ionized Ammonia	0	**0.2201**	**0.0005**		**0.0793**	**0.0326**	0	**0.0004**
Arsenic	0.0011	0.00099	0.0005		0.00102	0.00106	0.0011	0.00064
Barium	0.0131	**0.126**	**0.0182**		**0.109**	**0.0736**	0.0131	**0.0589**
Boron	ND	**0.631**	**0.152**		**0.26**	**0.177**	ND	**0.034**
Cadmium	0.0000205	**0.000102**	0.0000087		**0.0000376**	**0.000053**	0.00000205	**0.0000437**
Chloride	0.44	**48.4**	**11.7**		**32.8**	**16.4**	0.44	**231**
Chromium	0.00071	**0.00233**	0.00053		**0.00124**	**0.00125**	0.00071	**0.00116**
Conductivity	62	**857**	**254**		**643**	**379**	62	**1100**
Copper	0.0014	**0.0036**	ND		**0.0025**	**0.003**	0.0014	**0.0019**
Iron	1.39	**7**	0.498		**22.3**	**11.1**	1.39	**5.83**
Lead	0.000357	**0.00182**	0.000092		**0.000554**	**0.00105**	0.000357	**0.000381**
Mercury	ND	**0.0000055**	ND		ND	ND	ND	ND
Nitrate	ND	**0.999**	ND		**0.046**	ND	ND	ND
Nitrite	ND	ND	ND		**0.013**	ND	ND	ND
TKN	0.94	**13**	0.723		**14.8**	**6.22**	0.94	**1.47**
pH	7.49	**8.32**	**8.18**		**8.14**	**7.98**	7.49	**8.01**
Total Phosphorus	0.0822	**0.223**	0.0282		**0.215**	**0.106**	0.0822	0.109
Total Suspended Solids	13.8	**202**	6.2		**103**	**84.8**	13.8	**97**
Total Dissolved Solids	54	**458**	**151**		**320**	**213**	54	**609**
Sulphate	ND	**8.56**	ND		ND	**0.33**	ND	**5.1**
Zinc	0.0041	**0.0292**	ND		**0.173**	**0.0091**	0.0041	**0.0156**
BOD	2.4	**25.8**	ND		**10.2**	**6.7**	2.4	**7.8**
COD	59	**143**	49		**124**	**72**	59	**66**
Phenol	0.002	0.0018	0.0012		0.0017	0.0014	0.002	0.0013
Field pH	7.01	**7.8**	**8.08**		**7.23**	**7.32**	7.01	**8.01**
Field Dissolved Oxygen	104.8	**142.5**	**114.3**		**160.1**	94.8	104.8	**105.1**
Field Conductivity	0.072	**0.935**	**0.288**		**0.705**	**0.456**	0.072	**1.188**
Field Temperature	19.5	**19.9**	18.6		**20.1**	17	19.5	17.5

ND – Not Detected; NA – Not Available; BOD – Biological Oxygen Demand; COD – Chemical Oxygen Demand; TKN – Total Kjeldahl Nitrogen
Bold and shaded values exceed trigger concentrations.

TABLE 14.A: SURFACE WATER TRIGGER MECHANISMS ASSESSMENT –SEPTEMBER 2022

Parameter	Trigger Concentration Using SW6 (mg/L)	Concentrations (mg/L)						
		SW1	SW2	SW3	SW4	SW5	SW6	SW7
Alkalinity	43.53	**386**	**239**	DRY	**230**	**376**	**47.3**	**107**
Ammonia	0.0559	**7.67**	0.02		**16.8**	**24.3**	**0.072**	0.05
Un-ionized Ammonia	0.00015	**0.379**	**0.0004**		**0.4128**	**0.2243**	**0.0002**	**0.0061**
Arsenic	0.00214	ND	ND		**0.0025**	0.0018	**0.00249**	0.00106
Barium	0.03883	**0.101**	0.0388		**0.102**	**0.127**	**0.0474**	**0.0753**
Boron	0.015	**0.8**	**0.38**		**0.39**	**0.036**	0.015	**0.053**
Cadmium	0.000059	ND	ND		ND	ND	**0.0000718**	0.0000094
Chloride	1.0625	**81**	**34.4**		**45.3**	**52.3**	**1.27**	**404**
Chromium	0.00203	ND	ND		ND	ND	**0.00247**	0.00155
Conductivity	90.125	**864**	**493**		**549**	**666**	**99.5**	**1280**
Copper	0.0021	ND	ND		ND	ND	**0.0023**	0.0017
Iron	1.9825	**3.7**	0.74		**23.8**	**16**	**2.18**	**4.18**
Lead	0.00165	ND	ND		**0.00228**	ND	**0.00208**	0.000452
Mercury	ND	ND	ND		ND	ND	ND	ND
Nitrate	ND	**0.169**	ND		ND	ND	ND	ND
Nitrite	ND	**0.1**	ND		ND	ND	ND	ND
TKN	2.5	**12.2**	0.878		**24.7**	**37.6**	**3.02**	**4.4**
pH	7.65	**8.38**	**8.4**		**8.30**	**8.34**	**7.70**	**7.67**
Total Phosphorus	0.1721	0.161	0.0203		**0.187**	**0.265**	**0.202**	**0.521**
Total Suspended Solids	17.1	**114**	10.9		**89**	**40**	**18.2**	**271**
Total Dissolved Solids	54.38	**551**	**305**		**297**	**434**	**54.5**	**749**
Sulphate	3.04	**14.3**	ND		**6.63**	**3.26**	3.04	**6**
Zinc	0.009575	ND	ND		ND	ND	**0.0114**	0..0075
BOD	10.95	5.3	ND		4.7	4.9	**13.8**	**12.5**
COD	86	82	56		**195**	**89**	**95**	**152**
Phenol	0.001875	**0.0021**	ND		**0.003**	**0.0065**	0.0015	0.0015
Field pH	6.95	**7.93**	**7.7**		**7.6**	**7.39**	6.77	**7.67**
Field Dissolved Oxygen	119.95	**136.6**	79.8		43.4	38.8	**125**	**170.6**
Field Conductivity	0.1035	**1.065**	**0.756**		**0.645**	**0.906**	**0.114**	**0.704**
Field Temperature	21.075	**25.7**	20.9		**26.1**	19.6	**21.6**	**23**

ND – Not Detected; NA – Not Available; BOD – Biological Oxygen Demand; COD – Chemical Oxygen Demand; TKN – Total Kjeldahl Nitrogen
Bold and shaded values exceed trigger concentrations.

5.6.3 Contingency Measures

Monitoring wells assessed to-date are intermediate wells in close proximity to the fill area, rather than CAZ boundary wells. In accordance with direction from the MECP, the Town has initiated the process to formally establish a CAZ. The Town has also submitted an easement application with MTO requesting that groundwater beneath the Highway 17 ROW be incorporated into the CAZ.

In accordance with ECA A-500-7134513066, the Town is also constructing improvements to site and local area surface water management facilities. This includes addressing suspected leachate seeps.

6.0 ADDITIONAL ANNUAL REPORTING REQUIREMENTS

Section 1.4 of this report outlines the annual reporting requirements for the Town of Blind River Municipal landfill site. The following subsections address the two requirements not addressed earlier in this document.

6.1 Site Plan – 2022 Contours and Areas of Operation

Drawing B2 in Appendix B depicts the following information as per the requirements reproduced in Section 1.4 of this report:

1. 2022 contours and facilities;
2. Areas of landfilling activity (2022 and intended for 2023); and,
3. Progress of final cover.

6.2 Site Capacity

A topographic survey was completed on November 2, 2022 in order to estimate the in-situ waste volume. A contour plan of the active landfill area was completed based on this survey (Drawing B2 in Appendix B) and was subsequently compared to a site survey conducted on December 16, 2021. The comparison indicates that during this period, approximately 3,737m^3 of waste and cover material were deposited within the approved fill area. This equates to an annual disposal rate of approximately 4,237m3/year.

Available site capacity was determined by overlaying the anticipated final contours over the November 2022 survey to consider how the Site is being shaped while accounting for consolidation of the fill. The final contours promote drainage to reduce volume of leachate formed, resulting in a pyramidal shaped-mound. A remaining volume of roughly 4,891m^3 was determined in this manner.

Using the annual disposal rate of 4,237m^3/year, the Site should operate until December of 2023. A summary of these calculations is presented in Appendix I.

Table 13 presents a summary of estimated volumes deposited at the landfill site during the reporting period and Chart 2 provides a summary of calculated disposal rates from 2002 to 2022. Chart 3 presents the estimated year of closure when applying the average historical disposal rates to the estimated remaining capacity.

TABLE 13: VOLUME SUMMARY 2022

Component	Estimated Volume (m^3)
Total Volume	3,737
Daily Cover Material	747*
Final Cover	0
Waste	2,990

* Volume of Daily Cover Material estimated as 20% of Total Volume.

Chart 2
Blind River Landfill Site
Historical Disposal Rates

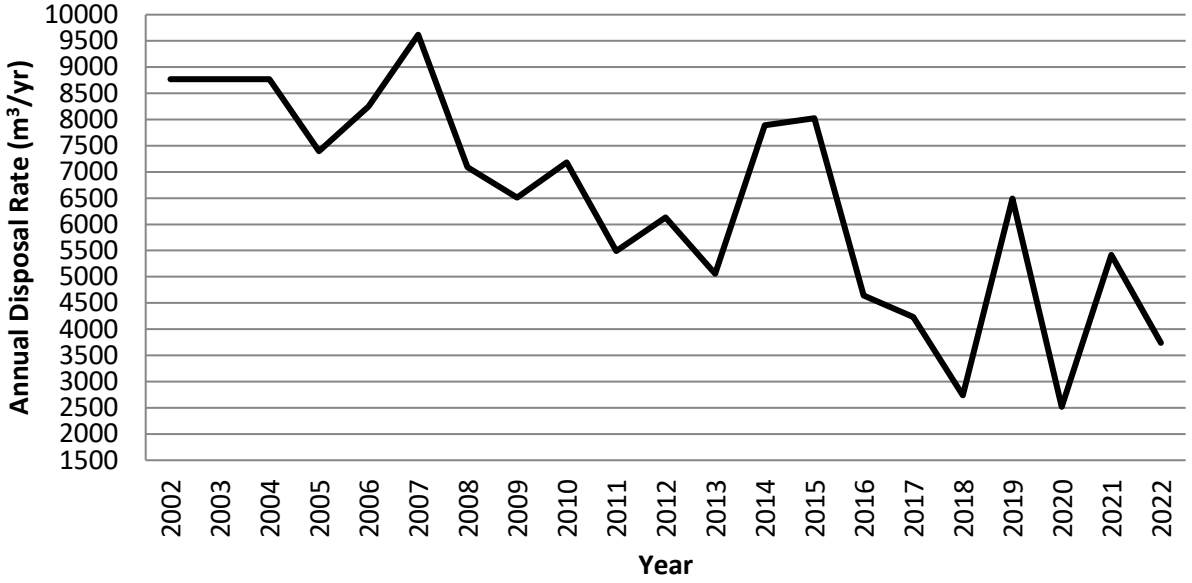
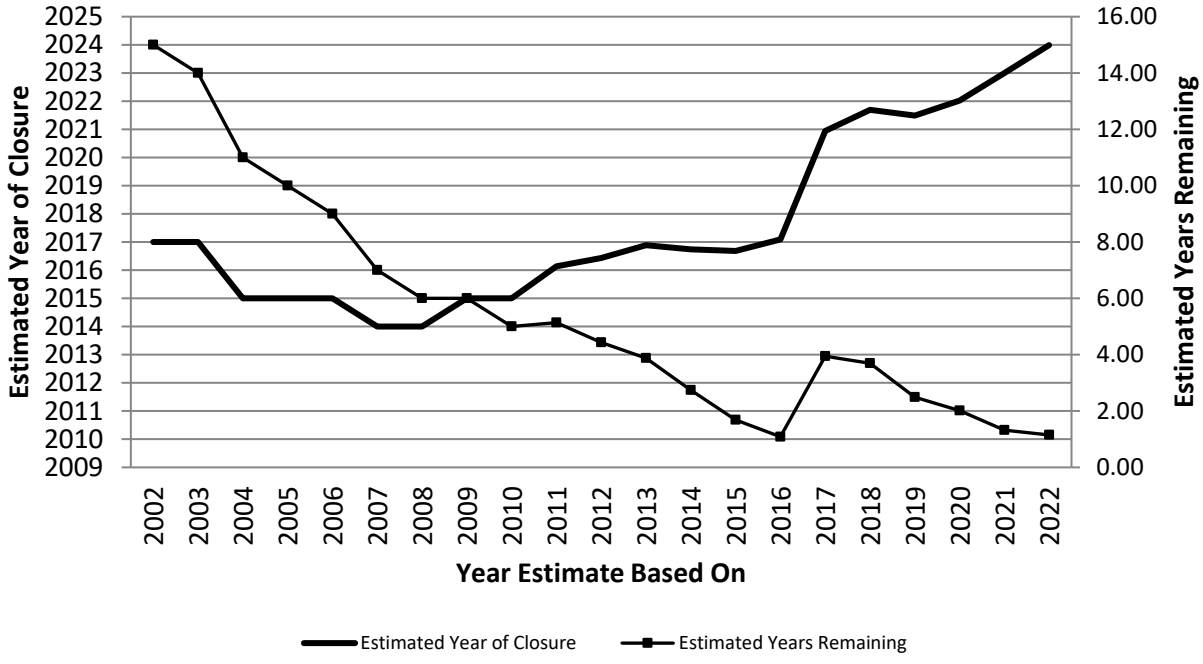


Chart 3
Blind River Landfill Site
Historical Estimates of Remaining Life Span



6.2.1 Waste Diversion

There is no record that the exact composition of wastes being disposed of at the Site has ever been determined, however, the Town does participate in a community-recycling program which diverts some common recyclables. Currently, rubber tires, white goods and electronics are stockpiled at the landfill for future recycling. Brush/scrap wood is also stockpiled for grinding or burning, in accordance with MECP procedures, prior to its landfilling.

Table 14 provides a summary of the estimated tonnage of recyclable material received at the Site for 2022 (provided by the Site operator).

TABLE 14: 2022 RECYCLING REPORT

Producer	Recyclable Material (tonnes)		
	FIBER	COMM	E-WASTE
Commercial	104.28	1.29	NA
GFL Depot	35.51	14.71	NA
Landfill	11.99	4.36	NA
Residential	52.75	32.35	NA
Totals	**204.53**	**52.71**	**NA**

The total waste deposited at the Site, as provided by the Town, was estimate to be approximately 1,843 tonnes for 2022. The total waste tonnage deposited at the Site, as provided by the Town has remained relatively constant since the data became available. Meanwhile, the estimated volumes took a noticeable decline in 2016, 2018 and 2020, as shown on Chart 2. The 2022 calculated volume, also shown on Chart 2, was comparable to historical levels. Using the same waste density of 750kg/m^3 as previous years and applying the 2022 estimated volume of 2,990m^3, we would expect a total of approximately 2,243 tonnes deposited at the Site in 2023.

The total recyclable tonnage was 257.24 tonnes, also provided by the operator. The estimated diversion rate is therefore calculated to be 12.2%. The diversion rate calculation is included in Appendix I of this report.

6.3 Complaints

There were no complaints reported to the Town of Blind River regarding the Site during the 2022 monitoring period.

6.4 MECP Site Visit

The MECP did not complete an inspection at the Site during the 2022 reporting period.

6.5 General Comments

During 2022, with the exception of encountering challenges with the collection of tipping fees, no landfill site operational difficulties were identified by the Town of Blind River or the Site Operator. General comments regarding Site operation include:

1. Signs have been installed and maintained at the main entrance of the Site and throughout the landfill to direct users appropriately.

2. The hours of operation for the Site are Wednesday, Thursday and Friday 10am-6pm and Saturday 9am-5pm during the summer (April 1 – Oct. 31). Wednesday to Saturday 9am-5pm during the winter (Nov.1 – March 31).

3. The Site is closed by a locked gate when a site attendant is not present to supervise landfilling operations.

4. The Town held a household hazardous waste day was on July 23, 2022;

5. Throughout the year, a variety of wildlife, including black bears, foxes, crows, ravens, gulls and eagles frequented the Site; however, no incidents of nuisance were reported.

6. Wood waste is burned at the Site in accordance with the MECP Guideline C-7. The burning of plywood, particle board, painted, varnished surfaces, etc. is prohibited and these materials must be landfilled.

7. Attention is being paid, by the Town as well as the contracted operator, to minimize environmental impacts, maximize public approval/satisfaction, as well as divert recyclable materials from landfilling.

7.0 CONCLUSIONS

The following conclusions are drawn from the assessments described herein:

1. The Site appears to be generally well run and site operations are considered satisfactory with respect to the control of dust and odour. No vector or vermin problems were observed and the Site was generally kept in good order throughout the reporting period.

2. Environmental monitoring was completed during the 2022 reporting period and the existing monitoring well network is felt to be adequate. Off-site impact in a direction hydrogeologically downgradient from the fill area is suspected and the continued monitoring of these impacts is required.

3. The assessment of groundwater trigger mechanisms reveals that:

    a. The trigger concentration for DOC was exceeded at MW3-02, MW4-02, MW6-02, MW1-03, MW1-15, and MW1-17 and MW1-20 during the 2022 spring and fall sampling events. DOC also exceeded trigger concentrations at MW3-15 during the spring sampling event.
    b. During both spring and fall sampling events, iron exceeded trigger concentrations at MW4-02, MW1-03, MW1-15, MW3-15, MW4-15, MW1-17 and MW1-20. Tigger concentrations for iron were also exceeded at MW3-02 during the spring sampling event.

c. During the spring and fall sampling events, MW1-03 and MW1-20 exceeded trigger concentrations for chloride, barium and sodium and MW1-15 exceeded trigger concentrations for alkalinity. MW3-02 also exceeded trigger concentrations for alkalinity during the fall sampling event.

4. The Town is pursuing the establishment of a CAZ and implementing improvements to site surface water management to address trigger mechanism exceedances.

5. With respect to surface water, SW2 appears to have been formed in a depression constructed during development of the solar farm that was excavated to below the water table. As SW2 is located within the limits of the delineated CAZ, leachate impacts at this location would not be unexpected.

6. SW3 is very near to a contractor's yard and may be impacted by related operations. There is no direct surface water flow pathway from areas potentially impacted by the landfill to SW3.

7. SW4 and SW5 are ponded areas located just south of the toe of the fill area and within the limits of the delineated CAZ. Similarly to SW2, leachate impacts at this location would not be unexpected.

8. Parameter concentrations at the SW6 appear to confirm this location as an appropriate background location.

9. SW7 does not appear to be impacted by landfill activities.

10. Winter highway de-icing activities may be contributing to the chloride levels impacting water quality at sample locations adjacent/downgradient of Highway 17 (MW1-03, MW1-02, SW7).

11. Based on topographic surveys completed at the Site, approximately 3,737m^3 of waste and cover material were deposited at the Site in 2022. Remaining site life is estimated to extend to December of 2023.

8.0 RECOMMENDATIONS

The following recommendations are provided for the Town's consideration:

1. Groundwater and surface water monitoring should be carried out as recommended (twice annually) to develop an adequate database to evaluate leachate production and migration within and from the Site.

2. Groundwater level measurements should continue to be collected during each sampling event to facilitate the ongoing interpretation of groundwater flow direction.

3. Surface water monitoring should be carried out as recommended in ECA No. A-500-7134513066 (quarterly) to support evaluation of leachate migration within and from the Site, as well as to confirm SW6 as the appropriate background location.

4. The contracted operator should continue to ensure that all landfill waste is disposed of within the approved area which is delineated by field markers.

5. Adequate cover should continue to be placed on the landfill waste in order to avoid windblown material.

6. The contracted operator should continue to minimize the co-mingling of segregated waste.

7. The steel protective casings at MW1-03 and MW2-15 should be repaired to ensure the integrity of these monitoring wells.

8. To ensure that steel casings are accessible, weathered locks at MW2-02 and MW3-15 should be replaced.

9. The Town should continue to work diligently through the EA process to ensure an adequate waste management plan can be developed and that MECP is provided updates when required.

This report is respectfully submitted by:
Kresin Engineering Corporation

Chris Kresin, M.Sc.(Eng.), P.Eng.
Consulting Engineer

Jennifer Sharpe, B.Sc.
Environmental Scientist

Appendix A
MECP Amended Provisional Certificate of Approval

BR04.09

23)

Ministry of the Environment

Ministère de l'Environnement

Ontario

2 St. Clair Ave. West
Toronto ON M4V 1L5

2, avenue St. Clair Ouest
Toronto ON M4V 1L5

IVIRONMENTAL ASSESSMENT AND APPROVALS BRANCH

January 6, 2000

:n Corbiere, Municipal Clerk
)rporation of the Town of Blind River
O. Box 640
. Hudson Street
lind River, Ontario
)R 1B0

ear Mr. Corbiere:

e: Use of Sawdust and Wood Bark as daily and Interim Cover: Blind River Landfill Site.

lease find enclosed a Notice of Amendment for Provisional Certificate of Approval No A 713870, which enables e use of sawdust and wood bark as daily or interim cover for a two year temporary period. The Notice requi ie submission of cover performance reports to the District Manager by each of December 31, 2000 and Decembe 0, 2001.

Sincerely,

Andrzej Dominski, P.Eng.
Section 39, Director

Encl.
RB/aq

c: Ken Corbiere, Clerk, Town of Blind River
District Manager, MOE Subury District Office

RECEIVED
JAN 27

C.C. FORESTRY LTD.

Ministry of the Environment | Ministère de l'Environnement

Ontario

Corporation of the Town of Blind River
Box 640
11 Hudson Street
Blind River, Ontario
P0R 1B0

You are hereby notified that Provisional Certificate of Approval No. A 7138701 dated May 30, 3, issued to you, Corporation of the Town of Blind River is being amended as follows:

The owner's name is changed

:

Corporation of the Town of Blind River
Box 640
11 Hudson Street
Blind River, Ontario
P0R 1B0

m:

Town of Blind River
Box 640
11 Hudson Street
Blind River, Ontario
P0R 1B0

e following definitions are added to your Provisional Certificate of proval:

(a) "Certificate" means the Provisional Certificate of Approval No. A 7138701 as amended from time to time, including all Schedules attached to and forming part of this Certificate, as well as all Notice of Amendments;

(b) "Director" means the one or more persons who from time to time are so designated for the purpose of Part V of the Environmental Protection Act, R.S.O. 1990, as amended from time to time;

(c) "District Manager" means the District Manager of the Sault Ste. Marie District Office of the Ministry of the Environment;

(d) "EPA" means the Environmental Protection Act, R.S.O. 1990, as amended from time to time;

(e) "Owner" means the Corporation of the Town of Deep River;

(f) "Ministry" or "MOE" means the Ontario Ministry of the Environment;

(g) "Regional Director" means the Director, Northern Region of the Ministry of the Environment;

(h) "Site" means the 2 ha landfill operation and adjacent buffer lands located in Part Lot 7, Conc. 1 Striker Township;

Conditions No. 3,4,5,6, and 7 are added to your Provisional Certificate of Approval:

3. The owner is allowed to use wood bark and sawdust as daily and interim cover material for a temporary period of two years, or until the site is closed, whichever is less.

4. Should the use of wood bark or sawdust as daily and interim cover cause any environmental problem the owner shall discontinue its use.

5. Sufficient soil cover shall be available on site for use either when conditions do not permit use of the sawdust or wood bark as daily of interim cover or if performance of the material is unsatisfactory.

6. The performance and impact of the wood bark and sawdust shall be detailed in a written report which is submitted to the District Manager by the end of each of December 2000 and December 2001.

7. Only with the written consent of the District Manager shall sawdust and wood bark be used for daily or interim cover subsequent to the date which occurs two years after the date of this Notice of Amendment. The District Manger may rescind that consent at any time by provision of written notice to the owner.

The reasons for the addition of definitions and conditions 3, 4, 5, 6, and 7 are:

1. *The reason for the addition of the definitions is that it is in the public interest to clearly define terms used in this Certificate.*

2. *The reason for the additions of conditions number 3, 4, 5, 6, and 7 is to ensure that the Site is operated in an environmentally safe manner.*

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990 c. E-19, you y by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this tice, require a hearing by the Board. Section 142 of the Environmental Protection Act, as amended provides t the Notice requiring a hearing shall state:

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

In addition to these legal requirements the Notice should also include:

The name of the appellant;
The address of the appellant;
The Certificate of Approval number;
The date of the Certificate of Approval;
The name of the Director;
The municipality within which the waste disposal site is located;
or
The municipality within which the waste management system is located;

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

This Notice must be served upon:

ie Secretary,
nvironmental Appeal Board,
300 Yonge St., 12th Floor,
O. Box 2382
oronto, Ontario.
4P 1E4

AND

The Director,
Section 39, Environmental Protection Act,
Ministry of Environment and Energy,
250 Davisville Avenue, 3rd Floor,
Toronto, Ontario.
M4S 1H2

ATED AT TORONTO this 6th *day of* January, 2000

A. Dominski, P. Eng.
Director
Section 39
Environmental Protection Act

:B/aq
: Ken Corbiere, Clerk, Town of Blind River
District Manager, MOE Subury District Office

COPY

(705) 670-3282 (705) 670-3282

April 25, 1994

The Corporation of the Town of Blind River
P.O. Box 640
11 Hudson Street
Blind River, Ontario
P0R 1B0

Attention: Mr. Ken Corbiere
Clerk Administrator

Dear Mr. Corbiere:

Re: The Corporation of the Town of Blind River
Amendment to Certificate of Approval No. A7138701

Please find enclosed a Notice which amends Provisional Certificate of Approval No. A7138701, to allow the addition of non-hazardous solid industrial waste and iron sludge waste to the categories of waste which can be accepted and disposed of at your site.

Should you have any questions regarding this amendment, please contact Ms. Maureen Burtch at the Sault Ste. Marie District Office.

Yours truly,

C. J. Lafrance
Supervisor
Approvals and Planning Unit
Mid Ontario Region

MEC/nc/C04-31

bcc: G. LaHaye/M. Burtch, SSM Office
Approvals Branch
Environmental Monitoring & Reporting Branch
J. G. Fry/C. J. Lafrance/File MP 13-02
MEC
C of A File A7138701

Encl.

THIS IS A TRUE COPY OF THE

ORIGINAL DATED ON APRIL 26/94
MEC

Ministry of the Environment | Ministère de l'Environnement

Notice
Avis

ataire

The Corporation of the Town of Blind River
P.O. Box 640, 11 Hudson Street
Blind River, Ontario
P0R 1B0

Pursuant to sections 39(2) and 139(2) of the Environmental Protection Act (the "EPA") R.S.O. 1990, you are hereby notified that Provisional Certificate of Approval No. A7138701 dated November 26, 1980 is being altered to allow the addition of non-hazardous solid industrial waste and iron sludge waste to the categories of waste presently being deposited at this site.

The above-noted Provisional Certificate of Approval is amended by adding the following conditions:

2. Except as otherwise provided by these Conditions, this waste disposal site (landfill) shall be operated in accordance with the application dated October 22, 1993, and supporting documentation, plans and specifications submitted therewith, and the additional items listed in Schedule "A" below.

The reason for Condition 2 is to ensure that this waste disposal site (landfill) is operated in accordance with the application submitted to amend the Provisional Certificate of Approval and not on a basis which the Director has not been asked to consider.

3. (1) The operation of this site shall be limited only to the acceptance and disposal of the following types of waste:

(a) domestic, commercial, and other waste limited to scrap wood and brush;

(b) non-hazardous solid industrial waste; and

(c) iron sludge waste generated only from the potable water treatment facility located at Cameco Corporation in Blind River, all in accordance with Schedule "A" below.

(2) Notwithstanding Condition 3(1) above, no hauled sewage, liquid industrial waste, or hazardous waste, as defined under Regulation 347, R.R.O. 1990, shall be accepted and/or deposited at this site.

The reason for Condition 3 is to ensure that the types of waste accepted and deposited at this site are in accordance with that approved by this Provisional Certificate of Approval.

... 2

Schedule "A"

Schedule "A" is hereby amended to add the following:

Letter dated January 19, 1994 from J.M. Degraw, Cameco Corporation, to Maureen Burtch, Ministry of Environment and Energy, outlining the nature of the iron waste sludge.

Should you wish to appeal any or all of these conditions you may, by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 142(1) of the Environmental Protection Act, as amended in 1983, provides that the Notice requiring the hearing shall state:

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

In addition to these legal requirements, the Notice should also include:

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

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

Please note, unless stayed by application under Section 143 of the Environmental Protection Act, this approval is effective from the date of issue.

This Notice must be served upon:

The Secretary
Environmental Appeal Board
112 St. Clair Avenue West
5th Floor
Toronto, Ontario
M4V 1N3

AND

The Director
Section 39, E.P.A.
Ministry of Environment and Energy
199 Larch Street, Suite 1101
Sudbury, Ontario
P3E 5P9

DATED at Sudbury, this 25th day of April, 1994.

Director
Section 39, E.P.A.
Ministry of Environment and Energy

MEC/mec/A7138701.NOT

Ontario

Ministry of the Environment

135 St. Clair Ave., W.,
Toronto, Ontario
M4V 1P5

November 26, 1980

Town of Blind River
Box 640
11 Hudson Street
Blind River, Ontario
P0R 1B0

Re: Landfilling Site
South 1/2 Lot 7, Concession 1
Township of Striker
District of Algoma

The enclosed revised Provisional Certificate of Approval contains a condition requiring it be registered on title. The reason for this condition is attached to the Certificate.

Two copies of the Certificate and reasons are on long paper to facilitate registration. Both of these should be taken to the Land Registry Office and one returned to the Director with registration particulars.

If your Certificate does not contain sufficient legal description for registration because you have not given one to the Director, you will have to provide one under Section 23(1) (e) of The Registry Act or in your application under The Land Titles Act.

In the event that the site including its buffer, is part of a larger parcel of land and you do not wish to prepare a new survey at this time, you may register the Certificate against the larger parcel of land. If you do so, the Director is prepared, if requested in the future.

1. In the case of land recorded under The Land Titles Act, to consent to an application to delete the registration from the title of lands not within the site including its buffer zone, and

2. In the case of land recorded under The Registry Act, to issue a Certificate that lands not used for the actual disposal of waste or buffer zone have not been so used.

Such documents would be issued after suitable draft documents including legal description were submitted by you or your successor. The purpose of such documents would be to assure subsequent purchasers that the lands in question were not affected by section 46 of the Environmental Protection Act.

Yours very truly

T. W. Kwan

Director

Ministry of the Environment
Ontario

File: Blind River w.d.s.
Provisional Certificate No. A 713870I

a- File in Bk.
c.c. - J. Harmar

PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE

Under The Environmental Protection Act, 1971 and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Town of Blind River
Box 640
11 Hudson Street
Blind River, Ontario
P0R 1B0

RECEIVED
DEC - 8 1980
S. S. MARIE
DISTRICT OFFICE

for the use and operation of a landfilling site within a total site area of 2 hectares.

all in accordance with the following plans and specifications:
Application and supporting information forms for a Waste Disposal Site.
Plan of the Waste Disposal Site entitled "Layout of Town Garbage Dump" dated Dec. 10, 1973.

Located: South 1/2 Lot 7, Concession 1
Township of Striker
District of Algoma

which includes the use of the site only for the disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) Domestic, commercial and "other" (limited to scrap wood and brush) wastes.

and subject to the following conditions:

1. No operation shall be carried out at the site after sixty days from this condition becoming enforceable unless this Certificate including the reasons for this condition has been registered by the applicant as an instrument in the appropriate Land Registry Office against title to the site and a duplicate registered copy thereof has been returned by the applicant to the Director.

THIS IS A TRUE COPY OF THE ORIGINAL CERTIFICATE MAILED

ON DEC 4 1980

(Signed)

Dated this 26th day of November, 19 80.

T. L. J. Director, Section 39,

Environment

Ontario

NOTICE

TO: Town of Blind River
Box 640
11 Hudson Street
Blind River, Ontario
P0R 1B0

You are hereby notified that Provisional Certificate of Approval No. A 7138701 has been issued to you subject to the conditions outlined therein.

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

The reason for the condition requiring registration of the Certificate is that Section 46 of The Environmental Protection Act, 1971 prohibits any use being made of the lands after they cease to be used for waste disposal purposes within a period of twenty-five years from the year in which such land ceased to be used unless the approval of the Minister for the proposed use has been given. The purpose of this prohibition is to protect future occupants of the site and the environment from any hazards which might occur as a result of waste being disposed of on the site. This prohibition and potential hazard should be drawn to the attention of future owners and occupants by the Certificate being registered on title.

You may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board.

This Notice should be served upon:

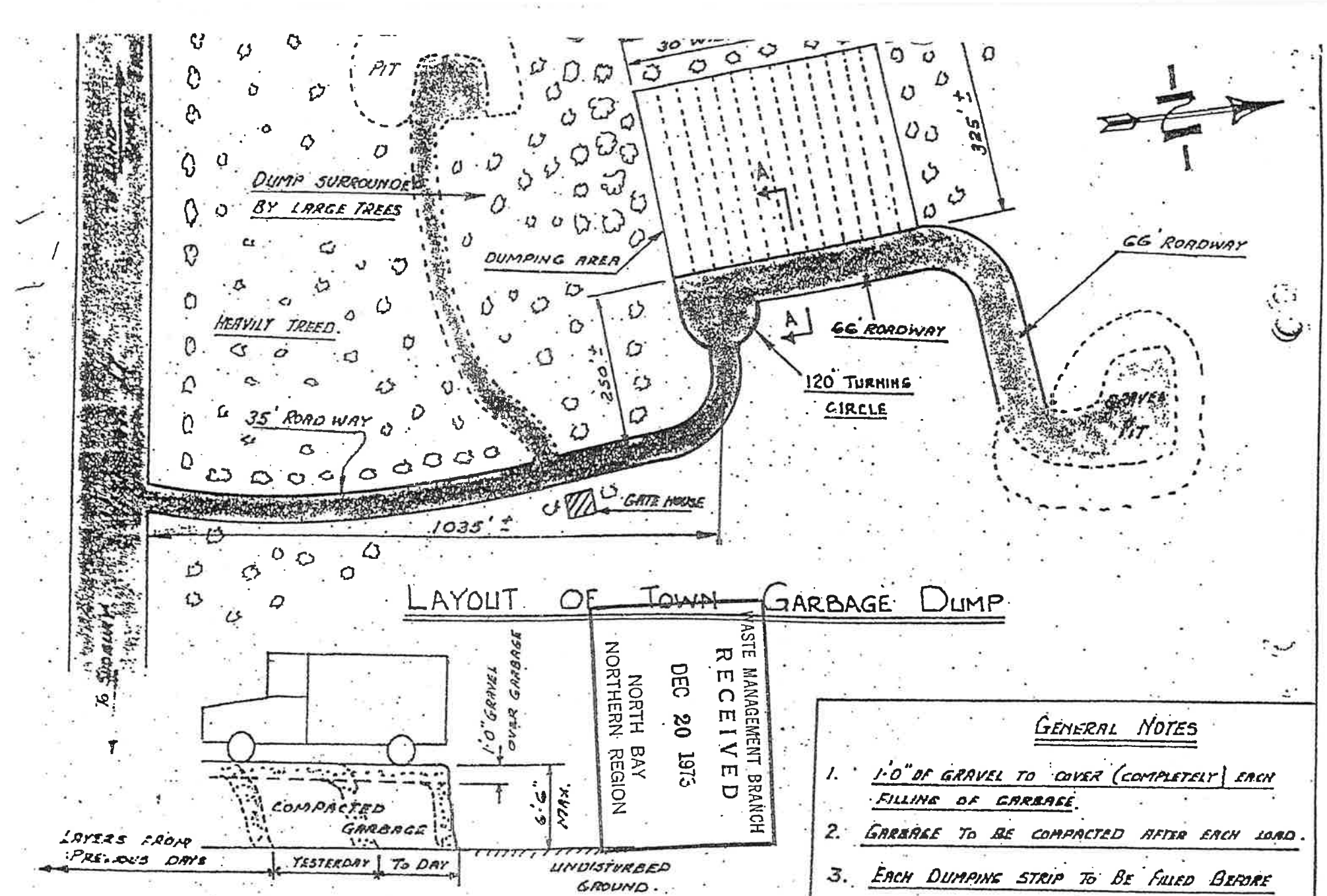
The Secretary,
Environmental Appeal Board,
1 St. Clair Ave. West,
5th Floor,
Toronto, Ontario,
M4V 1K7

AND

The Director,
Section 3a E.P.A.
Ministry of the Environment,

DATED Toronto this 26th day of November, 1980.

T.W. Dunn



LAYOUT OF TOWN GARBAGE DUMP

SECTION A-A.

SCALE 1" = 10'

GENERAL NOTES

1. 1'0" OF GRAVEL TO COVER (COMPLETELY) EACH FILLING OF GARBAGE.
2. GARBAGE TO BE COMPACTED AFTER EACH LOAD.
3. EACH DUMPING STRIP TO BE FILLED BEFORE MOVING TO NEXT STRIP.

TOWN OF BLIND RIVER

PROPOSED DUMP AND DUMPING PROCEEDURE.

H.C. KIERNAN C.E.T.

ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A-500-7134513066
Version: 1.0
Issue Date: October 26, 2022

Pursuant to section 20.3 of the Environmental Protection Act, Revised Statutes of Ontario (R.S.O.) 1990, c. E. 19 and subject to all other applicable Acts or regulations this Environmental Compliance Approval is issued to:

CORPORATION OF TOWN OF BLIND RIVER

11 HUDSON ST, BOX 640
BLIND RIVER ONTARIO
P0R1B0

For the following site:

Lot: 7, Concession: 1
Blind River, District of Algoma

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 establishment of stormwater management works to service the existing municipal waste disposal site (Site), located on south ½ of lot 7, Concession 1, and Highway 17 to the south within in the Town of Blind River, District of Algoma, for the collection, transmission, and disposal of stormwater runoff from a total catchment area of 10.95 hectares to attenuate post-development peak flows to pre-development peak flows for all storm events up to and including the 100-year storm event, infiltrating into ground consisting of the following:

- **drainage swale (Intercepting Swale 1 – Catchment Area 6.1 ha):** one (1) 220 metre long drainage swale with 1.75 metre base width, 3:1 side slope and 1 metre flow depth, flowing along the northern perimeter of existing landfill site, discharging to the proposed infiltration basin located on the western perimeter of the landfill site;
- **drainage swale (Intercepting Swale 2 – Catchment Area 4.85 ha):** one (1) 200 metre long drainage swale with 1.75 metre base width, 3:1 side slope and 1 metre flow depth, flowing along the southern perimeter of existing landfill site, discharging to the proposed infiltration basin located on the southern perimeter of the landfill site;
- **infiltration basin (Catchment Area 10.95 ha):** one (1) infiltration basin located on the western perimeter of the landfill site, having a total length of 225 metres, a width of 12 metres, a base area of 2,700 squared metres, a minimum storage depth of 1.25 metres including 0.75 metres operating depth and 0.5 metres freeboard and providing an approximate storage volume of 2,430 cubic metres to store and infiltrate stormwater run-off from the site, infiltrating at 0.05 cubic metres per second under the 100-year storm event, complete with an overflow riprap spillway, flow in excess of the 100-year storm directed overland on to the attenuation zone, ultimately to the Lake Huron.

including erosion/sedimentation control measures during construction and all other controls and appurtenances essential for the proper operation of the aforementioned Works;

all in accordance with the submitted application and supporting documents listed in Schedule 1 forming part of this Approval.

DEFINITIONS

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

1. "Approval" means this entire Environmental Compliance Approval and any Schedules attached to it;
2. "CAZ " means Contaminant Attenuation Zone;
3. "Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;
4. "District Manager" means the District Manager of the appropriate local district office of the Ministry, where the Works are geographically located;
5. "EPA" means the *Environmental Protection Act,* R.S.O. 1990, c.E.19, as amended;
6. "Ministry" means the ministry of the Minister and includes all, employees or other persons acting on its behalf;
7. "MNRF" means the Ministry of Natural Resources and Forestry of the government of Ontario and includes all officials, employees or other persons acting on its behalf;
8. "OWRA" means the *Ontario Water Resources Act,* R.S.O. 1990, c. O.40;
9. “Owner” means Corporation of Town of Blind River, including any successors and assignees;
10. “Quarterly” means during time periods of three (3) consecutive months beginning on the first day of January, April, July or October;
11. “Works” means the approved sewage works.

TERMS AND CONDITIONS

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

1. **GENERAL CONDITIONS**
    1. The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works 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. Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, and the application for approval of the Works.
    3. Where there is a conflict between a provision of any document in the schedule referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence, and where there is a conflict between the documents in the schedule, the document bearing the most recent date shall prevail.
    4. Where there is a conflict between the documents listed in Schedule A and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.
    5. The conditions of this Approval are severable. If any condition of this Approval, or the application of any requirement 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.
    6. The issuance of, and compliance with the conditions of, this Approval does not:
        1. relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority/MNRF necessary to construct or operate the sewage works; or
        2. limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

2. **EXPIRY OF APPROVAL**

1. This Approval will cease to apply to those parts of the Works which have not been constructed within five (5) years of the date of this Approval.

2. In the event that completion and commissioning of any portion of the Works is anticipated to be delayed beyond the specified expiry period, the Owner shall submit an application of extension to the expiry period, at least twelve (12) months prior to the end of the period. The application for extension shall include the reason(s) for the delay, whether there is any design change(s) and a review of whether the standards applicable at the time of Approval of the Works are still applicable at the time of request for extension, to ensure the ongoing protection of the environment.

3. **CHANGE OF OWNER**

1. The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:

    a. change of Owner;

    b. change of address of the Owner;

    c. change of partners where the Owner 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.B17 shall be included in the notification to the District Manager; or

    d. change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the District Manager.

2. In the event of any change in ownership of the Works, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be forwarded to the District Manager and the Director.

3. The Owner shall ensure that all communications made pursuant to this condition refer to the number at the top of this Approval.

4. **OPERATION AND MAINTENANCE**

1. If applicable, any proposed storm sewers or other stormwater conveyance in this Approval can be constructed but not operated until the proposed stormwater management facilities in this Approval or any other Approval that are designed to service the storm sewers or other stormwater conveyance are in operation.

2. The Owner shall make all necessary investigations, take all necessary steps and obtain all necessary approvals so as to ensure that the physical structure, siting and operations of the Works do not constitute a safety or health hazard to the general public.

3. The Owner shall undertake an inspection of the condition of the Works, at least once a year, and undertake any necessary cleaning and maintenance to ensure that sediment, debris and excessive decaying vegetation are removed from the Works to prevent the excessive build-up of sediment, oil/grit, debris and/or decaying vegetation, to avoid reduction of the capacity and/or permeability of the Works, as applicable. The Owner shall also regularly inspect and clean out the inlet to and outlet from the Works to ensure that these are not obstructed.

4. The Owner shall construct, operate and maintain the Works with the objective that the effluent from the Works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film, sheen, foam or discoloration on the receiving waters.

5. The Owner shall maintain a logbook to record the results of these inspections and any cleaning and maintenance operations undertaken, and shall keep the logbook at the Owner's administrative office for inspection by the Ministry. The logbook shall include the following:

    a. the name of the Works; and

b. the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed and method of clean-out of the Works.

6. The Owner shall prepare an operations manual prior to the commencement of operation of the Works that includes, but is not necessarily limited to, the following information:
    a. operating and maintenance procedures for routine operation of the Works;
    b. inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;
    c. repair and maintenance programs, including the frequency of repair and maintenance for the Works;
    d. contingency plans and procedures for dealing with potential spills and any other abnormal situations and for notifying the District Manager; and
    e. procedures for receiving, responding and recording public complaints, including recording any follow-up actions taken.
7. The Owner shall maintain the operations manual current and retain a copy at the Owner's administrative office for the operational life of the Works. Upon request, the Owner shall make the manual available to Ministry staff.

5. **TEMPORARY EROSION AND SEDIMENT CONTROL**
    1. The Owner shall install and maintain temporary sediment and erosion control measures during construction and conduct inspections once every two (2) weeks and after each significant storm event (a significant storm event is defined as a minimum of 25 millimetres of rain in any 24 hours period). The inspections and maintenance of the temporary sediment and erosion control measures shall continue until they are no longer required and at which time they shall be removed and all disturbed areas reinstated properly.
    2. The Owner shall maintain records of inspections and maintenance which shall be made available for inspection by the Ministry, upon request. The record shall include the name of the inspector, date of inspection, and the remedial measures, if any, undertaken to maintain the temporary sediment and erosion control measures.

6. **MONITORING**

Surface Water Monitoring

1. A surface water monitoring program shall be carried out by the Owner, as outlined in Schedule 2, Table 1.
2. A trigger mechanism and contingency plan shall be completed, to the satisfaction of the District Manager, and submitted for concurrence within six months of the issuance of this ECA. The trigger mechanism and contingency plan shall incorporate the following:

- A monitoring well, between CAZ boundary well and the fill area, and accompanying trigger levels that would provide sufficient time to identify a potential for surface water impacts from the landfill leachate plume, before they occur, and time to implement contingency measures, to prevent unacceptable surface water impacts;
- A monitoring well at the CAZ boundary to determine if unacceptable concentrations of leachate parameters are entering surface waters;
- Comparison of parameter concentrations at monitoring wells to those of source leachate well and background well, to determine if elevated parameter concentrations at downgradient wells are a result of landfill operations;
- Trigger concentrations for wells monitoring for potential impacts to surface waters, shall be linked to contingency actions;
- Contingency actions proposed shall be feasible for the Site and be beyond standard operational practices.

Seep Monitoring

3. The Owner shall monitor for seeps as outlined in Schedule 2, Table 2 and results shall be documented in the annual monitoring reports.

7. **REPORTING**

1. One (1) week prior to the start-up of the operation of the Works, the Owner shall notify the District Manager (in writing) of the pending start-up date.

2. The Owner shall, upon request, make all reports, manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.

3. The Owner shall prepare a performance report within ninety (90) days following the end of the period being reported upon, and submit the report(s) to the District Manager annually by March 31. The first such report shall cover the first annual period following the commencement of operation of the Works and subsequent reports shall be prepared to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

    1. a description of any operating problems encountered and corrective actions taken;

    2. a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works, including an estimate of the quantity of any materials removed from the Works;

    3. a summary of any complaints received during the reporting period and any steps taken to address the complaints;

    4. a summary of all spill or abnormal discharge events; and

    5. any other information the District Manager requires from time to time.

    6. a summary and interpretation of surface water monitoring data and groundwater monitoring data used in monitoring for potential impacts to surface waters; and

    7. a summary of results of seep monitoring. If none are found, this information shall also be reported.

8. **RECORD KEEPING**

    1. The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the operation, maintenance and monitoring activities required by this Approval.

REASONS

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

1. Condition 1 is imposed to ensure that the Works are constructed and operated in the manner in which they were described and upon which approval was granted. This condition is also included to emphasize the precedence of conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. Condition 1.6 is included to emphasize that the issuance of this Approval does not diminish any other statutory and regulatory obligations to which the Owner is subject in the construction, maintenance and operation of the Works. The Condition specifically highlights the need to obtain any necessary conservation authority approvals. The Condition also emphasizes the fact that this Approval doesn't limit the authority of the Ministry to require further information.

2. Condition 2 is included to ensure that, when the Works are constructed, the Works will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to the approved Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.

4. Condition 4 is included as regular inspection and necessary removal of sediment and excessive decaying vegetation from the Works are required to mitigate the impact of sediment, debris and/or decaying vegetation on the treatment capacity of the Works. The Condition also ensures that adequate storage is maintained in the Works at all times as required by the design. Furthermore, this Condition is included to ensure that the Works are operated and maintained to function as designed.

5. Condition 5 is included as installation, regular inspection and maintenance of the temporary sediment and erosion control measures is required to mitigate the impact on the downstream receiving watercourse during construction until they are no longer required.
6. Condition 6 is 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 near or at the site.
7. Condition 7 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.
8. Condition 8 is included to require that all records are retained for a sufficient time period to adequately evaluate the long-term operation and maintenance of the Works.

APPEAL PROVISIONS

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:

I. 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;

II. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

I. The name of the appellant;

II. The address of the appellant;

III. The environmental compliance approval number;

IV. The date of the environmental compliance approval;

V. The name of the Director, and;

VI. 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.olt.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 26th day of October, 2022

Aziz Ahmed

Director

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

c: Ryan Wilson, Kresin Engineering Corporation
Kathryn Scott, CORPORATION OF TOWN OF BLIND RIVER

The following schedules are a part of this environmental compliance approval:
Schedule 1

SCHEDULE 1

1. Application for Environmental Compliance Approval, dated June 21, 2021, received on June 21, 2021, submitted by Kresin Engineering Corporation on behalf of the Town of Blind River;
2. Municipal Waste Disposal Site Expansion - SURFACE WATER MANAGEMENT PLAN AND SYSTEM DESIGN, SWM Report, dated June 2021, prepared by Kresin Engineering Corporation;
3. Revised SWM Report "The Corporation of the Town of Blind River Municipal Waste Disposal Site Expansion Surface Water Management Plan and System Design, prepared by Kresin Engineering Corporation, dated April 7, 2022;
4. The Corporation of the Town of Blind River Municipal Waste Disposal Site - Ground and Surface Water Monitoring, Trigger Mechanisms and Contingency Plan (Monitoring Plan), prepared by Kresin Engineering Corporation - Revision 2, dated May 2022;
5. Engineering Drawings, signed, stamped and dated on August 10, 2021, prepared by Kresin Engineering Corporation;
6. Revised Engineering Drawings (2073 BR LF Drainage Management-D1.pdf and 2073 BR LF Drainage Management-D2.pdf) stamped, signed and dated on September 17, 2021; and
7. Response to Information Request, emails received from Ryan Wilson from Kresin Engineering Corporation, dated August 30, 2021 and from Chris Kresin from Kresin Engineering Corporation, dated September 20, 2021 and September 24, 2021 respectively including revised SWM report and revised drawings;

SCHEDULE 2

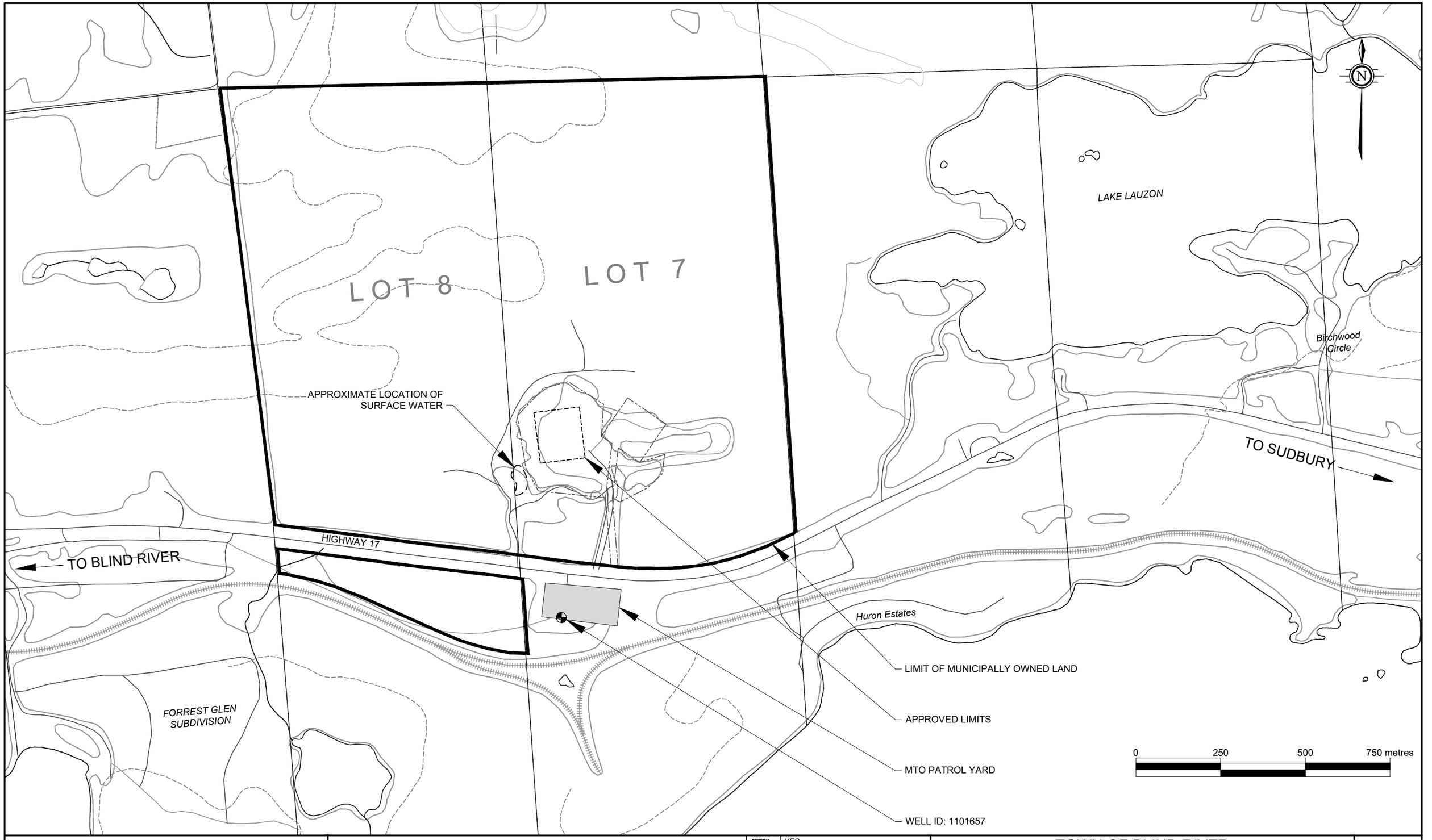
Surface Water Monitoring Program - Table 1

Sampling Locations	Frequency	Parameters to be Analysed
SW1- approximately 80 meters southwest of fill area where water pools	Quarterly	Alkalinity, ammonia, arsenic, barium, boron, cadmium, chloride, conductivity, copper, iron, lead, manganese, mercury, nitrate, nitrite, Total Kjeldahl Nitrogen, pH, total phosphorous, total suspended solids, total dissolved solids, sulphate, zinc, biological oxygen demand (BOD5), chemical oxygen demand, phenol, Chromium, DOC and Hardness. Field Parameters: Conductivity, pH, dissolved oxygen, flow and Temperature.
SW2- approximately 330 meters southwest of fill area	Quarterly	
SW3- drainage ditch approximately 440 meters southwest of fill area	Quarterly	
SW4- approximately 95 meters south of southeast corner of fill area	Quarterly	
SW5- approximately 110 meters southwest of the southeast corner of fill area	Quarterly	
SW6- background location, approximately 200 meters north of fill area	Quarterly	
SW7- 120 meters west of the southwest corner of CAZ, between Hwy 17 right-of-way and railroad tracks, within a wetland	Quarterly	

Seep Monitoring Program - Table 2

Locations	Frequency	Information to be Recorded and Parameters to be Analysed
Inspection of the site for seeps	Quarterly	If a seep is observed and quantity is sufficient, samples shall be taken for the same analysis as for surface water sampling (Table 1). Date and location (including geographic coordinates) shall be recorded. Estimate of flow rate

Appendix B
Referenced Drawings



KRESIN Engineering Corporation
Sault Ste. Marie, Ontario
(705) 949-4900

NOTES

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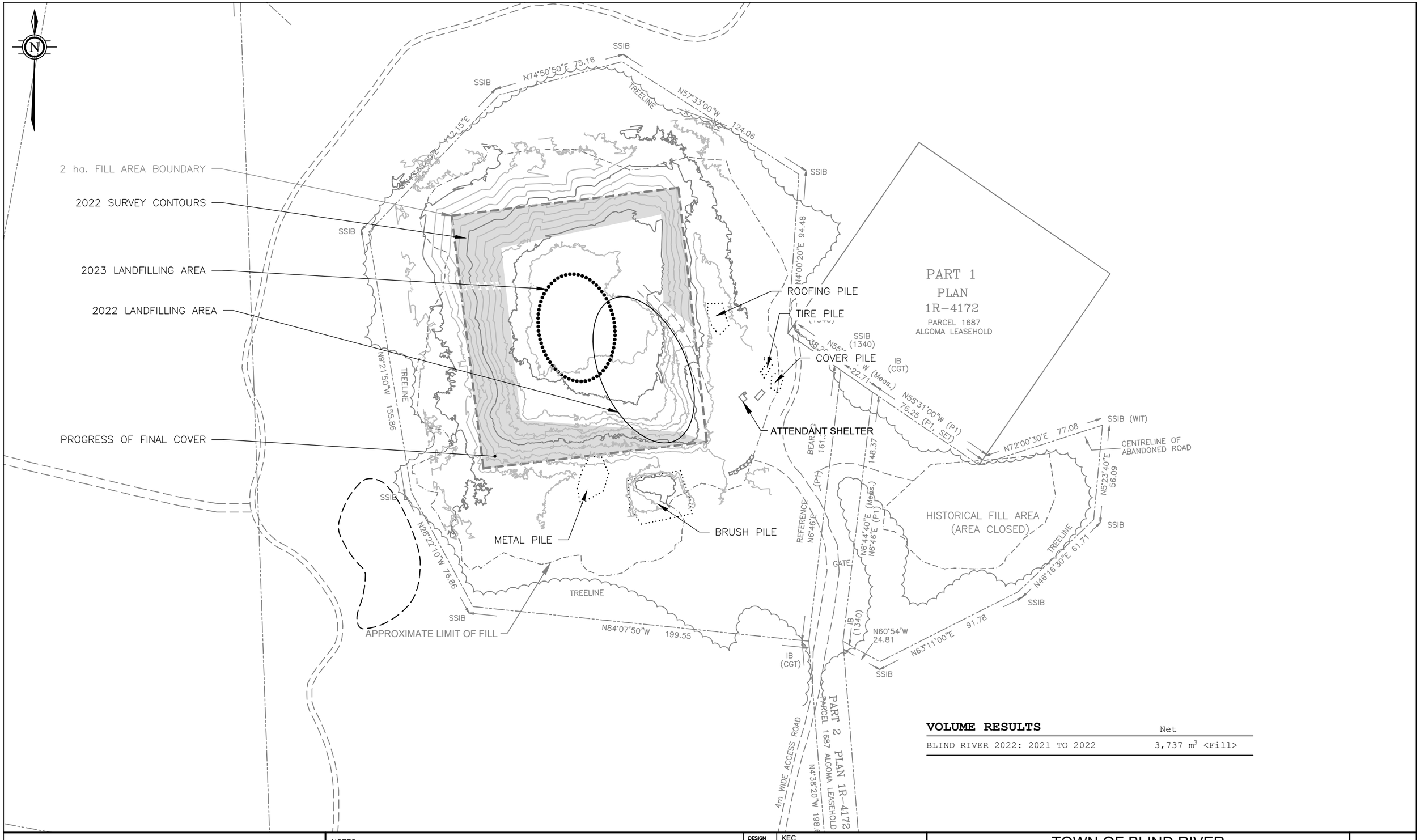
DRAWN	K.SHERLOCK	04/2023
CHECKED	J. SHARPE	04/2023
PROJECT	2231.03	
FILENAME	2231 report drawings.dwg	
SCALE	1:1000	

TOWN OF BLIND RIVER
MUNICIPAL LANDFILL SITE

LOCATION PLAN

B1

Rev 0



VOLUME RESULTS

	Net
BLIND RIVER 2022: 2021 TO 2022	3,737 m^3 <Fill>

KRESIN Engineering Corporation
Sault Ste. Marie, Ontario
(705) 949-4900

NOTES

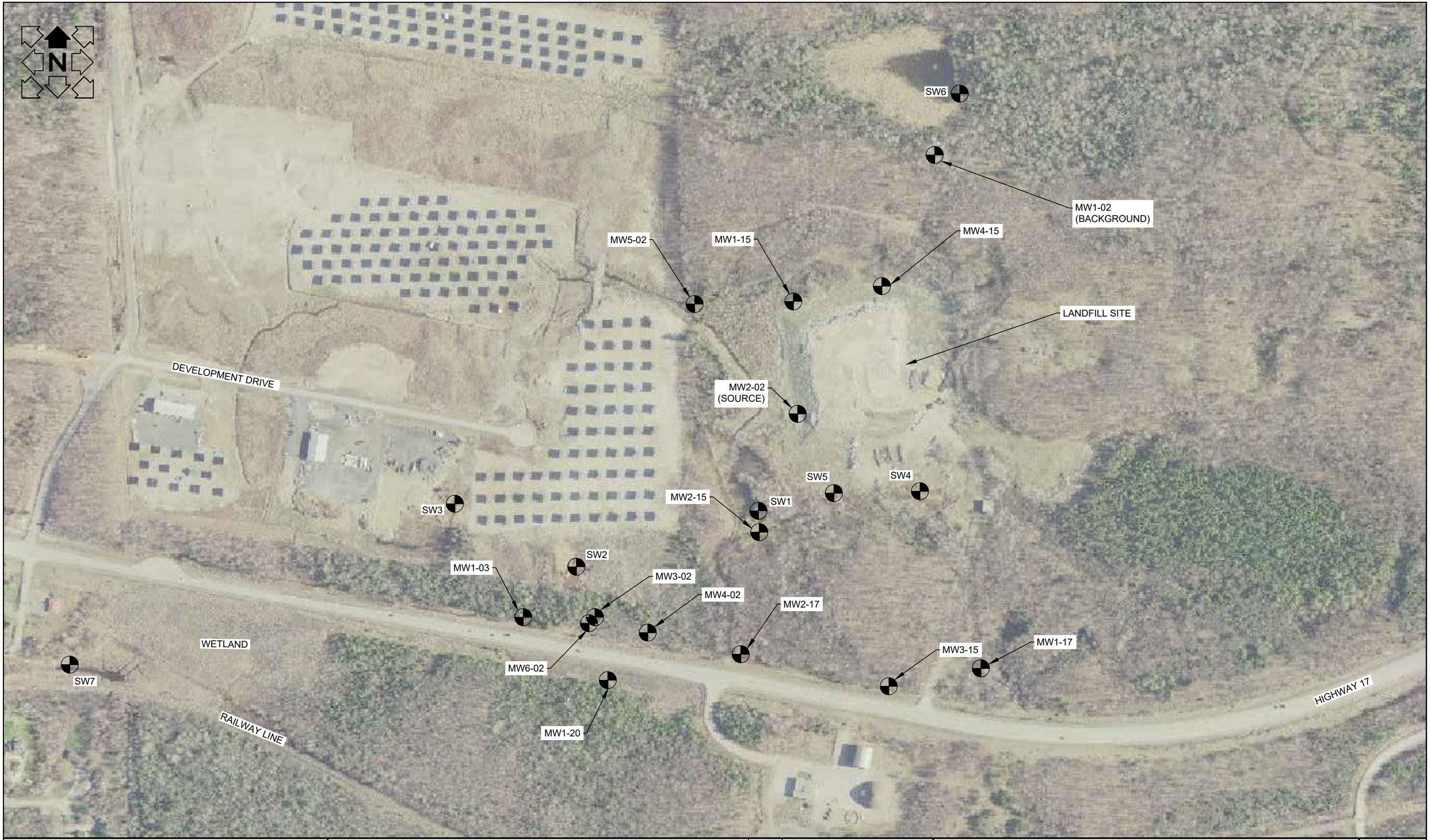
DESIGN	KEC	
DRAWN	K.SHERLOCK	05/2023
CHECKED	J. SHARPE	05/2023
PROJECT	2231.03	
FILENAME	2231 report drawings.dwg	
SCALE	1:2000	

TOWN OF BLIND RIVER
MUNICIPAL LANDFILL SITE

2022 FALL CONTOURS

B2

Rev 0



KRESIN Engineering Corporation
Sault Ste. Marie, Ontario
(705) 949-4900

NOTES

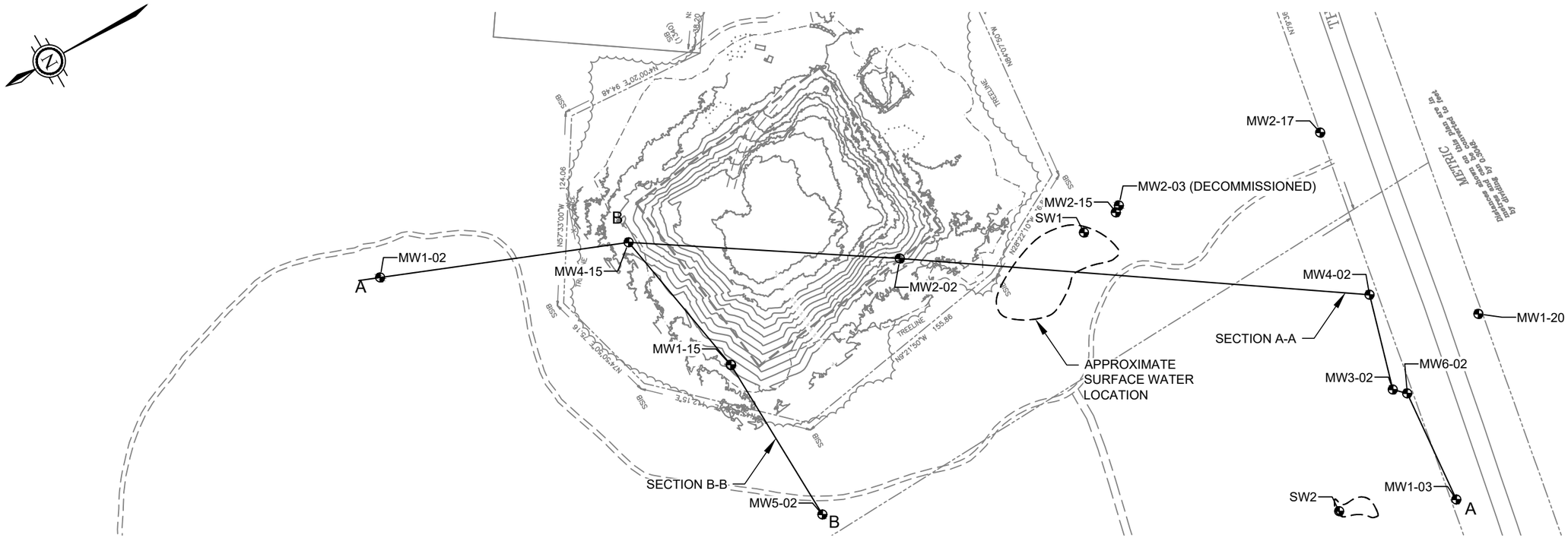
DESIGN	.	07/2023
DRAWN	JS	07/2023
CHECKED	CK	07/2023
PROJECT	2231	
FILENAME	2231 monitoring locations	
SCALE	1:4,000	

TOWN OF BLIND RIVER
MUNICIPAL WASTE DISPOSAL SITE

MONITORING WELL AND SURFACE WATER LOCATIONS

B3

Rev 0



KRESIN Engineering Corporation
Sault Ste. Marie, Ontario
(705) 949-4900

NOTES

DESIGN	KEC
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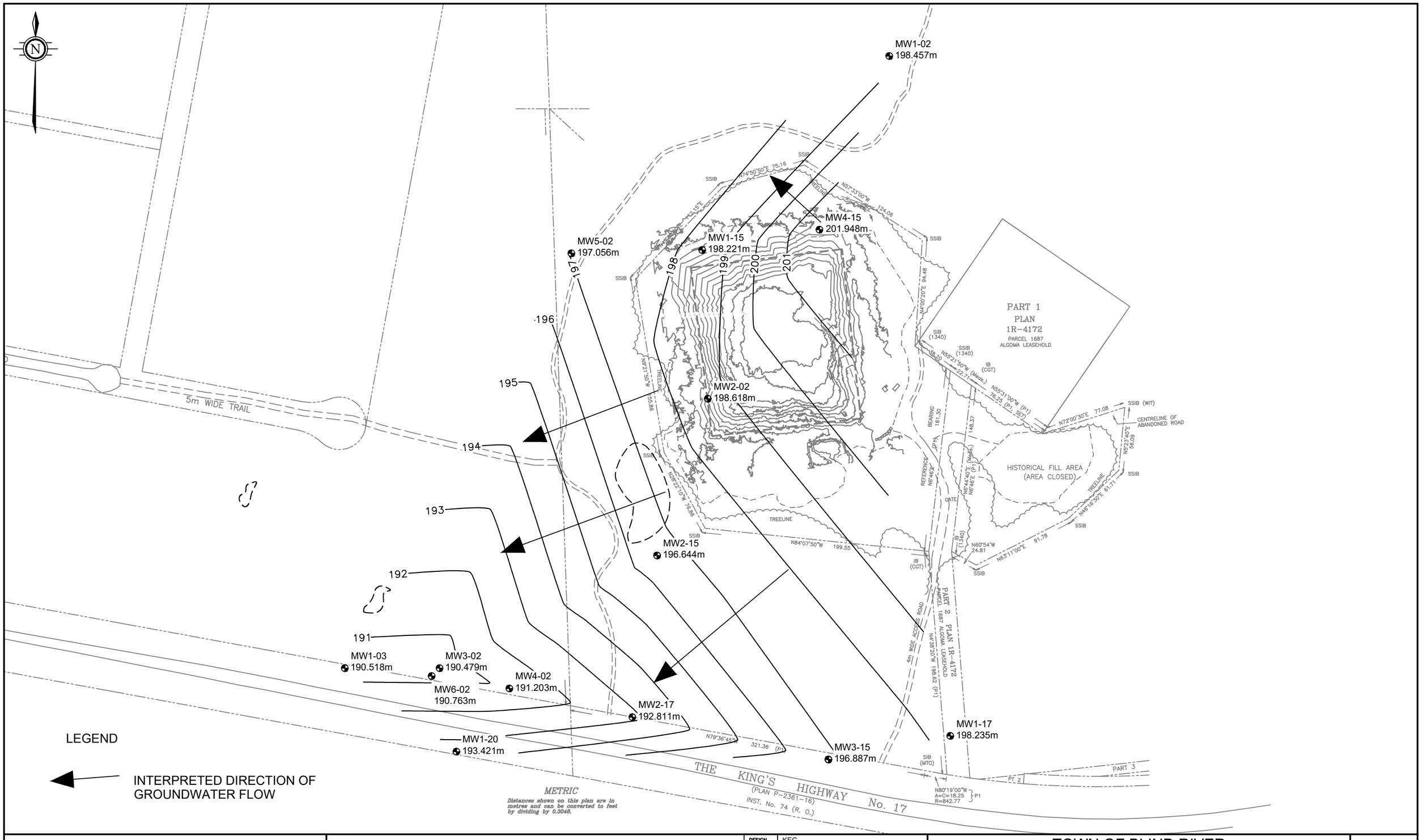
CHECKED	J. SHARPE
PROJECT	2231.03
FILENAME	2231 report drawings.dwg
SCALE	1:3000

TOWN OF BLIND RIVER
MUNICIPAL LANDFILL SITE

WATER TABLE ELEVATIONS

B4

Rev 0



KRESIN Engineering Corporation
Sault Ste. Marie, Ontario
(705) 949-4900

NOTES

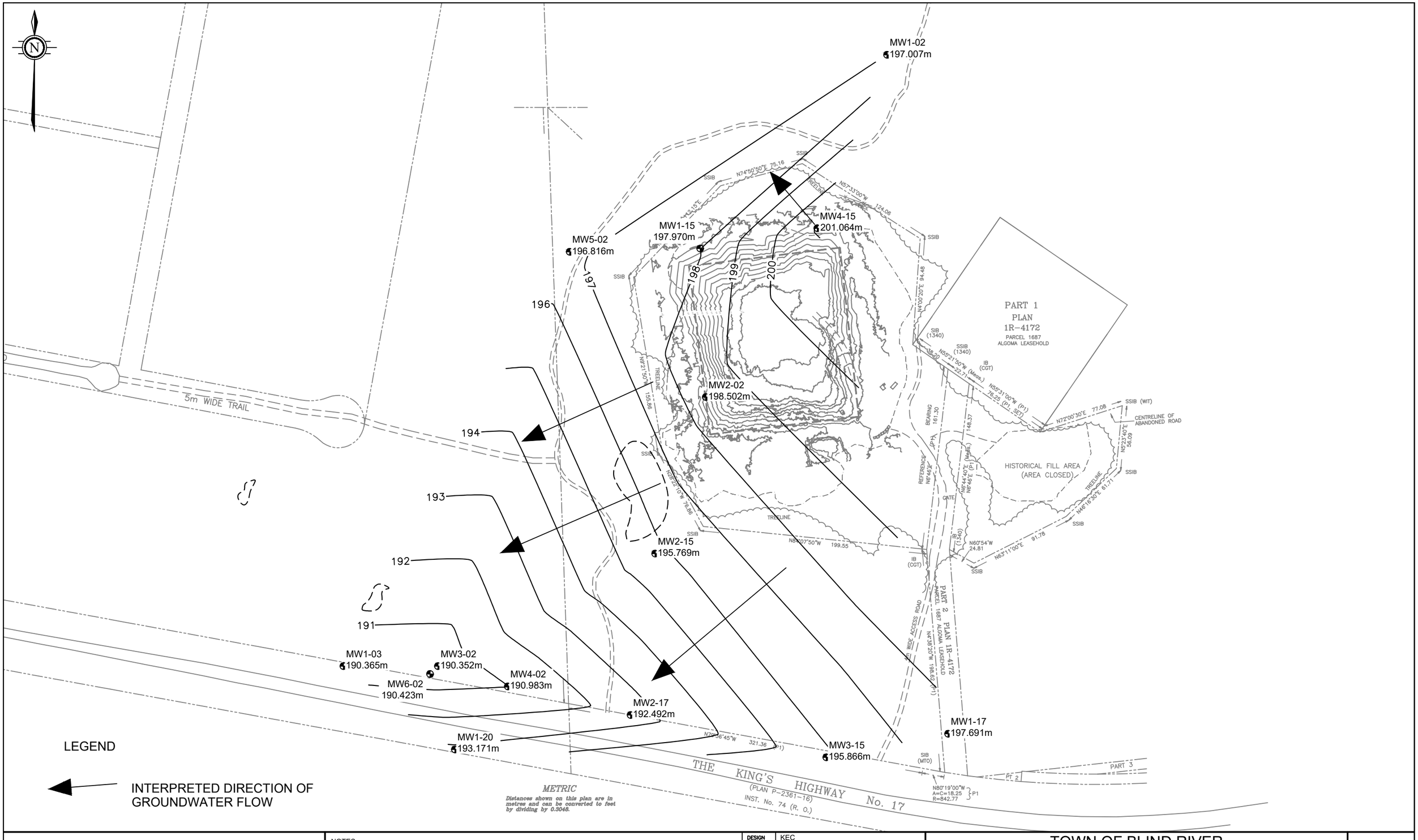
DESIGN	KEC	
DRAWN	B. MAAHS	05/2023
CHECKED	J. SHARPE	05/2023
PROJECT	2231.03	
FILENAME	2231 report drawings.dwg	
SCALE	1:3000	

TOWN OF BLIND RIVER
MUNICIPAL LANDFILL SITE

GROUNDWATER CONTOURS - SPRING 2022

B5

Rev 0



KRESIN Engineering Corporation
Sault Ste. Marie, Ontario
(705) 949-4900

NOTES

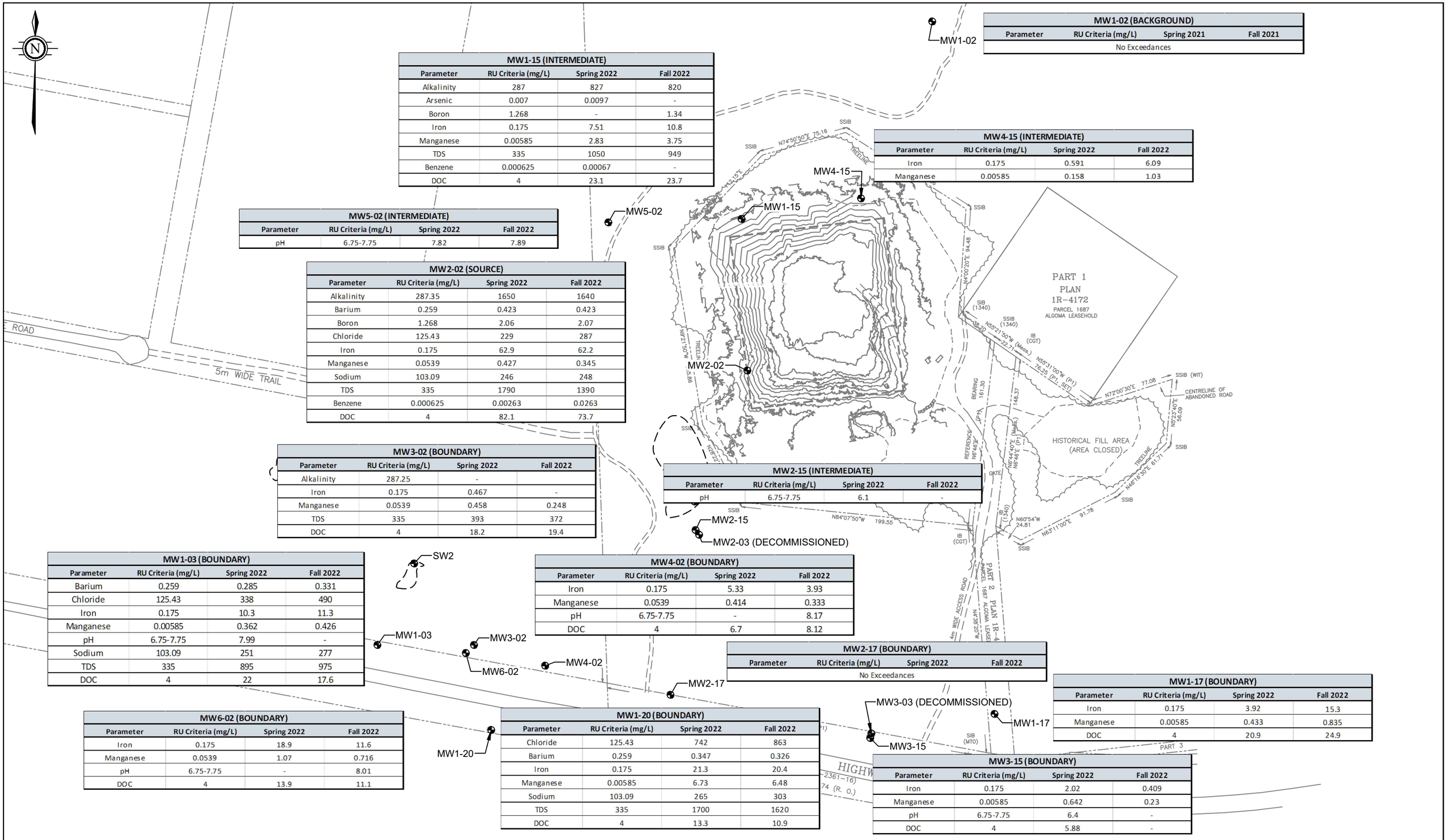
DESIGN	KEC	
DRAWN	B. MAAHS	05/2023
CHECKED	J. SHARPE	05/2023
PROJECT	2231.03	
FILENAME	2231 report drawings.dwg	
SCALE	1:3000	

TOWN OF BLIND RIVER
MUNICIPAL LANDFILL SITE

GROUNDWATER CONTOURS - FALL 2022

B6

Rev 0



MW1-02 (BACKGROUND)

Parameter	RU Criteria (mg/L)	Spring 2021	Fall 2021
No Exceedances			

MW1-15 (INTERMEDIATE)

Parameter	RU Criteria (mg/L)	Spring 2022	Fall 2022
Alkalinity	287	827	820
Arsenic	0.007	0.0097	-
Boron	1.268	-	1.34
Iron	0.175	7.51	10.8
Manganese	0.00585	2.83	3.75
TDS	335	1050	949
Benzene	0.000625	0.00067	-
DOC	4	23.1	23.7

MW4-15 (INTERMEDIATE)

Parameter	RU Criteria (mg/L)	Spring 2022	Fall 2022
Iron	0.175	0.591	6.09
Manganese	0.00585	0.158	1.03

MW5-02 (INTERMEDIATE)

Parameter	RU Criteria (mg/L)	Spring 2022	Fall 2022
pH	6.75-7.75	7.82	7.89

MW2-02 (SOURCE)

Parameter	RU Criteria (mg/L)	Spring 2022	Fall 2022
Alkalinity	287.35	1650	1640
Barium	0.259	0.423	0.423
Boron	1.268	2.06	2.07
Chloride	125.43	229	287
Iron	0.175	62.9	62.2
Manganese	0.0539	0.427	0.345
Sodium	103.09	246	248
TDS	335	1790	1390
Benzene	0.000625	0.00263	0.0263
DOC	4	82.1	73.7

MW3-02 (BOUNDARY)

Parameter	RU Criteria (mg/L)	Spring 2022	Fall 2022
Alkalinity	287.25	-	
Iron	0.175	0.467	-
Manganese	0.0539	0.458	0.248
TDS	335	393	372
DOC	4	18.2	19.4

MW2-15 (INTERMEDIATE)

Parameter	RU Criteria (mg/L)	Spring 2022	Fall 2022
pH	6.75-7.75	6.1	-

MW1-03 (BOUNDARY)

Parameter	RU Criteria (mg/L)	Spring 2022	Fall 2022
Barium	0.259	0.285	0.331
Chloride	125.43	338	490
Iron	0.175	10.3	11.3
Manganese	0.00585	0.362	0.426
pH	6.75-7.75	7.99	-
Sodium	103.09	251	277
TDS	335	895	975
DOC	4	22	17.6

MW4-02 (BOUNDARY)

Parameter	RU Criteria (mg/L)	Spring 2022	Fall 2022
Iron	0.175	5.33	3.93
Manganese	0.0539	0.414	0.333
pH	6.75-7.75	-	8.17
DOC	4	6.7	8.12

MW2-17 (BOUNDARY)

Parameter	RU Criteria (mg/L)	Spring 2022	Fall 2022
No Exceedances			

MW1-17 (BOUNDARY)

Parameter	RU Criteria (mg/L)	Spring 2022	Fall 2022
Iron	0.175	3.92	15.3
Manganese	0.00585	0.433	0.835
DOC	4	20.9	24.9

MW6-02 (BOUNDARY)

Parameter	RU Criteria (mg/L)	Spring 2022	Fall 2022
Iron	0.175	18.9	11.6
Manganese	0.0539	1.07	0.716
pH	6.75-7.75	-	8.01
DOC	4	13.9	11.1

MW1-20 (BOUNDARY)

Parameter	RU Criteria (mg/L)	Spring 2022	Fall 2022
Chloride	125.43	742	863
Barium	0.259	0.347	0.326
Iron	0.175	21.3	20.4
Manganese	0.00585	6.73	6.48
Sodium	103.09	265	303
TDS	335	1700	1620
DOC	4	13.3	10.9

MW3-15 (BOUNDARY)

Parameter	RU Criteria (mg/L)	Spring 2022	Fall 2022
Iron	0.175	2.02	0.409
Manganese	0.00585	0.642	0.23
pH	6.75-7.75	6.4	-
DOC	4	5.88	-

KRESIN Engineering Corporation
Sault Ste. Marie, Ontario
(705) 949-4900

NOTES

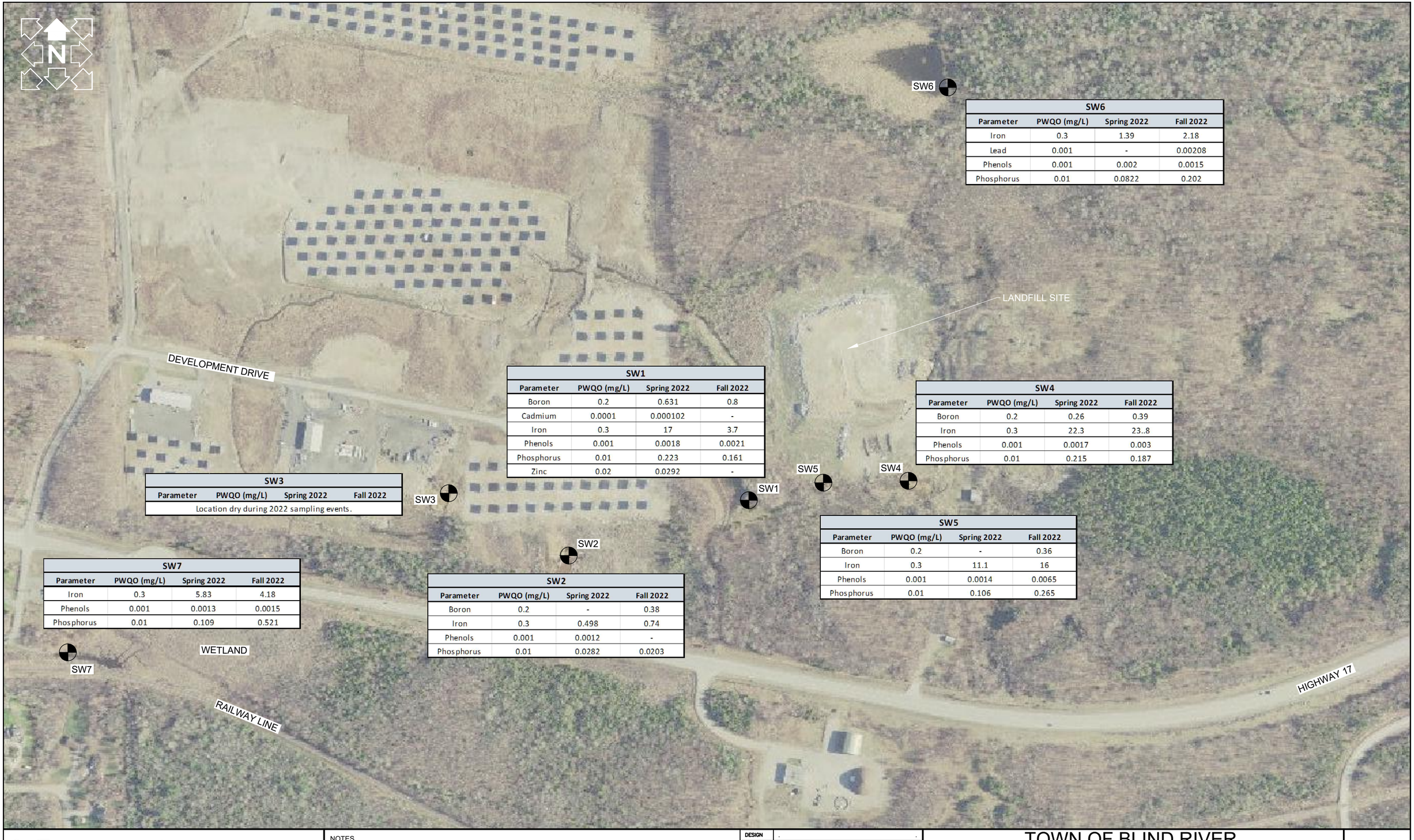
DESIGN	KEC
DRAWN	K.Sherlock 07/2023
CHECKED	J. SHARPE
PROJECT	2231
FILENAME	2231 report drawings.dwg
SCALE	1:3000

TOWN OF BLIND RIVER
MUNICIPAL LANDFILL SITE

MONITORING WELLS - RU EXCEEDANCES

B7

Rev 0



SW6			
Parameter	PWQO (mg/L)	Spring 2022	Fall 2022
Iron	0.3	1.39	2.18
Lead	0.001	-	0.00208
Phenols	0.001	0.002	0.0015
Phosphorus	0.01	0.0822	0.202

SW1			
Parameter	PWQO (mg/L)	Spring 2022	Fall 2022
Boron	0.2	0.631	0.8
Cadmium	0.0001	0.000102	-
Iron	0.3	17	3.7
Phenols	0.001	0.0018	0.0021
Phosphorus	0.01	0.223	0.161
Zinc	0.02	0.0292	-

SW4			
Parameter	PWQO (mg/L)	Spring 2022	Fall 2022
Boron	0.2	0.26	0.39
Iron	0.3	22.3	23..8
Phenols	0.001	0.0017	0.003
Phosphorus	0.01	0.215	0.187

SW3			
Parameter	PWQO (mg/L)	Spring 2022	Fall 2022
Location dry during 2022 sampling events.			

SW5			
Parameter	PWQO (mg/L)	Spring 2022	Fall 2022
Boron	0.2	-	0.36
Iron	0.3	11.1	16
Phenols	0.001	0.0014	0.0065
Phosphorus	0.01	0.106	0.265

SW7			
Parameter	PWQO (mg/L)	Spring 2022	Fall 2022
Iron	0.3	5.83	4.18
Phenols	0.001	0.0013	0.0015
Phosphorus	0.01	0.109	0.521

SW2			
Parameter	PWQO (mg/L)	Spring 2022	Fall 2022
Boron	0.2	-	0.38
Iron	0.3	0.498	0.74
Phenols	0.001	0.0012	-
Phosphorus	0.01	0.0282	0.0203

KRESIN Engineering Corporation
Sault Ste. Marie, Ontario
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NOTES

DESIGN	.	.
DRAWN	JS	07/2023
CHECKED	CK	07/2023
PROJECT	2231	
FILENAME	2231 sw exceedances	
SCALE	1:4,000	

TOWN OF BLIND RIVER
MUNICIPAL WASTE DISPOSAL SITE

SURFACE WATER - PWQO EXCEEDANCES

B8

Rev 0

Appendix C
Borehole Logs and Photographic Inventory

Log of MW-1

Trow

Auger Sample ☒
SPT (N) Value ○○ ▨ Natural Moisture ×
Dynamic Cone Test —— PL & LL ⊢—○
Shelby Tube ●● ■ Undrained Triaxial at 0
Rock Core ☒ Overburden Press. 15⊕5
Field Vane Test + S % Strain at Failure 10
Penetrometer ▲
Water Level: Est.: ▽ Measured: ▼ Perched: ▽

Project: Blind River Monitoring Well Installation — Fig. No. 2
Landfill Site
Blind River, Ontario — Project No. S02403E
Borehole Location and elevation datum shown on Drawing No. 1

OW	GWL	SYMBOL	Soil Description	Depth Below Grade m	DEPTH
Grout →			TOPSOIL, ~130 mm thick over	0.13	0
			SAND & GRAVEL, light brown, wet. (compact)		
Bentonite →			**SILTY SAND & GRAVEL**, occasional cobbles from ~1.1 to 1.6 m depth, light brown, wet. (compact)	0.70	1
Sand Pack →				2.10	2
			TILL, silty sand & gravel, cobble layers from ~2.6 to 3.0 m & from 3.5 to 3.8 m depths, grey, wet. (very dense)		
Monitoring Well →					3
					4
			END OF BOREHOLE	4.60	

N Value (20 40 60 80) / Shear Strength
O/150 mm
O/150 mm
O/75 mm

Natural Moisture Content and Atterberg Limits % Dry Weight (10 20 30)

Natural Unit Weight kN/m³

LBHMI3 S02403E GPJ 09/09/02

NOTES:
1. Borehole data requires interpretation assistance from Trow before use by others
2. Borehole advanced using continuous flight hollow stem augering equipment on May 6, 2002.
3. Monitoring well installed to ~4.26 m depth on completion.
4. See Drawing 2 for Notes on Sample Descriptions
5. This Drawing to be read with Trow report S02403E

WATER LEVEL RECORDS

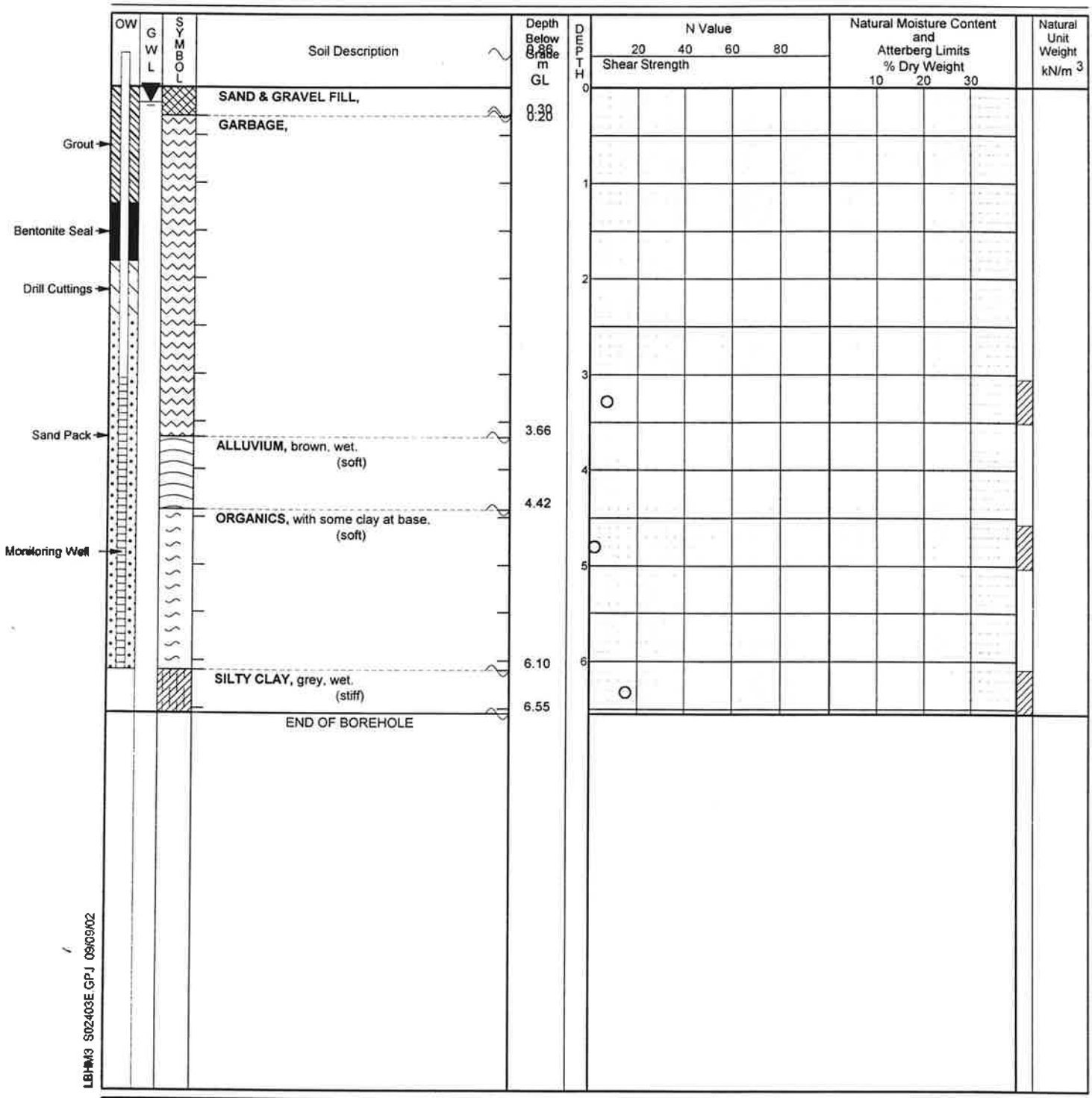
Measurement date	Water Elevation (m)

Log of MW-2

Trow

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Rock Core
Field Vane Test
Water Level: Est.: Measured: Perched:
Natural Moisture
PL & LL
Undrained Triaxial at Overburden Press.
% Strain at Failure
Penetrometer

Project: Blind River Monitoring Well Installation — Fig. No. 4
Landfill Site
Blind River, Ontario — Project No. S02403E
Borehole Location and elevation datum shown on Drawing No. 1



LBHM3 S02403E.GPJ 09/09/02

NOTES:
1. Borehole data requires interpretation assistance from Trow before use by others
2. Borehole advanced using continuous flight hollow stem augering equipment on May 14, 2002.
3. Monitoring well installed to ~6.09 m depth on completion.
4. See Drawing 2 for Notes on Sample Descriptions
5. This Drawing to be read with Trow report S02403E

WATER LEVEL RECORDS

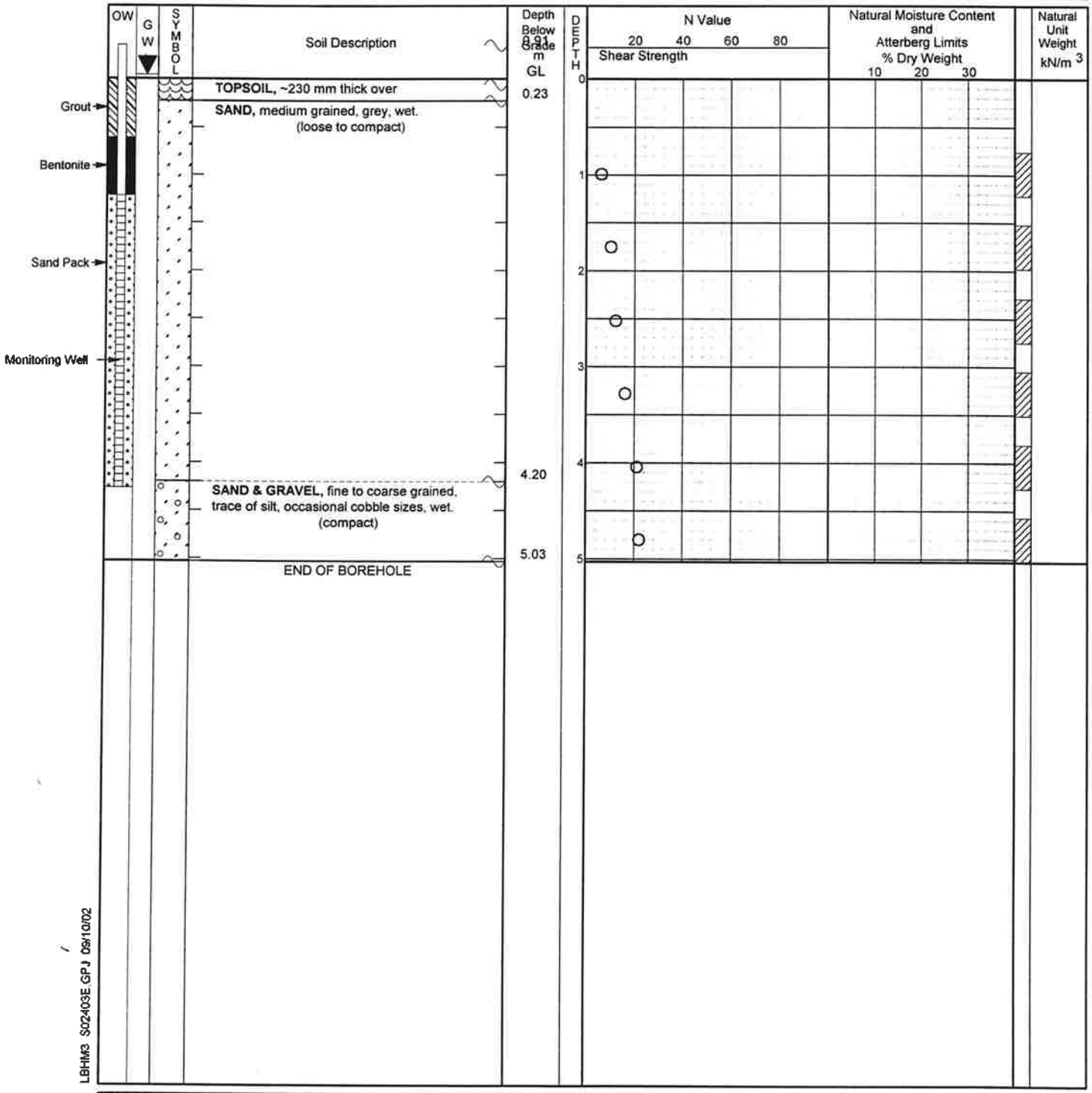
Measurement date	Water Elevation (m)
May 14/02	0.20

Log of MW-3

Trow

Auger Sample ⊠
SPT (N) Value ○○ ▨ Natural Moisture ×
Dynamic Cone Test —— PL & LL ⊢—○
Shelby Tube ●● ■ Undrained Triaxial at Overburden Press. 0 / 15 ⊕ 5
Rock Core ⊠ % Strain at Failure 10
Field Vane Test + S Penetrometer ▲
Water Level: Est.: ▽ Measured: ▼ Perched: ▽

Project: Blind River Monitoring Well Installation — Fig. No. 5
Landfill Site
Blind River, Ontario — Project No. S02403E
Borehole Location and elevation datum shown on Drawing No. 1



LBHM3 S02403E GPJ 09/10/02

NOTES:
1. Borehole data requires interpretation assistance from Trow before use by others
2. Borehole advanced uncased using hand augering equipment on May 14, 2002.
3. Monitoring well installed to ~4.27 m depth on completion.
4. See Drawing 2 for Notes on Sample Descriptions
5. This Drawing to be read with Trow report S02403E

WATER LEVEL RECORDS

Measurement date	Water Elevation (m)
May 14/02	0.00

Log of MW-4

Trow

Auger Sample ⊠
SPT (N) Value ○○ ▨ Natural Moisture ×
Dynamic Cone Test —— PL & LL ⊢○
Shelby Tube ●● ■ Undrained Triaxial at Overburden Press. 0 / 15⊕5
Rock Core ⊠ % Strain at Failure 10
Field Vane Test + S Penetrometer ▲
Water Level: Est.: ▽ Measured: ▼ Perched: ▽

Project: Blind River Monitoring Well Installation — Fig. No. 6
Landfill Site
Blind River, Ontario — Project No. S02403E
Borehole Location and elevation datum shown on Drawing No. 1

OW	GW	SYMBOL	Soil Description	Depth Below Grade m	DEPTH
Grout			**TOPSOIL**, ~300 mm thick over	0.30	0
			SANDY GRAVEL, fine grained, grey.	0.80	
Bentonite			**SAND**, medium to coarse grained, traces of organics, grey, wet. (loose to very loose)	1.90	1
Sand Pack			**SAND & GRAVEL**, with occasional cobbles, grey, wet. (compact to dense)		2
Monitoring Well					3
					4
			END OF BOREHOLE	5.03	5

N Value: 20 40 60 80 — Shear Strength
Natural Moisture Content and Atterberg Limits: % Dry Weight 10 20 30
Natural Unit Weight kN/m³

LBHM3 S02403E.GPJ 09/09/02

NOTES:
1. Borehole data requires interpretation assistance from Trow before use by others
2. Borehole advanced using continuous flight hollow stem augering equipment on May 14, 2002.
3. Monitoring well installed to ~4.57 m depth on completion.
4. See Drawing 2 for Notes on Sample Descriptions
5. This Drawing to be read with Trow report S02403E

WATER LEVEL RECORDS

Measurement date	Water Elevation (m)
May 14/02	0.00

Log of MW-5

Trow

Auger Sample ⊠
SPT (N) Value ○○ ▨ Natural Moisture ×
Dynamic Cone Test —— PL & LL ⊢○
Shelby Tube ●● ■ Undrained Triaxial at 0
Rock Core ⊠ Overburden Press. 15⊕5
Field Vane Test + S % Strain at Failure 10
Penetrometer ▲
Water Level: Est.: ▽ Measured: ▼ Perched: ▽

Project: Blind River Monitoring Well Installation — Fig. No. 7
Landfill Site
Blind River, Ontario — Project No. S02403E
Borehole Location and elevation datum shown on Drawing No. 1

OW	GWL	SYMBOL	Soil Description	Depth Below Grade m	DEPTH	N Value / Shear Strength (20 40 60 80)	Natural Moisture Content and Atterberg Limits % Dry Weight (10 20 30)	Natural Unit Weight kN/m³
			TOPSOIL, ~150 mm thick over	GL 0.15	0			
Grout			SAND & GRAVEL, alternating layers of light brown and grey, wet, occasional cobble sizes below ~2.3 m depth. (dense becoming very dense with increasing depth)		1	○		
Bentonite					2	○		
Sand Pack					3	○/75 mm & Bouncing		
Monitoring Well				4.04	4	○/75 mm		
			END OF BOREHOLE DUE TO AUGER REFUSAL ON BEDROCK OR BOULDER					

LBHM3 S02403E.GPJ 06/09/02

NOTES:
1. Borehole data requires interpretation assistance from Trow before use by others
2. Borehole advanced using continuous flight hollow stem augering equipment on May 6, 2002.
3. Monitoring well installed to ~3.96 m depth on completion.
4. See Drawing 2 for Notes on Sample Descriptions
5. This Drawing to be read with Trow report S02403E

WATER LEVEL RECORDS	
Measurement date	Water Elevation (m)

Log of MW-6

Trow

Auger Sample ⊠
SPT (N) Value ○○ ▨ Natural Moisture ×
Dynamic Cone Test —— PL & LL ⊢—○
Shelby Tube ●● ■ Undrained Triaxial at 0
Rock Core ⊠ Overburden Press. 15⊕5
Field Vane Test + S % Strain at Failure 10
Penetrometer ▲
Water Level: Est.: ▽ Measured: ▼ Perched: ▽

Project: Blind River Monitoring Well Installation — Fig. No. 8
Landfill Site
Blind River, Ontario — Project No. S02403E
Borehole Location and elevation datum shown on Drawing No. 1

OW	GW	SYMBOL	Soil Description	Depth Below Grade m / GL	DEPTH
			TOPSOIL, ~250 mm thick over	0.25	0
Grout			**SAND**, medium grained, grey, wet. (loose to compact)		1
Bentonite					2
Sand Pack					3
				4.20	4
Bentonite			**SAND & GRAVEL**, fine to coarse grained, trace of silt to ~6.0 m depth, occasional cobble sizes, wet. (compact)		5
Sand Pack					6
Monitoring Well				7.16	7
			END OF BOREHOLE DUE TO AUGER REFUSAL ON BEDROCK OR BOULDER		

N Value — Shear Strength: 20 40 60 80
Natural Moisture Content and Atterberg Limits — % Dry Weight: 10 20 30
Natural Unit Weight kN/m³

○ 150 mm & Bouncing

LBHM3 S02403E GPJ 09/10/02

NOTES:
1. Borehole data requires interpretation assistance from Trow before use by others
2. Borehole advanced using continuous flight hollow stem augering equipment on May 14, 2002.
3. Monitoring well installed to ~7.01 m depth on completion.
4. See Drawing 2 for Notes on Sample Descriptions
5. This Drawing to be read with Trow report S02403E

WATER LEVEL RECORDS

Measurement date	Water Elevation (m)
May 14/02	0.00

Log of MW-1

Trow

Auger Sample	⊠	Split Spoon Sample	▨
SPT (N) Value (blows/0.3m)	○	Natural Moisture	×
Dynamic Cone Test	——	Plastic & Liquid Limit	⊢—⊖
Shelby Tube	■	Undrained Triaxial at Overburden Pressure	0 / 15⊕5 / 10
Rock Core	⊠	% Strain at Failure	
Field Vane Test & Sensitivity	+$_S^R$	Pocket Penetrometer	▲
Water Level: Est.: ▽	Measured: ▼	Perched: ▼	

Project: Blind River Landfill — Fig. No. 16

Blind River, Ontario — Project No. S09538G

Hole location and datum see Drawing No. 2

GWL	SYMBOL	Soil Description	Assumed Elev. m	DEPTH	N Value / Shear Strength	Natural Moisture Content and Atterberg Limits % Dry Weight	Sample Type	Natural Unit Weight kN/m^3
			190.8	0	20 40 60 80 / 50 100 kPa	10 20 30		
		TOPSOIL, 200 mm thick.	190.6					
		SAND, brown, wet, loose, well graded, fine to coarse grained, trace silt, trace to some gravel.		1	○			
				2	○	×		
		- grey, compact, poorly graded, medium to coarse grained, some gravel below ~2.3 m depth.		3	○	×		
			167.4					
		END OF BOREHOLE AT ~3.5 m DEPTH.						

Grout

Bentonite

Sand Pack

Observation Well

GEOTECH S09538-1.GPJ 11/20/03

NOTES:
1. Soils log data requires interpretation assistance from Trow before use by others.
2. Borehole advanced using continuous flight hollow stem augers on October 17, 2003.
3. Groundwater not encountered at time of drilling.
4. See Fig. 1A & 1B for Notes on Sample Descriptions.
5. This Drawing to be read with Trow Consulting Engineers Ltd. report S09538G.
6. Borehole logged by S. McAuliffe & Approved by T. Crilly.

WATER LEVEL RECORDS

Date Measured	Water Level Depth Below Grade (m)	Hole Open To (m)

Log of MW-2

Trow

Auger Sample ⊠ Split Spoon Sample ▨
SPT (N) Value (blows/0.3m) ○ Natural Moisture ×
Dynamic Cone Test —— Plastic & Liquid Limit ⊢—○
Shelby Tube ■ Undrained Triaxial at Overburden Pressure 0 / 15⊕5
Rock Core ⊠ % Strain at Failure 10
Field Vane Test & Sensitivity +S= Pocket Penetrometer ▲
Water Level: Est.: ▽ Measured: ▼ Perched: ▽

Project Blind River Landfill Fig. No. 17

Blind River, Ontario Project No. S09538G

Hole location and datum see Drawing No. 2

GWL	SYMBOL	Soil Description	Assumed Elev. m GL	DEPTH	N Value / Shear Strength	Natural Moisture Content and Atterberg Limits % Dry Weight	Sample Type	Natural Unit Weight kN/m³
		TOPSOIL, 80 mm thick.	0.1	0				
		SAND, brown, moist, compact, well graded, fine to coarse grained, some cobbles.						
		- wet below ~1.52 m depth.	1.6					
		SILTY SAND, brown, wet, compact to dense, poorly graded, coarse grained, some cobbles.		1				
		AUGER REFUSAL ON BEDROCK OR BOULDER AT ~2.29 m DEPTH.	2.3	2				

Grout
Bentonite
Sand Pack
Observation Well

N Value: 20 40 60 80
Shear Strength: 50 100 kPa
Natural Moisture Content and Atterberg Limits % Dry Weight: 10 20 30

GEOTECH S09538-1.GPJ 11/20/03

NOTES:
1. Soils log data requires interpretation assistance from Trow before use by others.
2. Borehole advanced using continuous flight hollow stem augers on October 17, 2003.
3. Groundwater not encountered at time of drilling.
4. See Fig. 1A & 1B for Notes on Sample Descriptions.
5. This Drawing to be read with Trow Consulting Engineers Ltd. report S09538G.
6. Borehole logged by S. McAuliffe & Approved by T. Crilly.

WATER LEVEL RECORDS

Date Measured	Water Level Depth Below Grade (m)	Hole Open To (m)

Log of MW-3

Trow

Auger Sample | Split Spoon Sample
SPT (N) Value (blows/0.3m) | Natural Moisture
Dynamic Cone Test | Plastic & Liquid Limit
Shelby Tube | Undrained Triaxial at Overburden Pressure
Rock Core | % Strain at Failure
Field Vane Test & Sensitivity | Pocket Penetrometer
Water Level: Est.: | Measured: | Perched:

Project: Blind River Landfill — Fig. No. 18

Blind River, Ontario — Project No. S09538G

Hole location and datum see Drawing No. 2

Soil Description	Assumed Elev. m	Depth
BOULDERS AND COBBLES, some sand.	198.4	0
SILTY SAND, brown, moist, dense, poorly graded, fine to medium grained. (TILL).	197.7	1
COBBLES, (TILL)	196.9	2
SAND, brown, moist to wet, compact, poorly graded, fine to medium grained, some silt.	196.1	3
- some cobbles below ~2.74 m depth.		4
- wet below ~3.05 m depth.		
END OF BOREHOLE AT ~5.03 m depth.	193.4	5

Grout
Bentonite
Sand Pack
Observation Well

N Value: 20 40 60 80 — Shear Strength: 50 100 kPa

Natural Moisture Content and Atterberg Limits % Dry Weight: 10 20 30

Sample Type

Natural Unit Weight kN/m³

Auger refusal encountered at 0.3 to 0.6 m depth, 4 times in this area prior to drilling this borehole due to presence of boulders and cobbles.

GEOTECH S09538-1.GPJ 11/20/03

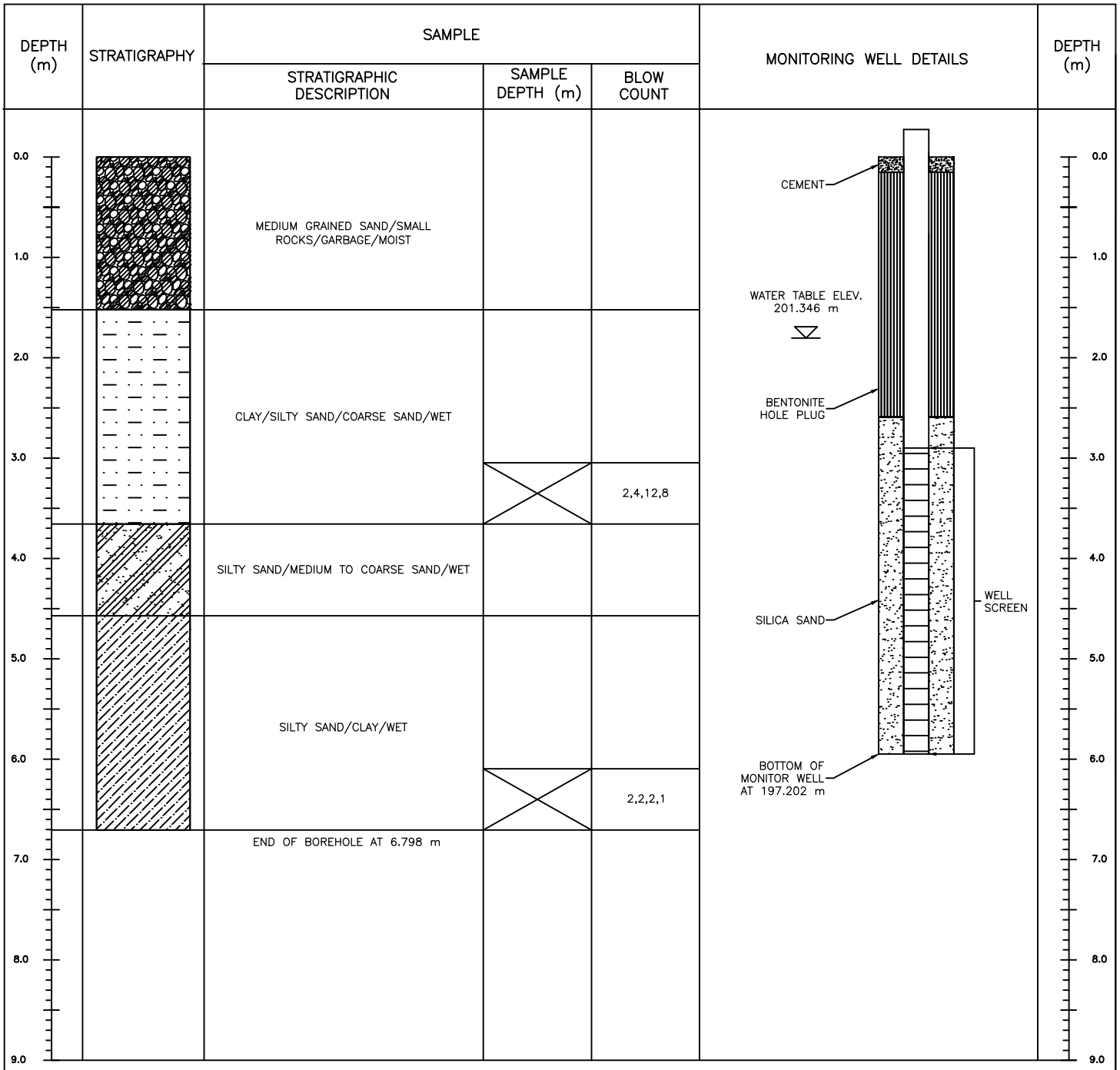
NOTES:
1. Soils log data requires interpretation assistance from Trow before use by others.
2. Borehole advanced using continuous flight hollow stem augers on October 17, 2003.
3. Groundwater not encountered at time of drilling.
4. See Fig. 1A & 1B for Notes on Sample Descriptions.
5. This Drawing to be read with Trow Consulting Engineers Ltd. report S09538G.
6. Borehole logged by S. McAuliffe & Approved by T. Crilly.

WATER LEVEL RECORDS

Date Measured	Water Level Depth Below Grade (m)	Hole Open To (m)

MW1–15

PROJECT NAME	BLIND RIVER LANDFILL SITE	PROJECT NO.	1567.02
CLIENT	TOWN OF BLIND RIVER	DATE	DECEMBER 2, 2015
BOREHOLE TYPE	203 mm (8 inch) DIAMETER AUGER	FIELD SUPERVISOR	JS
GROUND ELEVATION	203.151 m	ENGINEER	



NOTES: SAND POINT USED FOR INSTALLATION OF MONITORING WELL.

WELL STICK UP 0.849 m; STEEL PROTECTIVE CASING 0.957 m; BOTTOM OF MONITOR WELL INSTALLED AT 5.949 mbgs.

KRESIN Engineering Corporation

DESIGN	. .
DRAWN	. Dec 2015
CHECKED	. .
PROJECT	1567.02
FILENAME	1567.02 well logs
SCALE	NTS

TOWN OF BLIND RIVER
MUNICIPAL LANDFILL SITE

MONITORING WELL INSTALLATION - 2015

1

Rev 0

MW2–15

PROJECT NAME	BLIND RIVER LANDFILL SITE	PROJECT NO.	1567.02
CLIENT	TOWN OF BLIND RIVER	DATE	DECEMBER 1, 2015
BOREHOLE TYPE	203 mm (8 inch) DIAMETER AUGER	FIELD SUPERVISOR	JS
GROUND ELEVATION	199.933 m	ENGINEER	

DEPTH (m)	STRATIGRAPHY	SAMPLE			MONITORING WELL DETAILS	DEPTH (m)
		STRATIGRAPHIC DESCRIPTION	SAMPLE DEPTH (m)	BLOW COUNT		
0.0		MEDIUM GRAINED SAND/SMALL ROCKS/MOIST			WATER TABLE ELEV. 199.293 m; CEMENT; BENTONITE HOLE PLUG; WELL SCREEN; SILICA SAND; BOTTOM OF MONITOR WELL AT 197.202 m	0.0
1.0		SILTY SAND/MEDIUM TO COARSE SAND/WET				1.0
2.0		END OF BOREHOLE 2.286 m DUE TO AUGER REFUSAL ON BEDROCK OR BOULDER				2.0
3.0						3.0
4.0						4.0
5.0						5.0
6.0						6.0
7.0						7.0
8.0						8.0
9.0						9.0

NOTES: SAND POINT USED FOR INSTALLATION OF MONITORING WELL.

WELL STICK UP 1.067 m; STEEL PROTECTIVE CASING 1.202 m; BOTTOM OF MONITOR WELL INSTALLED AT 1.948 mbgs.

ATTEMPTED TO TAKE SAMPLE AT 2.286 m – SPLIT SPOON WOULD NOT ADVANCE (BOUNCE).

KRESIN Engineering Corporation

DESIGN	.	.
DRAWN	.	Dec 2015
CHECKED	.	.
PROJECT	1567.02	
FILENAME	1567.02 well logs	
SCALE	NTS	

TOWN OF BLIND RIVER
MUNICIPAL LANDFILL SITE

MONITORING WELL INSTALLATION - 2015

2

Rev 0

MW3–15

PROJECT NAME	BLIND RIVER LANDFILL SITE	PROJECT NO.	1567.02
CLIENT	TOWN OF BLIND RIVER	DATE	DECEMBER 2, 2015
BOREHOLE TYPE	203 mm (8 inch) DIAMETER AUGER	FIELD SUPERVISOR	JS
GROUND ELEVATION	196.198 m	ENGINEER	

DEPTH (m)	STRATIGRAPHY	SAMPLE			MONITORING WELL DETAILS	DEPTH (m)
		STRATIGRAPHIC DESCRIPTION	SAMPLE DEPTH (m)	BLOW COUNT		
0.0		BOULDERS/COBBLES/SOME SAND			CEMENT	0.0
1.0		SILTY SAND/FINE TO MEDIUM SAND/MOIST			WATER TABLE ELEV. 194.858 m	1.0
2.0		BOULDERS/COBBLES/SOME SAND			BENTONITE HOLE PLUG	2.0
3.0		SILTY SAND/FINE TO MEDIUM SAND/ SOME COBBLES/WET			WELL SCREEN; SILICA SAND/BACKFILL	3.0
4.0						4.0
5.0		END OF BOREHOLE 5.03 m			BOTTOM OF MONITOR WELL AT 191.835 m	5.0
6.0						6.0
7.0						7.0
8.0						8.0
9.0						9.0

NOTES: SAND POINT USED FOR INSTALLATION OF MONITORING WELL.

WELL STICK UP 0.802 m; STEEL PROTECTIVE CASING 0.921 m; BOTTOM OF MONITORING WELL INSTALLED AT 4.363 mbgs.

BOREHOLE LOCATION WITHIN EXISTING MW3–03 LOCATION, PREVIOUSLY INSTALLED BY TROW ASSOCIATES INC.

BOREHOLE DESCRIPTION FROM GEOTECHNICAL INVESTIGATION – PROPOSED WATER SUPPLY SYSTEM UPGRADE LANDFILL MONITORING WELLS, BLIND RIVER ONTARIO BY TROW ASSOCIATES INC. 2003.

KRESIN Engineering Corporation

DESIGN	.	.
DRAWN	.	Dec 2015
CHECKED	.	.
PROJECT	1567.02	
FILENAME	1567.02 well logs	
SCALE	NTS	

TOWN OF BLIND RIVER
MUNICIPAL LANDFILL SITE

MONITORING WELL INSTALLATION - 2015

3

Rev 0

MW4–15

PROJECT NAME	BLIND RIVER LANDFILL SITE	PROJECT NO.	1567.02
CLIENT	TOWN OF BLIND RIVER	DATE	DECEMBER 1, 2015
BOREHOLE TYPE	203 mm (8 inch) DIAMETER AUGER	FIELD SUPERVISOR	JS
GROUND ELEVATION	197.165 m	ENGINEER	

DEPTH (m)	STRATIGRAPHY	SAMPLE: STRATIGRAPHIC DESCRIPTION	SAMPLE: SAMPLE DEPTH (m)	SAMPLE: BLOW COUNT	MONITORING WELL DETAILS	DEPTH (m)
0.0 – 1.0		SAND/SMALL ROCKS/MOIST			CEMENT; BENTONITE HOLE PLUG	0.0 – 1.0
1.0 – 3.0		MEDIUM TO COARSE SAND/SMALL ROCKS/CLAY/GARBAGE/WOOD/MOIST			WATER TABLE ELEV. 195.317 m	1.0 – 3.0
3.0 – 4.0				3,3,4,7	SILICA SAND; WELL SCREEN	3.0 – 4.0
4.0 – 5.0		SILTY SAND/FINE TO MEDIUM SAND/ SOME COBBLES/WET				4.0 – 5.0
5.0 – 6.0		SILTY SAND/CLAY/WET			BOTTOM OF MONITOR WELL AT 192.528 m	5.0 – 6.0
6.0 – 9.0		END OF BOREHOLE 5.486 m DUE TO AUGER REFUSAL ON BEDROCK OR BOULDER				6.0 – 9.0

NOTES: SAND POINT USED FOR INSTALLATION OF MONITORING WELL.

WELL STICK UP 0.849 m; STEEL PROTECTIVE CASING 0.957 m; BOTTOM OF MONITORING WELL INSTALLED AT 4.637 mbgs.

KRESIN Engineering Corporation

DESIGN	. .
DRAWN	. Dec 2015
CHECKED	. .
PROJECT	1567.02
FILENAME	1567.02 well logs
SCALE	NTS

TOWN OF BLIND RIVER
MUNICIPAL LANDFILL SITE

MONITORING WELL INSTALLATION - 2015

4

Rev 0

MW1-17

PROJECT NAME	BLIND RIVER LANDFILL SITE	PROJECT NO.	0508.11
CLIENT	TOWN OF BLIND RIVER	DATE	JULY 12, 2017
BOREHOLE TYPE	203 mm (8 inch) DIAMETER AUGER	FIELD SUPERVISOR	RW
GROUND ELEVATION	199.034 m	ENGINEER	

DEPTH (m)	STRATIGRAPHY	SAMPLE			MONITORING WELL DETAILS	DEPTH (m)
		STRATIGRAPHIC DESCRIPTION	SAMPLE DEPTH (m)	BLOW COUNT		
0.0					CEMENT BENTONITE HOLE PLUG WATER TABLE ELEV. 198.090 m WELL SCREEN SILICA SAND BOTTOM OF MONITOR WELL AT 196.596 m	0.0
1.0		COBBLES/GRAVEL/FINE SAND/DRY				1.0
2.0		COBBLES/GRAVE/FINE SAND/WET				2.0
3.0						3.0
4.0						4.0
5.0						5.0
6.0						6.0
7.0						7.0
8.0						8.0
9.0						9.0

NOTES: SAND POINT USED FOR INSTALLATION OF MONITORING WELL.

WELL STICK UP 0.815 m; STEEL PROTECTIVE CASING 0.940 m; BOTTOM OF MONITOR WELL INSTALLED AT 2.438 mbgs.

COBBLES PREVENTED SPLIT SPOON SAMPLE COLLECTION.

KRESIN Engineering Corporation

DESIGN	.	.
DRAWN	JS	Oct 2017
CHECKED	.	.
PROJECT	0508.11	
FILENAME	0508.11 well log	
SCALE	NTS	

TOWN OF BLIND RIVER
MUNICIPAL LANDFILL SITE

MONITORING WELL INSTALLATION - 2017

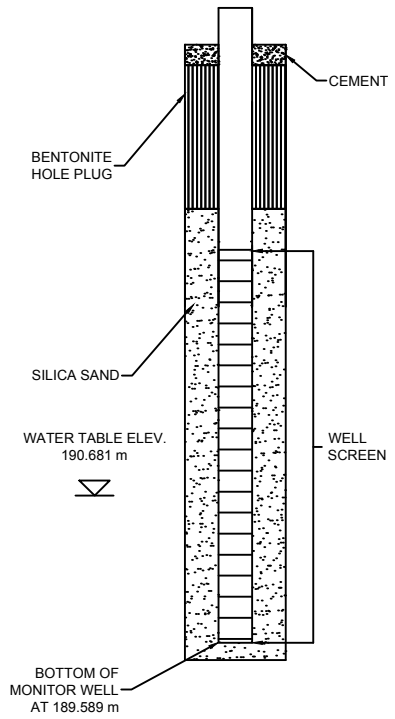
1

Rev 0

MW2-17

PROJECT NAME	BLIND RIVER LANDFILL SITE	PROJECT NO.	0508.11
CLIENT	TOWN OF BLIND RIVER	DATE	JULY 12, 2017
BOREHOLE TYPE	203 mm (8 inch) DIAMETER AUGER	FIELD SUPERVISOR	RW
GROUND ELEVATION	194.034 m	ENGINEER	

DEPTH (m)	STRATIGRAPHY	SAMPLE			MONITORING WELL DETAILS	DEPTH (m)
		STRATIGRAPHIC DESCRIPTION	SAMPLE DEPTH (m)	BLOW COUNT		
0.0						0.0
1.0		FINE SAND/DRY				1.0
2.0		MEDIUM SAND/WET				2.0
3.0				1,6,9,6		3.0
4.0		MEDIUM SAND/WET				4.0
5.0						5.0
6.0						6.0
7.0						7.0
8.0						8.0
9.0						9.0



NOTES: SAND POINT USED FOR INSTALLATION OF MONITORING WELL.

WELL STICK UP 0.78 m; STEEL PROTECTIVE CASING 0.94 m; BOTTOM OF MONITOR WELL INSTALLED AT 4.445 mbgs.

KRESIN Engineering Corporation

DESIGN	.	.
DRAWN	JS	Oct 2017
CHECKED	.	.
PROJECT	0508.11	
FILENAME	0508.11 well log	
SCALE	NTS	

TOWN OF BLIND RIVER
MUNICIPAL LANDFILL SITE

MONITORING WELL INSTALLATION - 2017

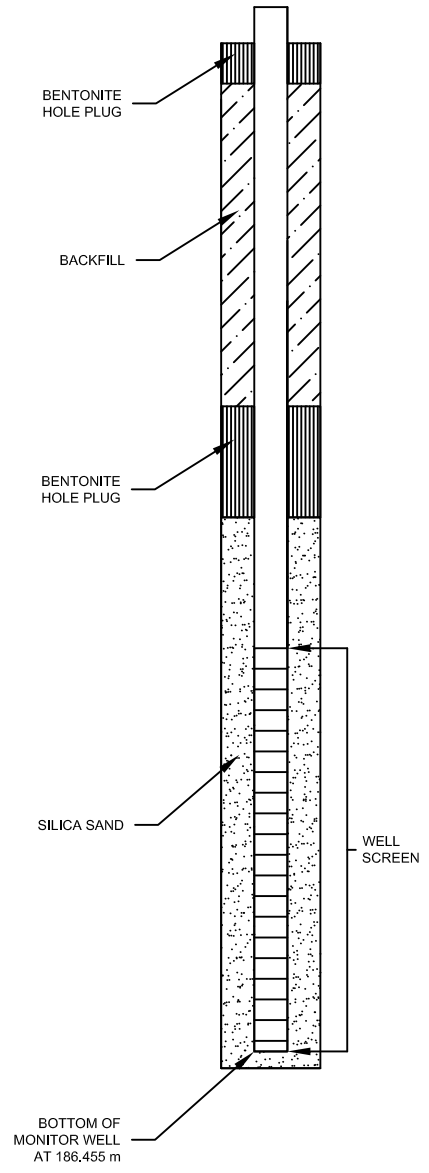
2

Rev 0

MW1-20

PROJECT NAME	BLIND RIVER LANDFILL SITE	PROJECT NO.	2049.02
CLIENT	TOWN OF BLIND RIVER	DATE	September 1, 2020
BOREHOLE TYPE	203 mm (8 inch) DIAMETER AUGER	FIELD SUPERVISOR	JS
GROUND ELEVATION	194.034 m	ENGINEER	

DEPTH (m)	STRATIGRAPHY	SAMPLE			MONITORING WELL DETAILS	DEPTH (m)
		STRATIGRAPHIC DESCRIPTION	SAMPLE DEPTH (m)	BLOW COUNT		
0.0						0.0
1.0		ORGANIC MATERIAL/FINE SANDY SILT/WET				1.0
2.0		DENSE SILTY CLAY/WET				2.0
3.0		LOOSE SILTY CLAY/WET				3.0
4.0		DENSE SILTY CLAY/WET				4.0
5.0		DENSE SILTY CLAY/SMALL COBBLES/WET				5.0
6.0		DENSE SILTY CLAY/WET				6.0
7.0						7.0
8.0						8.0
9.0						9.0



NOTES: BOTTOM OF WELL SCREEN IS CAPPED

WELL STICK UP 0.853 m; STEEL PROTECTIVE CASING 0.915 m; BOTTOM OF MONITOR WELL INSTALLED AT 7.62 mbgs.

KRESIN Engineering Corporation

DESIGN	.	.
DRAWN	JS	Sept 2020
CHECKED	.	.
PROJECT	2049.02	
FILENAME	2049..02 MW1-20 well log	
SCALE	NTS	

TOWN OF BLIND RIVER
MUNICIPAL LANDFILL SITE

MONITORING WELL INSTALLATION - 2020

1-20

Rev 0

Figure C.1. Monitoring location MW1-02

Figure C.2. Monitoring location MW1-02

Figure C.3. Monitoring location MW2-02

Figure C.4. Monitoring location MW2-02

Figure C.5. Monitoring location MW3-02

Figure C.6. Monitoring location MW3-02

Figure C.7. Monitoring location MW4-02

Figure C.8. Monitoring location MW4-02

Figure C.9. Monitoring location MW5-02

Figure C.10. Monitoring location MW5-02

Figure C.11. Monitoring location MW6-02

Figure C.12. Monitoring location MW6-02

Figure C.13. Monitoring location MW1-03

Figure C.14. Monitoring location MW1-03

Figure C.15. Monitoring location MW1-15

Figure C.16. Monitoring location MW1-15

Figure C.17. Monitoring location MW2-15

Figure C.18. Monitoring location MW2-15

Figure C.19. Monitoring Location MW3-15

Figure C.20. Monitoring Location MW3-15

Figure C.21. Monitoring location MW4-15

Figure C.22. Monitoring location MW4-15

Figure C.23. Monitoring location MW1-17

Figure C.24. Monitoring location MW1-17

Figure C.25. Monitoring location MW2-17

Figure C.26. Monitoring Location MW2-17

Figure C.27. Monitoring location MW1-20

Figure C.28. Monitoring location MW1-20

Figure C.29. Surface water location SW1

Figure C.30. Surface water location SW2

Figure C.31. Surface water location SW3

Figure C.32. Surface water location SW4

Figure C.33. Surface water location SW5

Figure C.34. Surface water location SW6

Figure C.3. Surface water location SW7

Appendix D
Observation Well and Surface Water Sampling Protocol

GROUNDWATER MONITORING AND SAMPLING PROTOCOL

1.0 EQUIPMENT PREPARATION

1. All field instruments shall be calibrated according the manufacturer specifications before each sampling event.

2. Sample bottles obtained from the analyzing laboratory shall be inspected for damage and to ensure that all required bottles are present.

2.0 WATER LEVEL MEASUREMENTS

1. If visiting the groundwater location for the first time or if not already collected, record GPS coordinates of the groundwater location.

2. Prior to purging/sampling, water levels shall be measured with the electronic tape.

3. Water level measurements shall be taken without the removal of the dedicated sampling device (tubing and foot-valve arrangements).

4. Water level and well depth measurements shall be taken from the top of the monitoring well. The measurement will be taken from the top of the PVC pipe and not the top of the steel protective casing or the ground level.

5. Measurements shall be recorded.

6. Thoroughly clean the measuring device after taking measurements in each monitor to eliminate contamination between wells.

3.0 PURGING PROCEDURE

1. Prior to sampling, each well shall be purged to remove the stagnant water within the well casing, to allow the sampling to be of fresh groundwater.

2. The volume of standing water in each monitoring well shall be calculated from the recorded static level and the total well depth and recorded. (For a 50 mm diameter well casing, 1 metre of water column = 2 L of water).

3. Three casing volumes shall be removed using the dedicated samplers. The purged water shall be measured into a calibrated container and the volume removed shall be recorded for each well. Slow inflow monitors shall be purged completely dry. The volume of purged water shall be recorded for each well. The water that is purged should be retained to be used for samples ONLY IF the well does not recover to allow sampling. If the purged water is used as a sample it must be clearly labelled as such.

4. Conductivity, temperature pH and dissolved oxygen values shall be field measured and recorded after the removal of each casing volume to confirm that the parameters have stabilized.

4.0 SAMPLING/SUBMISSION PROCEDURE

1. Suitable sample bottles (containing pre-measured preservatives, as required) shall be obtained from the analyzing laboratory in advance of the sampling program.

2. Field blank samples shall be collected during the same time and at the same location during the sampling program. Field blanks shall be collected in a similar manner as the sample but without using the groundwater collection equipment. Distilled water shall be used for submitting field blanks to the laboratory.

3. The number and type of field and spiked blanks shall be determined by prior consultation with the laboratory representative.

4. If possible, samples shall be collected the day following the purging exercise (to permit water-level recovery in the slower responding monitors) by means of the dedicated samplers in each monitor well.

5. Samples collected for metal determinations (which include iron and manganese) shall be field filtered before placement into the sample bottle containing acid preservative. If appreciable sediment is encountered in the sample and filtering cannot be undertaken, a sample should be collected in a clean bottle without preservative, and the sediment shall be allowed to settle before a sample is decanted for submission to a laboratory for subsequent filtering/acidification.

6. Sample bottles for volatile organics shall completely fill the sample bottle, without any air (head) space.

7. Each sample bottle shall be labelled to indicate the project name, well number, time of sample collection, preservatives added and analyses to be performed.

8. Place samples into a cooler with pre-frozen ice packs and deliver to the laboratory within 24 hours after the completion of the sampling program.

9. A Chain of Custody form shall be completed and submitted together with the samples to the laboratory.

SURFACE WATER MONITORING AND SAMPLING PROTOCOL

1. If visiting the surface water location for the first time or if not already collected, record GPS coordinates of the surface water location.

2. Disposable latex gloves shall be worn throughout the sampling procedure.

3. Conductivity, temperature, pH and dissolved oxygen shall be field measured and recorded at each sampling location.

4. If required, QA/QC blanks shall be obtained from the analyzing laboratory in advance of the sampling program. The number and type of blanks shall be determined by prior consultation with a laboratory representative.

5. Suitable sample bottles (containing pre-measured preservatives, as required) shall be obtained from the analyzing laboratory in advance of the sampling program and shall be assigned a unique sample number.

6. Samples shall be collected by partially submerging the sample bottles into the surface water, making sure to not overflow the bottles or flushing out any preservative.

7. Any observations made during sample collection shall be recorded.

8. Each sample bottle shall be labelled to indicate the project name, well number, time of sample collection, preservatives added and analyses to be performed.

9. Samples shall be placed into a cooler with pre-frozen ice packs and delivered to the laboratory within 24 hours after the completion of the sampling program.

10. A Chain of Custody form shall be completed and submitted together with the samples to the laboratory.

Appendix E
Field Record Sheets

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill WEATHER: sun/cloud, 14°C

KEC Project: 2231.01 RECORDERS: JS/BM

DESCRIPTION: MW1-02 GPS INFO:

DATE & TIME: May 17, 2022 1:03pm

Total depth of well from top of casing: 5.204 m (a)

Depth to water from top of casing: 1.170 m (b)

Height of casing above ground 0.918 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____m^3 x 1000 = 23.8 Litres

Purged 8 Litres

Meter Readings

ph	6.81
DO	29.8%
EC	0.221
Temp.	6.8°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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* Field Blank @ 2:45pm

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill WEATHER: Sun/cloud, 14 °C

KEC Project: 2231.01 RECORDERS: JS/BM

DESCRIPTION: MW2-02 GPS INFO:

DATE & TIME: May 17, 2022 3:42pm

Total depth of well from top of casing: 6.405 m (a)

Depth to water from top of casing: 2.269 m (b)

Height of casing above ground 0.719 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____m^3 x 1000 = —— Litres

Purged —— Litres

Meter Readings

ph	6.6
DO	15.8%
EC	3.660mS
Temp.	10.8 °C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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* Changed tubing *

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill WEATHER: Sun/cloud, 12°C

KEC Project: 2231.01 RECORDERS: JS/BM

DESCRIPTION: MW3-02 GPS INFO:

DATE & TIME: May 17, 2022 10:33am

Total depth of well from top of casing:	1.738	m	(a)
Depth to water from top of casing:	0.955	m	(b)
Height of casing above ground	0.851	m	

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 4.6 Litres

Purged 2 Litres

Meter Readings

ph	6.76
DO	67.7 %
EC	0.622mS
Temp.	10.3 °C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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* changed tubing *

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill WEATHER: Sun/cloud 12°C

KEC Project: 2231.01 RECORDERS: JS/BM

DESCRIPTION: MW4-02 GPS INFO:

DATE & TIME: May 17, 2022 9:09am

Total depth of well from top of casing: 4.966 m (a)

Depth to water from top of casing: 1.023 m (b)

Height of casing above ground 0.80 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____m^3 x 1000 = 23 Litres

Purged 8 Litres

Meter Readings

ph	6.62
DO	70.0%
EC	0.534mS
Temp.	9.4°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill **WEATHER:** sun/cloud, 14 °C

KEC Project: 2231.01 **RECORDERS:** JS/BM

DESCRIPTION: MW5-02 **GPS INFO:**

DATE & TIME: May 17, 2022 1:37pm

Total depth of well from top of casing:	4.624	m	(a)
Depth to water from top of casing:	1.103	m	(b)
Height of casing above ground	0.783	m	

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 20.7 Litres

Purged 5 Litres

Meter Readings

ph	7.14
DO	55.3%
EC	0.139
Temp.	7.4°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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* changed tubing *

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River landfill **WEATHER:** Sun/cloud, 12°C

KEC Project: 2231.01 **RECORDERS:** JS / BM

DESCRIPTION: MW6-02 **GPS INFO:**

DATE & TIME: May 17, 2022 10:45am

Total depth of well from top of casing: 7.185 m (a)

Depth to water from top of casing: 1.164 m (b)

Height of casing above ground 0.719 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____m^3 x 1000 = 35.5 Litres

Purged 13 Litres

Meter Readings

ph	6.80
DO	14.8%
EC	6.78 mS
Temp.	7.1

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill **WEATHER:** Sun/cloud, 12°C

KEC Project: 2231.01 **RECORDERS:** JS/BM

DESCRIPTION: MW1-03 **GPS INFO:**

DATE & TIME: May 17, 2022 11:07am

Total depth of well from top of casing: 3.56 m (a)

Depth to water from top of casing: 1.055 m (b)

Height of casing above ground 0.990 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 14.4 Litres

Purged 15 Litres

Meter Readings

ph	6.66
DO	24.3%
EC	1.733 mS
Temp.	6.6 °C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill **WEATHER:** sun/cloud, 14°C

KEC Project: 2231.01 **RECORDERS:** JS/BM

DESCRIPTION: MW 1-15 **GPS INFO:**

DATE & TIME: May 17, 2022 2:13pm

Total depth of well from top of casing:	6.7	m	(a)
Depth to water from top of casing:	2.358	m	(b)
Height of casing above ground	0.854	m	

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 25.6 Litres

Purged 26 Litres

Meter Readings

ph	6.52
DO	13.4%
EC	1.78 mS
Temp.	10.1°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill **WEATHER:** Sun/cloud, 14°C

KEC Project: 2231.01 **RECORDERS:** JS/BM

DESCRIPTION: MW2-15 **GPS INFO:**

DATE & TIME: May 17, 2022 3:19pm

Total depth of well from top of casing: 3.011 m (a)

Depth to water from top of casing: 2.122 m (b)

Height of casing above ground 1.047 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 5.2 Litres

Purged 6 Litres

Meter Readings

ph	7.01
DO	78.1%
EC	0.045 mS
Temp.	10.6

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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* Changed tubing *

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill
WEATHER: sun/cloud, 12°C
KEC Project: 2231.01
RECORDERS: JS/BM
DESCRIPTION: MW3-15
GPS INFO:
DATE & TIME: May 17, 2022 10:05am

Total depth of well from top of casing:	5.248	m	(a)
Depth to water from top of casing:	2.425	m	(b)
Height of casing above ground	0.765	m	

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 16.6 Litres

Purged 5 Litres

Meter Readings

ph	6.70
DO	24.4 %
EC	0.104 mS
Temp.	7.5 °C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill **WEATHER:** Sun/cloud, 14°C

KEC Project: 2231.01 **RECORDERS:** JS/BM

DESCRIPTION: MW4:15 **GPS INFO:**

DATE & TIME: May 17, 2022 1:56pm

Total depth of well from top of casing: 5.437 m (a)

Depth to water from top of casing: 2.442 m (b)

Height of casing above ground 0.810 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 17.6 Litres

Meter Readings

ph	6.94
DO	44.9 %
EC	0.111 mS
Temp.	7.8°C

Purged 18 Litres

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill **WEATHER:** Sun/cloud, 14°C

KEC Project: 2231.01 **RECORDERS:** JS/BM

DESCRIPTION: MW1-17 **GPS INFO:**

DATE & TIME: May 17, 2022 12:22pm

Total depth of well from top of casing: 3.058 m (a)

Depth to water from top of casing: 1.642 m (b)

Height of casing above ground 0.843 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 8.3 Litres

Meter Readings

ph	6.58
DO	33.7 %
EC	0.341 mS
Temp.	10.2 °C

Purged 1.5 Litres

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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Duplicate 9:40am

* changed tubing *

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill **WEATHER:** Sun/cloud 12°c

KEC Project: 2231.01 **RECORDERS:** JS/BM

DESCRIPTION: MW2-17 **GPS INFO:**

DATE & TIME: May 17, 2022 9:34am

Total depth of well from top of casing: 5.165 m (a)

Depth to water from top of casing: 1.983 m (b)

Height of casing above ground 0.765 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 18.7 Litres

Purged 19 Litres

Meter Readings

ph	6.85
DO	50.4%
EC	0.178 mS
Temp.	7.3

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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28		

* changed tubing *

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill **WEATHER:** Sun/Cloud 12°C

KEC Project: 2231.01 **RECORDERS:** JS/BM

DESCRIPTION: MW1-20 **GPS INFO:**

DATE & TIME: May 17, 2022 11:26am

Total depth of well from top of casing: 8.349 m (a)

Depth to water from top of casing: 1.468 m (b)

Height of casing above ground 0.855 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 40.5 Litres

Purged 41 Litres

Meter Readings

ph	6.48
DO	16.2 %
EC	2.608
Temp.	7.0 °C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill **WEATHER:** sun/cloud, 14°C

KEC Project: 2231.01 **RECORDERS:** JS/BM

DESCRIPTION: SW1 **GPS INFO:**

DATE & TIME: May 17, 2022 3:25pm

Total depth of well from top of casing: – m (a)

Depth to water from top of casing: – m (b)

Height of casing above ground – m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = – Litres

Purged – Litres

Meter Readings

ph	7.80
DO	142.5%
EC	0.935
Temp.	19.9°C

Recovery Time of Well

Observation No.	Time	Depth
1		
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Observation No.	Time	Depth
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* SW 3-location dry *

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill
WEATHER: sun/cloud, 14°C
KEC Project: 2231.01
RECORDERS: JS/BM
DESCRIPTION: SW2
GPS INFO:
DATE & TIME: May 17, 2022 4:41pm

Total depth of well from top of casing: — m (a)
Depth to water from top of casing: — m (b)
Height of casing above ground — m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____m^3 x 1000 = —Litres

Purged —Litres

Meter Readings

ph	8.08
DO	114.3%
EC	0.288 mS
Temp.	18.6°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill **WEATHER:** sun/cloud, 14°C

KEC Project: 2231.01 **RECORDERS:** JS/BM

DESCRIPTION: SW4 **GPS INFO:**

DATE & TIME: May 17, 2022 2:13pm

Total depth of well from top of casing: — m (a)

Depth to water from top of casing: — m (b)

Height of casing above ground — m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = — Litres

Purged — Litres

Meter Readings

ph	7.23
DO	160.1%
EC	0.705
Temp.	20.1°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill **WEATHER:** Sun/cloud, 14°C

KEC Project: 2231.01 **RECORDERS:** JS/BM

DESCRIPTION: SW5 **GPS INFO:**

DATE & TIME: May 17, 2022 3:11 pm

Total depth of well from top of casing: – m (a)

Depth to water from top of casing: – m (b)

Height of casing above ground – m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____m^3 x 1000 = –Litres

Purged –Litres

Meter Readings

ph	7.32
DO	94.8%
EC	0.456 mS
Temp.	17.0 °C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill WEATHER: sun/cloud, 14°C

KEC Project: 2231.01 RECORDERS: JS/BM

DESCRIPTION: SW6 GPS INFO:

DATE & TIME: May 17, 2022 1:17 pm

Total depth of well from top of casing: — m (a)

Depth to water from top of casing: — m (b)

Height of casing above ground — m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____m^3 x 1000 = — Litres

Purged — Litres

Meter Readings

ph	7.01
DO	104.8
EC	0.072 mS
Temp.	19.5°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill WEATHER: Sno/cloud, 14°C

KEC Project: 2231.01 RECORDERS: JS/BM

DESCRIPTION: SW7 GPS INFO:

DATE & TIME: May 17, 2022 4:22pm

Total depth of well from top of casing: — m (a)

Depth to water from top of casing: — m (b)

Height of casing above ground — m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = —— Litres

Purged — Litres

Meter Readings

ph	7.74
DO	105.1%
EC	1.188mS
Temp.	17.5°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill WEATHER: Sunny, 20°C

KEC Project: 2231.01 RECORDERS: JS/KS

DESCRIPTION: MW1-02 GPS INFO:

DATE & TIME: Sept. 21, 2022 12:05

Total depth of well from top of casing: 5.204 m (a)

Depth to water from top of casing: 2.621 m (b)

Height of casing above ground 0.919 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____m^3 x 1000 = 15.2 Litres

Meter Readings

ph	6.41
DO	33.4%
EC	0.228 mS
Temp.	11.8°C

Purged 4 Litres

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill
WEATHER: Sunny, 22°C
KEC Project: 2231.01
RECORDERS: JS/KS
DESCRIPTION: MW2-02
GPS INFO:
DATE & TIME: Sept. 21, 2022

Total depth of well from top of casing: 6.409 m (a)
Depth to water from top of casing: 2.385 m (b)
Height of casing above ground 0.719 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 23.7 Litres

Purged 24 Litres

Meter Readings

ph	6.51
DO	33.2%
EC	3.650 mS
Temp.	12.8°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill
WEATHER: Overcast, 19°C
KEC Project: 2231.01
RECORDERS: JS/KS
DESCRIPTION: MW3-02
GPS INFO:
DATE & TIME: Sept. 21, 2022

Total depth of well from top of casing: 1.739 m (a)
Depth to water from top of casing: 1.169 m (b)
Height of casing above ground 0.938 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 3.3 Litres

Meter Readings

ph	6.38
DO	71.2%
EC	0.641 mS
Temp.	16°C

Purged 1 Litres

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Bluid River Landfill **WEATHER:** overcast, 19°C

KEC Project: 2231.01 **RECORDERS:** JS/KS

DESCRIPTION: MW4-02 **GPS INFO:**

DATE & TIME: Sept. 21, 2022 9:23 am

Total depth of well from top of casing: 4.967 m (a)

Depth to water from top of casing: 1.225 m (b)

Height of casing above ground 0.782 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____m^3 x 1000 = 22 Litres

Meter Readings

ph 5.71

DO 26.2%

EC 0.418 mS

Temp. 11.9°C

Purged 9 Litres

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill
WEATHER: Sunny, 20°C
KEC Project: 2231.01
RECORDERS: JS/KS
DESCRIPTION: MWS-02
GPS INFO:
DATE & TIME: Sept 21, 2022 12:51pm

Total depth of well from top of casing: 4.630 m (a)
Depth to water from top of casing: 1.356 m (b)
Height of casing above ground 0.796 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 19.3 Litres

Meter Readings

ph	6.90
DO	63.3 %
EC	0.140 mS
Temp.	12.8°C

Purged 5 Litres

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill
WEATHER: overcast, 19°C
KEC Project: 2231.01
RECORDERS: JS/KS
DESCRIPTION: MW16-02
GPS INFO:
DATE & TIME: Sept. 21, 2022 9:48am

Total depth of well from top of casing: 7.428 m (a)
Depth to water from top of casing: 1.582 m (b)
Height of casing above ground 0.797 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____m^3 x 1000 = 34.4 Litres

Purged 13 Litres

Meter Readings

ph	6.31
DO	17.3 %
EC	0.650 mS
Temp.	10.1°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill — WEATHER: overcast, 19°C

KEC Project: 2231.01 — RECORDERS: JS/KS

DESCRIPTION: MW1-03 — GPS INFO:

DATE & TIME: Sept. 21, 2022 10:32am

Total depth of well from top of casing:	3.504	m	(a)
Depth to water from top of casing:	1.255	m	(b)
Height of casing above ground	1.037	m	

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 13.2 Litres

Meter Readings

ph	6.07
DO	20.5%
EC	1.834mS
Temp.	12.9°C

Purged 13.5 Litres

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill WEATHER: Sunny, 22°C

KEC Project: 2231.01 RECORDERS: JS/KS

DESCRIPTION: MW1-15 GPS INFO:

DATE & TIME: Sept. 21, 2022 1:29pm

Total depth of well from top of casing: 6.745 m (a)

Depth to water from top of casing: 2.612 m (b)

Height of casing above ground 0.857 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 24 Litres

Meter Readings

ph	6.49
DO	19.4 %
EC	1.639 mS
Temp.	11.8°C

Purged 24 Litres

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River landfill **WEATHER:** Sunny, 22°C

KEC Project: 2231.01 RECORDERS: JS/KS

DESCRIPTION: MW2-15 GPS INFO:

DATE & TIME: Sept. 21, 2022 3:07pm

Total depth of well from top of casing: 3.01 m (a)

Depth to water from top of casing: 2.985 m (b)

Height of casing above ground 1.035 m

Calculate Purge Volume

- DRY -

* Not enough to get up casing *

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____m^3 x 1000 = _____ Litres

Purged _____ Litres

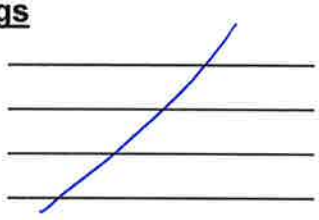
Meter Readings

ph

DO

EC

Temp.



Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill WEATHER: overcast, 19°C

KEC Project: 2231.01 RECORDERS: JS/KS

DESCRIPTION: MW3-15 GPS INFO:

DATE & TIME: Sept. 21, 2022 8:40 am

Total depth of well from top of casing: 5.245 m (a)

Depth to water from top of casing: 3.426 m (b)

Height of casing above ground 0.745 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 10.7 Litres

Meter Readings

ph	5.30
DO	39.2%
EC	0.088mS
Temp.	12.7°C

Purged 2.5 Litres

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill **WEATHER:** Sunny, 22°C

KEC Project: 2231.01 **RECORDERS:** JS/KS

DESCRIPTION: MW4-15 **GPS INFO:**

DATE & TIME: Sept. 21, 2022 1:13pm

Total depth of well from top of casing:	5.463	m	(a)
Depth to water from top of casing:	3.359	m	(b)
Height of casing above ground	0.843	m	

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 12.4 Litres

Purged 12.4 Litres

Meter Readings

ph	6.08
DO	38.3%
EC	0.149mS
Temp.	12.2°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River landfill WEATHER: overcast, 19°C

KEC Project: 2131.01 RECORDERS: JS/KS

DESCRIPTION: MW1-17 GPS INFO:

DATE & TIME: Sept. 21, 2022 11:30am

Total depth of well from top of casing: 3.058 m (a)

Depth to water from top of casing: 2.196 m (b)

Height of casing above ground 0.853 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 5 Litres

Meter Readings

ph	6.67
DO	55.7%
EC	0.360 mS
Temp.	16.0°C

Purged 0.5 Litres

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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Duplicate 9:05am

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill
WEATHER: overcast, 19°C
KEC Project: 2231.01
RECORDERS: JS/KS
DESCRIPTION: MW2-17
GPS INFO:
DATE & TIME: Sept. 21, 2022 8:57am

Total depth of well from top of casing: 5.177 m (a)
Depth to water from top of casing: 2.299 m (b)
Height of casing above ground 0.757 m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 17 Litres

Purged 17 Litres

Meter Readings

ph	4.82
DO	35.2%
EC	0.178 mS
Temp.	10.9°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind Rivers Landfill **WEATHER:** Overcast, 19°C

KEC Project: 2231.01 **RECORDERS:** JS/KS

DESCRIPTION: MW1-20 **GPS INFO:**

DATE & TIME: Sept. 21, 2022 10:51am

Total depth of well from top of casing:	8.399	m	(a)
Depth to water from top of casing:	1.713	m	(b)
Height of casing above ground	0.850	m	

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = 39.4 Litres

Purged 40 Litres

Meter Readings

ph	6.36
DO	26.0%
EC	2.845 mS
Temp.	8.9°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill **WEATHER:** Sunny, 22°C

KEC Project: 2231.01 **RECORDERS:** JS & KS

DESCRIPTION: SW1 **GPS INFO:**

DATE & TIME: Sept. 21, 2022 3:19pm

Total depth of well from top of casing: — m (a)

Depth to water from top of casing: — m (b)

Height of casing above ground — m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____m^3 x 1000 = —Litres

Purged —Litres

Meter Readings

ph	7.93
DO	136.6
EC	1.065mS
Temp.	25.7°C

Recovery Time of Well

Observation No.	Time	Depth
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Observation No.	Time	Depth
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MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill WEATHER: Sunny, 22°C

KEC Project: 2231.01 RECORDERS: JS/KS

DESCRIPTION: SW2 GPS INFO:

DATE & TIME: Sept. 21, 2022 4:03 pm

Total depth of well from top of casing: — m (a)

Depth to water from top of casing: — m (b)

Height of casing above ground — m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____m^3 x 1000 = —— Litres

Purged — Litres

Meter Readings

ph	7.70
DO	79.8%
EC	0.756
Temp.	20.9 °C

Recovery Time of Well

Observation No.	Time	Depth
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

Observation No.	Time	Depth
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill
WEATHER: Sunny, 22°C
KEC Project: 2231.01
RECORDERS: JS/KS
DESCRIPTION: SW3
GPS INFO:
DATE & TIME: Sept. 21, 2022

Total depth of well from top of casing: — m (a)
Depth to water from top of casing: — m (b)
Height of casing above ground — m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = — Litres

DRY

Purged — Litres

Meter Readings

ph
DO
EC
Temp.

Recovery Time of Well

Observation No.	Time	Depth
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

Observation No.	Time	Depth
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill WEATHER: Sunny 22°C

KEC Project: 2231.01 RECORDERS: JS/KS

DESCRIPTION: SW4 GPS INFO:

DATE & TIME: Sept 21, 2022 3:39pm

Total depth of well from top of casing: — m (a)

Depth to water from top of casing: — m (b)

Height of casing above ground — m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = — Litres

Purged — Litres

Meter Readings

ph	7.60
DO	43.4 %
EC	0.615mS
Temp.	26.1°C

Recovery Time of Well

Observation No.	Time	Depth
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

Observation No.	Time	Depth
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill
WEATHER: Sunny, 20°C
KEC Project: 2231.01
RECORDERS: JS/KS
DESCRIPTION: SW5
GPS INFO:
DATE & TIME: Sept. 21, 2022 2:29pm

Total depth of well from top of casing: – m (a)
Depth to water from top of casing: – m (b)
Height of casing above ground – m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = – Litres

Meter Readings

ph	7.39
DO	38.8%
EC	0.906 mS
Temp.	19.6°C

Purged – Litres

Recovery Time of Well

Observation No.	Time	Depth
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

Observation No.	Time	Depth
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill — WEATHER: Sunny, 20°C

KEC Project: 2231.01 — RECORDERS: JS/KS

DESCRIPTION: SW6 — GPS INFO:

DATE & TIME: Sept. 21, 2022 12:31

Total depth of well from top of casing:	–	m	(a)
Depth to water from top of casing:	–	m	(b)
Height of casing above ground	–	m	

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = – Litres

Purged – Litres

Meter Readings

ph	6.77
DO	125.0%
EC	0.114 mS
Temp.	21.6°C

Recovery Time of Well

Observation No.	Time	Depth
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

Observation No.	Time	Depth
15		
16		
17		
18		
19		
20		
21		
22		
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25		
26		
27		
28		

* Field Blank 3:45pm *

MONITORING WELL RECORD SHEET

KRESIN Engineering Corporation

PROJECT : Blind River Landfill
WEATHER: Sunny, 22°C
KEC Project: 2231.01
RECORDERS: JS/KS
DESCRIPTION: SW7
GPS INFO:
DATE & TIME: Sept. 21, 2022

Total depth of well from top of casing: — m (a)
Depth to water from top of casing: — m (b)
Height of casing above ground — m

Calculate Purge Volume

Note: calc is 3 volumes for 2" well

V= 3 x 0.025^2 x π x (total well depth (a) - distance to water (b))

V= (5.89049×10^{-3}) x (_____ - _____)

V= _____ m^3 x 1000 = — Litres

Purged — Litres

Meter Readings

ph	8.45
DO	1.706
EC	0.704mS
Temp.	23°C

Recovery Time of Well

Observation No.	Time	Depth
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

Observation No.	Time	Depth
15		
16		
17		
18		
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28		

Appendix F
Laboratory Analytical Results

KRESIN ENGINEERING CORP.
ATTN: Jennifer Sharpe
536 Fourth Line East
Sault Ste Marie ON P6A 5K8

Date Received: 18-MAY-22
Report Date: 15-JUN-22 19:00 (MT)
Version: FINAL

Client Phone: 705-949-4900

Certificate of Analysis

Lab Work Order #: L2707633

Project P.O. #: NOT SUBMITTED
Job Reference: BLIND RIVER LANDFILL
C of C Numbers:
Legal Site Desc:

Christine Paradis
Project Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-1 MW1-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 13:03 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	170		1.0	uS/cm		19-MAY-22	R5785798
Hardness (as CaCO3)	91.7		0.50	mg/L		25-MAY-22	
pH	7.61		0.10	pH		19-MAY-22	R5785798
Total Suspended Solids	310		3.0	mg/L		19-MAY-22	R5785634
Total Dissolved Solids	168		13	mg/L		19-MAY-22	R5785648
Anions and Nutrients							
Acceptable % Difference	FAIL	BL:INT				08-JUN-22	
Alkalinity, Bicarbonate (as CaCO3)	79.3		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	79.3		2.0	mg/L		19-MAY-22	R5785798
Ammonia, Total (as N)	0.0341		0.0050	mg/L	19-MAY-22	27-MAY-22	R5789997
Chloride (Cl)	0.86		0.10	mg/L	19-MAY-22	03-JUN-22	R5795606
Fluoride (F)	0.023		0.020	mg/L	19-MAY-22	03-JUN-22	R5795606
Nitrate (as N)	0.102	HTD	0.020	mg/L	19-MAY-22	03-JUN-22	R5795606
Nitrite (as N)	<0.010	HTD	0.010	mg/L	19-MAY-22	03-JUN-22	R5795606
Organic Nitrogen	0.261		0.050	mg/L		27-MAY-22	
Total Kjeldahl Nitrogen	0.30		0.25	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	0.858		0.030	mg/L	24-MAY-22	27-MAY-22	R5788152
Sulfate (SO4)	9.29		0.30	mg/L	19-MAY-22	03-JUN-22	R5795606
Anion Sum	1.81			meq/L		08-JUN-22	
Cation Sum	2.18			meq/L		08-JUN-22	
Cation - Anion Balance	9.3			%		08-JUN-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	3.11		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-MAY-22	R5786192
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786250
Arsenic (As)-Dissolved	0.00037		0.00010	mg/L	24-MAY-22	25-MAY-22	R5786639
Barium (Ba)-Dissolved	0.0124		0.00010	mg/L	24-MAY-22	25-MAY-22	R5786639
Boron (B)-Dissolved	0.018		0.010	mg/L	24-MAY-22	25-MAY-22	R5786639
Cadmium (Cd)-Dissolved	0.0000091		0.0000050	mg/L	24-MAY-22	25-MAY-22	R5786639
Calcium (Ca)-Dissolved	23.4		0.050	mg/L	24-MAY-22	25-MAY-22	R5786639
Chromium (Cr)-Dissolved	0.00056		0.00050	mg/L	24-MAY-22	25-MAY-22	R5786639
Iron (Fe)-Dissolved	0.020		0.010	mg/L	24-MAY-22	25-MAY-22	R5786639
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-22	25-MAY-22	R5786639
Magnesium (Mg)-Dissolved	8.07		0.0050	mg/L	24-MAY-22	25-MAY-22	R5786639
Manganese (Mn)-Dissolved	0.0169		0.00050	mg/L	24-MAY-22	25-MAY-22	R5786639
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786396

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-1 MW1-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 13:03 Matrix: Groundwater							
Dissolved Metals							
Potassium (K)-Dissolved	1.65		0.050	mg/L	24-MAY-22	25-MAY-22	R5786639
Sodium (Na)-Dissolved	6.91		0.050	mg/L	24-MAY-22	25-MAY-22	R5786639
Zinc (Zn)-Dissolved	0.0017		0.0010	mg/L	24-MAY-22	25-MAY-22	R5786639
Aggregate Organics							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	49		10	mg/L	19-MAY-22	25-MAY-22	R5786790
Phenols (4AAP)	<0.0010		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0		5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50		0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	99.2		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	104.5		70-130	%		25-MAY-22	R5786153
L2707633-2 MW2-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 15:42 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	3670		1.0	uS/cm		19-MAY-22	R5785798
Hardness (as CaCO3)	806		1.3	mg/L		25-MAY-22	
pH	7.17		0.10	pH		19-MAY-22	R5785798
Total Suspended Solids	191		3.0	mg/L		19-MAY-22	R5785634
Total Dissolved Solids	1790		40	mg/L		19-MAY-22	R5785648
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	1650		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	1650		2.0	mg/L		19-MAY-22	R5785798
Ammonia, Total (as N)	141		2.5	mg/L	19-MAY-22	27-MAY-22	R5789997
Chloride (Cl)	229		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	0.025		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	22.0		0.050	mg/L		27-MAY-22	
Total Kjeldahl Nitrogen	163		4.0	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	0.657		0.030	mg/L	24-MAY-22	26-MAY-22	R5788152
Sulfate (SO4)	1.39		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	39.4			meq/L		25-MAY-22	
Cation Sum	34.6			meq/L		25-MAY-22	
Cation - Anion Balance	-6.5			%		25-MAY-22	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-2 MW2-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 15:42 Matrix: Groundwater							
Anions and Nutrients							
Cyanides							
Cyanide, Total	0.0023		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	82.1	DLM	2.5	mg/L	17-MAY-22	26-MAY-22	R5788877
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-MAY-22	R5786192
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786250
Arsenic (As)-Dissolved	<0.0010	DLHC	0.0010	mg/L	24-MAY-22	25-MAY-22	R5786639
Barium (Ba)-Dissolved	0.423	DLHC	0.0010	mg/L	24-MAY-22	25-MAY-22	R5786639
Boron (B)-Dissolved	2.06	DLHC	0.10	mg/L	24-MAY-22	25-MAY-22	R5786639
Cadmium (Cd)-Dissolved	<0.000050	DLHC	0.000050	mg/L	24-MAY-22	25-MAY-22	R5786639
Calcium (Ca)-Dissolved	191	DLHC	0.50	mg/L	24-MAY-22	25-MAY-22	R5786639
Chromium (Cr)-Dissolved	<0.0050	DLHC	0.0050	mg/L	24-MAY-22	25-MAY-22	R5786639
Iron (Fe)-Dissolved	62.9	DLHC	0.10	mg/L	24-MAY-22	25-MAY-22	R5786639
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	24-MAY-22	25-MAY-22	R5786639
Magnesium (Mg)-Dissolved	79.8	DLHC	0.050	mg/L	24-MAY-22	25-MAY-22	R5786639
Manganese (Mn)-Dissolved	0.427	DLHC	0.0050	mg/L	24-MAY-22	25-MAY-22	R5786639
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786396
Potassium (K)-Dissolved	173	DLHC	0.50	mg/L	24-MAY-22	25-MAY-22	R5786639
Sodium (Na)-Dissolved	246	DLHC	0.50	mg/L	24-MAY-22	25-MAY-22	R5786639
Zinc (Zn)-Dissolved	<0.010	DLHC	0.010	mg/L	24-MAY-22	25-MAY-22	R5786639
Aggregate Organics							
Biochemical Oxygen Demand	9.9		3.3	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	284		10	mg/L	19-MAY-22	25-MAY-22	R5786790
Phenols (4AAP)	0.0053		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	2.63		0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	1.04		0.50	ug/L		26-MAY-22	R5787619
Dichloromethane	<5.0		5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50		0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	99.3		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	103.9		70-130	%		25-MAY-22	R5786153
L2707633-3 MW3-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 10:33 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	639		1.0	uS/cm		19-MAY-22	R5785798
Hardness (as CaCO3)	212		0.50	mg/L		25-MAY-22	
pH	8.20		0.10	pH		19-MAY-22	R5785798
Total Suspended Solids	77.3		3.0	mg/L		19-MAY-22	R5785634

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-3 MW3-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 10:33 Matrix: Groundwater							
Physical Tests							
Total Dissolved Solids	393		20	mg/L		19-MAY-22	R5785648
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	277		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	277		2.0	mg/L		19-MAY-22	R5785798
Ammonia, Total (as N)	0.198		0.0050	mg/L	19-MAY-22	27-MAY-22	R5789997
Chloride (Cl)	36.3		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	0.021		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	0.877		0.050	mg/L		30-MAY-22	
Total Kjeldahl Nitrogen	1.07		0.050	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	0.0662		0.0030	mg/L	25-MAY-22	26-MAY-22	R5788152
Sulfate (SO4)	<0.30		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	6.55			meq/L		25-MAY-22	
Cation Sum	6.45			meq/L		25-MAY-22	
Cation - Anion Balance	-0.8			%		25-MAY-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	18.2		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-MAY-22	R5786192
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786250
Arsenic (As)-Dissolved	0.00028		0.00010	mg/L	24-MAY-22	25-MAY-22	R5786639
Barium (Ba)-Dissolved	0.0198		0.00010	mg/L	24-MAY-22	25-MAY-22	R5786639
Boron (B)-Dissolved	0.309		0.010	mg/L	24-MAY-22	25-MAY-22	R5786639
Cadmium (Cd)-Dissolved	0.0000118		0.0000050	mg/L	24-MAY-22	25-MAY-22	R5786639
Calcium (Ca)-Dissolved	58.5		0.050	mg/L	24-MAY-22	25-MAY-22	R5786639
Chromium (Cr)-Dissolved	0.00081		0.00050	mg/L	24-MAY-22	25-MAY-22	R5786639
Iron (Fe)-Dissolved	0.467		0.010	mg/L	24-MAY-22	25-MAY-22	R5786639
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-22	25-MAY-22	R5786639
Magnesium (Mg)-Dissolved	16.1		0.0050	mg/L	24-MAY-22	25-MAY-22	R5786639
Manganese (Mn)-Dissolved	0.458		0.00050	mg/L	24-MAY-22	25-MAY-22	R5786639
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786396
Potassium (K)-Dissolved	26.8		0.050	mg/L	24-MAY-22	25-MAY-22	R5786639
Sodium (Na)-Dissolved	33.9		0.050	mg/L	24-MAY-22	25-MAY-22	R5786639
Zinc (Zn)-Dissolved	0.0092		0.0010	mg/L	24-MAY-22	25-MAY-22	R5786639
Aggregate Organics							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-3 MW3-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 10:33 Matrix: Groundwater							
Aggregate Organics							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	64		10	mg/L	19-MAY-22	24-MAY-22	R5786315
Phenols (4AAP)	<0.0010		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0		5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50		0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	97.8		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	103.5		70-130	%		25-MAY-22	R5786153
L2707633-4 MW4-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 09:09 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	426		1.0	uS/cm		19-MAY-22	R5785798
Hardness (as CaCO3)	114		0.50	mg/L		25-MAY-22	
pH	7.45		0.10	pH		19-MAY-22	R5785798
Total Suspended Solids	518		3.0	mg/L		19-MAY-22	R5785634
Total Dissolved Solids	298		20	mg/L		19-MAY-22	R5785648
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	126		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	126		2.0	mg/L		19-MAY-22	R5785798
Ammonia, Total (as N)	0.424		0.010	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	51.6		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	0.765		0.050	mg/L		31-MAY-22	
Total Kjeldahl Nitrogen	1.19		0.050	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	0.308		0.030	mg/L	25-MAY-22	27-MAY-22	R5788152
Sulfate (SO4)	1.34		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	4.01			meq/L		25-MAY-22	
Cation Sum	4.15			meq/L		25-MAY-22	
Cation - Anion Balance	1.7			%		25-MAY-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD	PEHT				21-MAY-22	R5785950

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-4 MW4-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 09:09 Matrix: Groundwater							
Organic / Inorganic Carbon							
Dissolved Organic Carbon	6.70		0.50	mg/L	21-MAY-22	26-MAY-22	R5788999
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-MAY-22	R5786192
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786250
Arsenic (As)-Dissolved	0.00021		0.00010	mg/L	24-MAY-22	25-MAY-22	R5786639
Barium (Ba)-Dissolved	0.0664		0.00010	mg/L	24-MAY-22	25-MAY-22	R5786639
Boron (B)-Dissolved	0.068		0.010	mg/L	24-MAY-22	25-MAY-22	R5786639
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	25-MAY-22	R5786639
Calcium (Ca)-Dissolved	29.4		0.050	mg/L	24-MAY-22	25-MAY-22	R5786639
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	24-MAY-22	25-MAY-22	R5786639
Iron (Fe)-Dissolved	5.33		0.010	mg/L	24-MAY-22	25-MAY-22	R5786639
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-22	25-MAY-22	R5786639
Magnesium (Mg)-Dissolved	9.79		0.0050	mg/L	24-MAY-22	25-MAY-22	R5786639
Manganese (Mn)-Dissolved	0.414		0.00050	mg/L	24-MAY-22	25-MAY-22	R5786639
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786396
Potassium (K)-Dissolved	8.02		0.050	mg/L	24-MAY-22	25-MAY-22	R5786639
Sodium (Na)-Dissolved	31.5		0.050	mg/L	24-MAY-22	25-MAY-22	R5786639
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-MAY-22	25-MAY-22	R5786639
Aggregate Organics							
Biochemical Oxygen Demand	3.1		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	51		10	mg/L	19-MAY-22	24-MAY-22	R5786315
Phenols (4AAP)	<0.0010		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0	OWP	5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	96.4		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	103.7		70-130	%		25-MAY-22	R5786153
L2707633-5 MW5-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 13:37 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	117		1.0	uS/cm		19-MAY-22	R5785798
Hardness (as CaCO3)	48.5		0.50	mg/L		25-MAY-22	
pH	7.82		0.10	pH		19-MAY-22	R5785798
Total Suspended Solids	130		3.0	mg/L		19-MAY-22	R5785634
Total Dissolved Solids	89		13	mg/L		19-MAY-22	R5785648
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	48.8		2.0	mg/L		18-MAY-22	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-5 MW5-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 13:37 Matrix: Groundwater							
Anions and Nutrients							
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	48.8		2.0	mg/L		19-MAY-22	R5785798
Ammonia, Total (as N)	0.0244		0.0050	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	1.05		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	0.022		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	0.154		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	0.113		0.050	mg/L		31-MAY-22	
Total Kjeldahl Nitrogen	0.137		0.050	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	0.0456		0.0030	mg/L	20-MAY-22	24-MAY-22	R5787864
Sulfate (SO4)	9.52		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	1.22			meq/L		25-MAY-22	
Cation Sum	1.14			meq/L		25-MAY-22	
Cation - Anion Balance	-3.3			%		25-MAY-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	3.35		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-MAY-22	R5786192
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786250
Arsenic (As)-Dissolved	0.00020		0.00010	mg/L	24-MAY-22	25-MAY-22	R5786639
Barium (Ba)-Dissolved	0.00762		0.00010	mg/L	24-MAY-22	25-MAY-22	R5786639
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-MAY-22	25-MAY-22	R5786639
Cadmium (Cd)-Dissolved	0.0000128		0.0000050	mg/L	24-MAY-22	25-MAY-22	R5786639
Calcium (Ca)-Dissolved	12.9		0.050	mg/L	24-MAY-22	25-MAY-22	R5786639
Chromium (Cr)-Dissolved	0.00408		0.00050	mg/L	24-MAY-22	25-MAY-22	R5786639
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-MAY-22	25-MAY-22	R5786639
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-22	25-MAY-22	R5786639
Magnesium (Mg)-Dissolved	3.98		0.0050	mg/L	24-MAY-22	25-MAY-22	R5786639
Manganese (Mn)-Dissolved	0.00076		0.00050	mg/L	24-MAY-22	25-MAY-22	R5786639
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786396
Potassium (K)-Dissolved	0.985		0.050	mg/L	24-MAY-22	25-MAY-22	R5786639
Sodium (Na)-Dissolved	3.30		0.050	mg/L	24-MAY-22	25-MAY-22	R5786639
Zinc (Zn)-Dissolved	0.0065		0.0010	mg/L	24-MAY-22	25-MAY-22	R5786639
Aggregate Organics							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	14		10	mg/L	19-MAY-22	24-MAY-22	R5786315
Phenols (4AAP)	0.0016		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-5 MW5-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 13:37 Matrix: Groundwater							
Volatile Organic Compounds							
Benzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0		5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50		0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	96.5		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	103.5		70-130	%		25-MAY-22	R5786153
L2707633-6 MW6-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 10:45 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	533		1.0	uS/cm		19-MAY-22	R5785798
Hardness (as CaCO3)	212		0.50	mg/L		25-MAY-22	
pH	7.70		0.10	pH		19-MAY-22	R5785798
Total Suspended Solids	587		3.0	mg/L		19-MAY-22	R5785634
Total Dissolved Solids	333		20	mg/L		19-MAY-22	R5785648
Anions and Nutrients							
Acceptable % Difference	FAIL	BL:INT				25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	198		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	198		2.0	mg/L		19-MAY-22	R5785798
Ammonia, Total (as N)	2.01		0.050	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	46.9		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	0.024		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	0.014		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	0.279		0.050	mg/L		31-MAY-22	
Total Kjeldahl Nitrogen	2.29		0.050	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	0.405		0.030	mg/L	20-MAY-22	25-MAY-22	R5787864
Sulfate (SO4)	<0.30		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	5.27			meq/L		25-MAY-22	
Cation Sum	6.56			meq/L		25-MAY-22	
Cation - Anion Balance	10.9			%		25-MAY-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	13.9		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Dissolved Metals							
Dissolved Mercury Filtration Location	LAB					24-MAY-22	R5786192
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-6 MW6-02 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 10:45 Matrix: Groundwater							
Dissolved Metals							
Arsenic (As)-Dissolved	0.00085		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Barium (Ba)-Dissolved	0.189		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Boron (B)-Dissolved	0.114		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Calcium (Ca)-Dissolved	59.9		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Chromium (Cr)-Dissolved	0.00063		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Iron (Fe)-Dissolved	18.9		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Magnesium (Mg)-Dissolved	15.2		0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Manganese (Mn)-Dissolved	1.07		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786396
Potassium (K)-Dissolved	5.88		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Sodium (Na)-Dissolved	25.8		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	0.0025		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	6.7		3.3	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	59		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0014		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0		5.0	ug/L		25-MAY-22	R5786153
Toluene	0.50		0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50		0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	96.0		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	103.4		70-130	%		25-MAY-22	R5786153
L2707633-7 MW1-03 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 11:07 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	1640		1.0	uS/cm		19-MAY-22	R5785798
Hardness (as CaCO3)	156		1.3	mg/L		25-MAY-22	
pH	7.99		0.10	pH		19-MAY-22	R5785798
Total Suspended Solids	108		3.0	mg/L		19-MAY-22	R5785634
Total Dissolved Solids	895		20	mg/L		19-MAY-22	R5785648
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	225		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	225		2.0	mg/L		19-MAY-22	R5785798
Ammonia, Total (as N)	1.68		0.050	mg/L	19-MAY-22	30-MAY-22	R5790879

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-7 MW1-03 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 11:07 Matrix: Groundwater							
Anions and Nutrients							
Chloride (Cl)	338		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	0.650		0.050	mg/L		31-MAY-22	
Total Kjeldahl Nitrogen	2.33		0.050	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	0.242		0.030	mg/L	20-MAY-22	25-MAY-22	R5787864
Sulfate (SO4)	2.43		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	14.1			meq/L		25-MAY-22	
Cation Sum	15.6			meq/L		25-MAY-22	
Cation - Anion Balance	5.1			%		25-MAY-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	22.0	DLM	2.5	mg/L	17-MAY-22	26-MAY-22	R5788877
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					25-MAY-22	R5786534
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Arsenic (As)-Dissolved	<0.0010	DLHC	0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Barium (Ba)-Dissolved	0.285	DLHC	0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Boron (B)-Dissolved	0.29	DLHC	0.10	mg/L	24-MAY-22	24-MAY-22	R5786474
Cadmium (Cd)-Dissolved	<0.000050	DLHC	0.000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Calcium (Ca)-Dissolved	39.1	DLHC	0.50	mg/L	24-MAY-22	24-MAY-22	R5786474
Chromium (Cr)-Dissolved	<0.0050	DLHC	0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Iron (Fe)-Dissolved	10.3	DLHC	0.10	mg/L	24-MAY-22	24-MAY-22	R5786474
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Magnesium (Mg)-Dissolved	14.1	DLHC	0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Manganese (Mn)-Dissolved	0.362	DLHC	0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	25-MAY-22	25-MAY-22	R5786569
Potassium (K)-Dissolved	36.9	DLHC	0.50	mg/L	24-MAY-22	24-MAY-22	R5786474
Sodium (Na)-Dissolved	251	DLHC	0.50	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	<0.010	DLHC	0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	85		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	<0.0010		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0		5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50		0.50	ug/L		25-MAY-22	R5786153

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-7 MW1-03 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 11:07 Matrix: Groundwater							
Volatile Organic Compounds							
Vinyl chloride	<0.50		0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	95.8		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	103.6		70-130	%		25-MAY-22	R5786153
L2707633-8 MW1-15 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 14:13 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	1610		1.0	uS/cm		19-MAY-22	R5785798
Hardness (as CaCO3)	704		1.3	mg/L		25-MAY-22	
pH	7.14		0.10	pH		19-MAY-22	R5785798
Total Suspended Solids	4530		15	mg/L		19-MAY-22	R5785634
Total Dissolved Solids	1050		40	mg/L		19-MAY-22	R5785648
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	827		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	827		2.0	mg/L		19-MAY-22	R5785798
Ammonia, Total (as N)	0.479		0.010	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	66.9		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	0.027		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	2.96		0.050	mg/L		31-MAY-22	
Total Kjeldahl Nitrogen	3.44		0.50	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	1.61		0.075	mg/L	20-MAY-22	27-MAY-22	R5790387
Sulfate (SO4)	0.66		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	18.4			meq/L		25-MAY-22	
Cation Sum	16.8			meq/L		25-MAY-22	
Cation - Anion Balance	-4.6			%		25-MAY-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	23.1	DLM	2.5	mg/L	17-MAY-22	26-MAY-22	R5788877
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					25-MAY-22	R5786534
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Arsenic (As)-Dissolved	0.0097	DLHC	0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Barium (Ba)-Dissolved	0.158	DLHC	0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Boron (B)-Dissolved	1.06	DLHC	0.10	mg/L	24-MAY-22	24-MAY-22	R5786474
Cadmium (Cd)-Dissolved	<0.000050	DLHC	0.000050	mg/L	24-MAY-22	24-MAY-22	R5786474

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-8 MW1-15 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 14:13 Matrix: Groundwater							
Dissolved Metals							
Calcium (Ca)-Dissolved	174	DLHC	0.50	mg/L	24-MAY-22	24-MAY-22	R5786474
Chromium (Cr)-Dissolved	<0.0050	DLHC	0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Iron (Fe)-Dissolved	7.51	DLHC	0.10	mg/L	24-MAY-22	24-MAY-22	R5786474
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Magnesium (Mg)-Dissolved	65.7	DLHC	0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Manganese (Mn)-Dissolved	2.83	DLHC	0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	25-MAY-22	25-MAY-22	R5786569
Potassium (K)-Dissolved	3.59	DLHC	0.50	mg/L	24-MAY-22	24-MAY-22	R5786474
Sodium (Na)-Dissolved	49.1	DLHC	0.50	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	<0.010	DLHC	0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	153		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0017		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	0.67	OWP	0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0	OWP	5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	95.2		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	103.4		70-130	%		25-MAY-22	R5786153
L2707633-9 MW2-15 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 15:19 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	36.0		1.0	uS/cm		19-MAY-22	R5785798
Hardness (as CaCO3)	10.6		0.50	mg/L		25-MAY-22	
pH	6.10		0.10	pH		19-MAY-22	R5785798
Total Suspended Solids	876		3.0	mg/L		19-MAY-22	R5785634
Total Dissolved Solids	37		10	mg/L		19-MAY-22	R5785648
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	9.8		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	9.8		2.0	mg/L		19-MAY-22	R5785798
Ammonia, Total (as N)	0.020		0.010	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	1.24		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	0.516		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-9 MW2-15 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 15:19 Matrix: Groundwater							
Anions and Nutrients							
Organic Nitrogen	0.587		0.050	mg/L		31-MAY-22	
Total Kjeldahl Nitrogen	0.607		0.050	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	0.268		0.030	mg/L	20-MAY-22	25-MAY-22	R5787864
Sulfate (SO4)	1.77		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	0.30			meq/L		25-MAY-22	
Cation Sum	0.31			meq/L		25-MAY-22	
Cation - Anion Balance	1.6			%		25-MAY-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	2.93		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-MAY-22	R5786192
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Barium (Ba)-Dissolved	0.00756		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Cadmium (Cd)-Dissolved	0.0000094		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Calcium (Ca)-Dissolved	3.39		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Iron (Fe)-Dissolved	0.081		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Lead (Pb)-Dissolved	0.000103		0.000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Magnesium (Mg)-Dissolved	0.505		0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Manganese (Mn)-Dissolved	0.00517		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786396
Potassium (K)-Dissolved	0.335		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Sodium (Na)-Dissolved	1.78		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	53		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0010		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0		5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50		0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	94.9		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	102.8		70-130	%		25-MAY-22	R5786153
L2707633-10 MW3-15							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-10 MW3-15 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 10:05 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	73.4		1.0	uS/cm		19-MAY-22	R5785798
Hardness (as CaCO3)	13.7		0.50	mg/L		25-MAY-22	
pH	6.40		0.10	pH		19-MAY-22	R5785798
Total Suspended Solids	1810		3.0	mg/L		19-MAY-22	R5785634
Total Dissolved Solids	123		13	mg/L		19-MAY-22	R5785648
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	23.0		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	23.0		2.0	mg/L		19-MAY-22	R5785798
Ammonia, Total (as N)	0.018		0.010	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	6.19		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	0.030		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	0.030		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	0.485		0.050	mg/L		31-MAY-22	
Total Kjeldahl Nitrogen	0.503		0.050	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	0.477		0.030	mg/L	20-MAY-22	25-MAY-22	R5787864
Sulfate (SO4)	4.27		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	0.73			meq/L		25-MAY-22	
Cation Sum	0.76			meq/L		25-MAY-22	
Cation - Anion Balance	2.2			%		25-MAY-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD	PEHT				21-MAY-22	R5785950
Dissolved Organic Carbon	5.88		0.50	mg/L	21-MAY-22	26-MAY-22	R5788999
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-MAY-22	R5786192
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Arsenic (As)-Dissolved	0.00027		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Barium (Ba)-Dissolved	0.00618		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Boron (B)-Dissolved	0.193		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Cadmium (Cd)-Dissolved	0.0000095		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Calcium (Ca)-Dissolved	3.55		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Chromium (Cr)-Dissolved	0.00067		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Iron (Fe)-Dissolved	2.02		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Lead (Pb)-Dissolved	0.000285		0.000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Magnesium (Mg)-Dissolved	1.18		0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Manganese (Mn)-Dissolved	0.642		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Mercury (Hg)-Dissolved	0.0000073		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786396

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-10 MW3-15 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 10:05 Matrix: Groundwater							
Dissolved Metals							
Potassium (K)-Dissolved	0.362		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Sodium (Na)-Dissolved	7.72		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	0.0097		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	64		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0012		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0		5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50		0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	94.3		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	102.4		70-130	%		25-MAY-22	R5786153
L2707633-11 MW4-15 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 13:56 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	81.4		1.0	uS/cm		19-MAY-22	R5785798
Hardness (as CaCO3)	32.4		0.50	mg/L		25-MAY-22	
pH	7.25		0.10	pH		19-MAY-22	R5785798
Total Suspended Solids	331		3.0	mg/L		19-MAY-22	R5785634
Total Dissolved Solids	75		13	mg/L		19-MAY-22	R5785648
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	37.0		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	37.0		2.0	mg/L		19-MAY-22	R5785798
Ammonia, Total (as N)	0.0680		0.0050	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	0.84		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	0.024		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	0.124		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	0.399		0.050	mg/L		31-MAY-22	
Total Kjeldahl Nitrogen	0.467		0.050	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	0.324		0.030	mg/L	20-MAY-22	25-MAY-22	R5787864
Sulfate (SO4)	4.95		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	0.88			meq/L		25-MAY-22	
Cation Sum	0.85			meq/L		25-MAY-22	
Cation - Anion Balance	-1.4			%		25-MAY-22	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-11 MW4-15 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 13:56 Matrix: Groundwater							
Anions and Nutrients							
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	2.78		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					25-MAY-22	R5786534
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Arsenic (As)-Dissolved	0.00055		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Barium (Ba)-Dissolved	0.00712		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Boron (B)-Dissolved	0.011		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Calcium (Ca)-Dissolved	8.64		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Iron (Fe)-Dissolved	0.591		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Lead (Pb)-Dissolved	0.000111		0.000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Magnesium (Mg)-Dissolved	2.63		0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Manganese (Mn)-Dissolved	0.158		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	25-MAY-22	25-MAY-22	R5786569
Potassium (K)-Dissolved	0.660		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Sodium (Na)-Dissolved	3.34		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	0.0039		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	22		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	<0.0010		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0	OWP	5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	94.2		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	101.7		70-130	%		25-MAY-22	R5786153
L2707633-12 MW1-17 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 12:22 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	271		1.0	uS/cm		19-MAY-22	R5785798
Hardness (as CaCO3)	57.7		0.50	mg/L		25-MAY-22	
pH	7.13		0.10	pH		19-MAY-22	R5785798
Total Suspended Solids	1410		7.5	mg/L		19-MAY-22	R5785634

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-12 MW1-17 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 12:22 Matrix: Groundwater							
Physical Tests							
Total Dissolved Solids	317		20	mg/L		19-MAY-22	R5785648
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	80.0		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	80.0		2.0	mg/L		19-MAY-22	R5785798
Ammonia, Total (as N)	0.459		0.010	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	15.4		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	0.048		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	0.092		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	3.70		0.050	mg/L		31-MAY-22	
Total Kjeldahl Nitrogen	4.2		1.0	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	0.87		0.75	mg/L	20-MAY-22	27-MAY-22	R5790387
Sulfate (SO4)	29.0		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	2.64			meq/L		25-MAY-22	
Cation Sum	2.92			meq/L		25-MAY-22	
Cation - Anion Balance	4.9			%		25-MAY-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	20.9		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					25-MAY-22	R5786534
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Arsenic (As)-Dissolved	0.00103		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Barium (Ba)-Dissolved	0.0252		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Boron (B)-Dissolved	0.024		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Cadmium (Cd)-Dissolved	0.0000116		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Calcium (Ca)-Dissolved	14.4		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Chromium (Cr)-Dissolved	0.00202		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Iron (Fe)-Dissolved	3.92		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Lead (Pb)-Dissolved	0.00110		0.000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Magnesium (Mg)-Dissolved	5.30		0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Manganese (Mn)-Dissolved	0.433		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	25-MAY-22	25-MAY-22	R5786569
Potassium (K)-Dissolved	1.16		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Sodium (Na)-Dissolved	33.6		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	0.0121		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-12 MW1-17 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 12:22 Matrix: Groundwater							
Aggregate Organics							
Biochemical Oxygen Demand	4.3		3.3	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	66	HSED	10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0026		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0	OWP	5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	91.9		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	101.7		70-130	%		25-MAY-22	R5786153
L2707633-13 MW2-17 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 09:34 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	162		1.0	uS/cm		19-MAY-22	R5785798
Hardness (as CaCO3)	66.4		0.50	mg/L		25-MAY-22	
pH	7.21		0.10	pH		19-MAY-22	R5785798
Total Suspended Solids	5350		15	mg/L		19-MAY-22	R5785634
Total Dissolved Solids	236		40	mg/L		19-MAY-22	R5785648
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	71.3		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	71.3		2.0	mg/L		19-MAY-22	R5785798
Ammonia, Total (as N)	0.035		0.010	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	4.91		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	0.022		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	0.058		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	3.13		0.050	mg/L		31-MAY-22	
Total Kjeldahl Nitrogen	3.16		0.25	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	4.1		1.5	mg/L	20-MAY-22	27-MAY-22	R5790387
Sulfate (SO4)	9.32		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	1.76			meq/L		25-MAY-22	
Cation Sum	1.62			meq/L		25-MAY-22	
Cation - Anion Balance	-4.1			%		25-MAY-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD	PEHT				21-MAY-22	R5785950

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-13 MW2-17 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 09:34 Matrix: Groundwater							
Organic / Inorganic Carbon							
Dissolved Organic Carbon	2.46		0.50	mg/L	21-MAY-22	26-MAY-22	R5788999
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-MAY-22	R5786192
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Arsenic (As)-Dissolved	0.00044		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Barium (Ba)-Dissolved	0.0113		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Cadmium (Cd)-Dissolved	0.0000064		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Calcium (Ca)-Dissolved	17.8		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Chromium (Cr)-Dissolved	0.00069		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Iron (Fe)-Dissolved	0.014		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Magnesium (Mg)-Dissolved	5.32		0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Manganese (Mn)-Dissolved	0.00056		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786396
Potassium (K)-Dissolved	0.774		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Sodium (Na)-Dissolved	6.27		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	<3.3	DLM	3.3	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	16	HSED	10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	<0.0010		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0	OWP	5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	92.0		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	101.6		70-130	%		25-MAY-22	R5786153
L2707633-14 MW1-20 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 11:26 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	2720		1.0	uS/cm		20-MAY-22	R5786165
Hardness (as CaCO3)	656		1.3	mg/L		25-MAY-22	
pH	7.35		0.10	pH		20-MAY-22	R5786165
Total Suspended Solids	17900		15	mg/L		20-MAY-22	R5785949
Total Dissolved Solids	1700		40	mg/L		20-MAY-22	R5786195
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	74.6		2.0	mg/L		18-MAY-22	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-14 MW1-20 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 11:26 Matrix: Groundwater							
Anions and Nutrients							
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	74.6		2.0	mg/L		20-MAY-22	R5786165
Ammonia, Total (as N)	2.33		0.10	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	742		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	0.772		0.050	mg/L		31-MAY-22	
Total Kjeldahl Nitrogen	3.11		0.50	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	6.5		3.0	mg/L	20-MAY-22	27-MAY-22	R5790387
Sulfate (SO4)	<0.30		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	22.4			meq/L		25-MAY-22	
Cation Sum	26.1			meq/L		25-MAY-22	
Cation - Anion Balance	7.5			%		25-MAY-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	13.3		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Total Metals							
Arsenic (As)-Total	0.0204	DLHC	0.0010	mg/L	23-MAY-22	24-MAY-22	R5786279
Barium (Ba)-Total	0.790	DLHC	0.0010	mg/L	23-MAY-22	24-MAY-22	R5786279
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	23-MAY-22	24-MAY-22	R5786279
Cadmium (Cd)-Total	0.000417	DLHC	0.000050	mg/L	23-MAY-22	24-MAY-22	R5786279
Chromium (Cr)-Total	0.112	DLHC	0.0050	mg/L	23-MAY-22	24-MAY-22	R5786279
Copper (Cu)-Total	0.154	DLHC	0.0050	mg/L	23-MAY-22	24-MAY-22	R5786279
Iron (Fe)-Total	90.6	DLHC	0.10	mg/L	23-MAY-22	24-MAY-22	R5786279
Lead (Pb)-Total	0.0554	DLHC	0.00050	mg/L	23-MAY-22	24-MAY-22	R5786279
Mercury (Hg)-Total	0.0000150		0.0000050	mg/L		24-MAY-22	R5786314
Zinc (Zn)-Total	0.163	DLHC	0.030	mg/L	23-MAY-22	24-MAY-22	R5786279
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-MAY-22	R5786192
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Arsenic (As)-Dissolved	0.0027	DLHC	0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Barium (Ba)-Dissolved	0.347	DLHC	0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Boron (B)-Dissolved	<0.10	DLHC	0.10	mg/L	24-MAY-22	24-MAY-22	R5786474
Cadmium (Cd)-Dissolved	<0.000050	DLHC	0.000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Calcium (Ca)-Dissolved	183	DLHC	0.50	mg/L	24-MAY-22	24-MAY-22	R5786474
Chromium (Cr)-Dissolved	<0.0050	DLHC	0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Iron (Fe)-Dissolved	21.3	DLHC	0.10	mg/L	24-MAY-22	24-MAY-22	R5786474
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-14 MW1-20 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 11:26 Matrix: Groundwater							
Dissolved Metals							
Magnesium (Mg)-Dissolved	48.7	DLHC	0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Manganese (Mn)-Dissolved	6.73	DLHC	0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786396
Potassium (K)-Dissolved	2.09	DLHC	0.50	mg/L	24-MAY-22	24-MAY-22	R5786474
Sodium (Na)-Dissolved	265	DLHC	0.50	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	<0.010	DLHC	0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	<5.0	DLM	5.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	73	HSED	10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0015		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0	OWP	5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	92.0		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	101.9		70-130	%		25-MAY-22	R5786153
L2707633-15 DUPLICATE Sampled By: Jennifer Sharpe on 17-MAY-22 @ 09:40 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	162		1.0	uS/cm		20-MAY-22	R5786165
Hardness (as CaCO3)	67.6		0.50	mg/L		26-MAY-22	
pH	7.20		0.10	pH		20-MAY-22	R5786165
Total Suspended Solids	3210		7.5	mg/L		20-MAY-22	R5785949
Total Dissolved Solids	127		20	mg/L		20-MAY-22	R5786195
Anions and Nutrients							
Acceptable % Difference	PASS					26-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	64.2		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	64.2		2.0	mg/L		20-MAY-22	R5786165
Ammonia, Total (as N)	0.0255		0.0050	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	6.05		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	0.026		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	0.062		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	6.68		0.050	mg/L		31-MAY-22	
Total Kjeldahl Nitrogen	6.70		0.50	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	2.40		0.75	mg/L	20-MAY-22	27-MAY-22	R5790387
Sulfate (SO4)	9.66		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-15 DUPLICATE Sampled By: Jennifer Sharpe on 17-MAY-22 @ 09:40 Matrix: Groundwater							
Anions and Nutrients							
Anion Sum	1.66			meq/L		26-MAY-22	
Cation Sum	1.64			meq/L		26-MAY-22	
Cation - Anion Balance	-0.8			%		26-MAY-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD	PEHT				21-MAY-22	R5785950
Dissolved Organic Carbon	3.06		0.50	mg/L	21-MAY-22	26-MAY-22	R5788999
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-MAY-22	R5786192
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Arsenic (As)-Dissolved	0.00044		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Barium (Ba)-Dissolved	0.0115		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Cadmium (Cd)-Dissolved	0.0000065		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Calcium (Ca)-Dissolved	18.1		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Chromium (Cr)-Dissolved	0.00067		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Iron (Fe)-Dissolved	0.019		0.010	mg/L	24-MAY-22	25-MAY-22	R5786474
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Magnesium (Mg)-Dissolved	5.44		0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Manganese (Mn)-Dissolved	0.00053		0.00050	mg/L	24-MAY-22	25-MAY-22	R5786474
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786396
Potassium (K)-Dissolved	0.797		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Sodium (Na)-Dissolved	6.02		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	<5.0	DLM	5.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	28	HSED	10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0050		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0	OWP	5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50	OWP	0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	91.0		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	101.2		70-130	%		25-MAY-22	R5786153
L2707633-16 FIELD BLANK Sampled By: Jennifer Sharpe on 17-MAY-22 @ 14:45 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	<1.0		1.0	uS/cm		20-MAY-22	R5786165

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-16 FIELD BLANK Sampled By: Jennifer Sharpe on 17-MAY-22 @ 14:45 Matrix: Groundwater							
Physical Tests							
Hardness (as CaCO3)	<0.50		0.50	mg/L		26-MAY-22	
pH	5.83		0.10	pH		20-MAY-22	R5786165
Total Suspended Solids	<3.0		3.0	mg/L		20-MAY-22	R5785949
Total Dissolved Solids	<10		10	mg/L		20-MAY-22	R5786195
Anions and Nutrients							
Acceptable % Difference	PASS					26-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	<2.0		2.0	mg/L		20-MAY-22	R5786165
Ammonia, Total (as N)	0.0120		0.0050	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	<0.10		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	<0.050		0.050	mg/L		31-MAY-22	
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	<0.0030		0.0030	mg/L	20-MAY-22	24-MAY-22	R5787864
Sulfate (SO4)	<0.30		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	<0.10			meq/L		26-MAY-22	
Cation Sum	<0.10			meq/L		26-MAY-22	
Cation - Anion Balance	0.0			%		26-MAY-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	<0.50		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-MAY-22	R5786192
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Barium (Ba)-Dissolved	0.00016	RRV	0.00010	mg/L	24-MAY-22	25-MAY-22	R5786474
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Magnesium (Mg)-Dissolved	<0.0050		0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Manganese (Mn)-Dissolved	<0.00050		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786396
Potassium (K)-Dissolved	<0.050		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-16 FIELD BLANK Sampled By: Jennifer Sharpe on 17-MAY-22 @ 14:45 Matrix: Groundwater							
Dissolved Metals							
Sodium (Na)-Dissolved	0.241	RRV	0.050	mg/L	24-MAY-22	25-MAY-22	R5786474
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	<10		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0103		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Dichloromethane	<5.0		5.0	ug/L		25-MAY-22	R5786153
Toluene	<0.50		0.50	ug/L		25-MAY-22	R5786153
Vinyl chloride	<0.50		0.50	ug/L		25-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	99.8		70-130	%		25-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	104.7		70-130	%		25-MAY-22	R5786153
L2707633-17 TRAVEL BLANK Sampled By: Jennifer Sharpe on 17-MAY-22 Matrix: Groundwater							
Physical Tests							
Conductivity (EC)	<1.0		1.0	uS/cm		20-MAY-22	R5786165
Hardness (as CaCO3)	<0.50		0.50	mg/L		25-MAY-22	
pH	5.36		0.10	pH		20-MAY-22	R5786165
Total Suspended Solids	<3.0		3.0	mg/L		20-MAY-22	R5785949
Total Dissolved Solids	<10		10	mg/L		20-MAY-22	R5786195
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	<2.0		2.0	mg/L		20-MAY-22	R5786165
Ammonia, Total (as N)	<0.0050		0.0050	mg/L	01-JUN-22	01-JUN-22	R5791976
Chloride (Cl)	<0.10		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Fluoride (F)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Organic Nitrogen	<0.050		0.050	mg/L		02-JUN-22	
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	<0.0030		0.0030	mg/L	20-MAY-22	24-MAY-22	R5787864
Sulfate (SO4)	<0.30		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	<0.10			meq/L		25-MAY-22	
Cation Sum	<0.10			meq/L		25-MAY-22	
Cation - Anion Balance	0.0			%		25-MAY-22	
Cyanides							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-17 TRAVEL BLANK Sampled By: Jennifer Sharpe on 17-MAY-22 Matrix: Groundwater							
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		25-MAY-22	R5787947
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	<0.50		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					24-MAY-22	R5786192
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-22	24-MAY-22	R5786474
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-MAY-22	24-MAY-22	R5786474
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-22	24-MAY-22	R5786474
Magnesium (Mg)-Dissolved	<0.0050		0.0050	mg/L	24-MAY-22	24-MAY-22	R5786474
Manganese (Mn)-Dissolved	<0.00050		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAY-22	24-MAY-22	R5786396
Potassium (K)-Dissolved	<0.050		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	<10		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	<0.0010		0.0010	mg/L		25-MAY-22	R5788076
Volatile Organic Compounds							
Benzene	<0.50	PEHR	0.50	ug/L		24-MAY-22	R5786153
1,4-Dichlorobenzene	<0.50	PEHR	0.50	ug/L		24-MAY-22	R5786153
Dichloromethane	<5.0	PEHR	5.0	ug/L		24-MAY-22	R5786153
Toluene	<0.50	PEHR	0.50	ug/L		24-MAY-22	R5786153
Vinyl chloride	<0.50	PEHR	0.50	ug/L		24-MAY-22	R5786153
Surrogate: 4-Bromofluorobenzene	100.3		70-130	%		24-MAY-22	R5786153
Surrogate: 1,4-Difluorobenzene	104.5		70-130	%		24-MAY-22	R5786153
L2707633-18 TRAVEL VOC SPIKE Sampled By: Jennifer Sharpe on 17-MAY-22 Matrix: Groundwater							
Volatile Organic Compounds							
Acetone	108		20	%		24-MAY-22	R5786153
Benzene	100		0.50	%		24-MAY-22	R5786153
Bromodichloromethane	105		1.0	%		24-MAY-22	R5786153
Bromoform	100		1.0	%		24-MAY-22	R5786153
Bromomethane	91.9		0.50	%		24-MAY-22	R5786153

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-18 TRAVEL VOC SPIKE Sampled By: Jennifer Sharpe on 17-MAY-22 Matrix: Groundwater							
Volatile Organic Compounds							
Carbon Disulfide	97.5		1.0	%		24-MAY-22	R5786153
Carbon tetrachloride	124		0.20	%		24-MAY-22	R5786153
Chlorobenzene	98.8		0.50	%		24-MAY-22	R5786153
Dibromochloromethane	99.9		1.0	%		24-MAY-22	R5786153
Chloroethane	124		1.0	%		24-MAY-22	R5786153
Chloroform	104		1.0	%		24-MAY-22	R5786153
Chloromethane	117		2.0	%		24-MAY-22	R5786153
1,2-Dibromoethane	88.1		0.20	%		24-MAY-22	R5786153
1,2-Dichlorobenzene	109		0.50	%		24-MAY-22	R5786153
1,3-Dichlorobenzene	112		0.50	%		24-MAY-22	R5786153
1,4-Dichlorobenzene	109		0.50	%		24-MAY-22	R5786153
Dichlorodifluoromethane	120		1.0	%		24-MAY-22	R5786153
1,1-Dichloroethane	102		0.50	%		24-MAY-22	R5786153
1,2-Dichloroethane	94.7		0.50	%		24-MAY-22	R5786153
1,1-Dichloroethylene	111		0.50	%		24-MAY-22	R5786153
cis-1,2-Dichloroethylene	112		0.50	%		24-MAY-22	R5786153
trans-1,2-Dichloroethylene	104		0.50	%		24-MAY-22	R5786153
Dichloromethane	106		2.0	%		24-MAY-22	R5786153
1,2-Dichloropropane	99.4		0.50	%		24-MAY-22	R5786153
cis-1,3-Dichloropropene	55.5		0.30	%		24-MAY-22	R5786153
trans-1,3-Dichloropropene	52.8		0.30	%		24-MAY-22	R5786153
Ethylbenzene	101		0.50	%		24-MAY-22	R5786153
n-Hexane	56.0		0.50	%		24-MAY-22	R5786153
2-Hexanone	73		20	%		24-MAY-22	R5786153
Methyl Ethyl Ketone	88		20	%		24-MAY-22	R5786153
Methyl Isobutyl Ketone	81		20	%		24-MAY-22	R5786153
MTBE	105		0.50	%		24-MAY-22	R5786153
Styrene	87.9		0.50	%		24-MAY-22	R5786153
1,1,1,2-Tetrachloroethane	103		0.50	%		24-MAY-22	R5786153
1,1,2,2-Tetrachloroethane	93.3		0.50	%		24-MAY-22	R5786153
Tetrachloroethylene	102		0.50	%		24-MAY-22	R5786153
Toluene	98.5		0.40	%		24-MAY-22	R5786153
1,1,1-Trichloroethane	119		0.50	%		24-MAY-22	R5786153
1,1,2-Trichloroethane	87.8		0.50	%		24-MAY-22	R5786153
Trichloroethylene	114		0.50	%		24-MAY-22	R5786153
Trichlorofluoromethane	120		1.0	%		24-MAY-22	R5786153
Vinyl chloride	118		0.50	%		24-MAY-22	R5786153
o-Xylene	99.8		0.30	%		24-MAY-22	R5786153
m+p-Xylenes	106		0.40	%		24-MAY-22	R5786153
Xylenes (Total)	206		0.50	%		25-MAY-22	
Surrogate: 4-Bromofluorobenzene	102.2		70-130	%		24-MAY-22	R5786153

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-18 TRAVEL VOC SPIKE Sampled By: Jennifer Sharpe on 17-MAY-22 Matrix: Groundwater							
Volatile Organic Compounds							
Surrogate: 1,4-Difluorobenzene	104.5		70-130	%		24-MAY-22	R5786153
Trihalomethanes							
Total THMs	409		2.0	%		25-MAY-22	
L2707633-19 SW1 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 15:25 Matrix: Surface Water							
Physical Tests							
Conductivity (EC)	857		1.0	uS/cm		20-MAY-22	R5786165
Hardness (as CaCO3)	277		0.50			19-MAY-22	
Hardness (as CaCO3)	277		0.50	mg/L		25-MAY-22	
pH	8.32		0.10	pH		20-MAY-22	R5786165
Total Suspended Solids	202		3.0	mg/L		20-MAY-22	R5785949
Total Dissolved Solids	458		20	mg/L		20-MAY-22	R5786195
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	356		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	9.2		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	365		2.0	mg/L		20-MAY-22	R5786165
Ammonia, Total (as N)	9.20		0.13	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	48.4		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	0.999		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Total Kjeldahl Nitrogen	13.0		0.25	mg/L	19-MAY-22	26-MAY-22	R5789016
Phosphorus (P)-Total	0.223		0.030	mg/L	20-MAY-22	25-MAY-22	R5787864
Sulfate (SO4)	8.56		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	8.91			meq/L		25-MAY-22	
Cation Sum	8.74			meq/L		25-MAY-22	
Cation - Anion Balance	-1.0			%		25-MAY-22	
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	24.8		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Total Metals							
Arsenic (As)-Total	0.00099		0.00010	mg/L	23-MAY-22	24-MAY-22	R5786279
Barium (Ba)-Total	0.126		0.00010	mg/L	23-MAY-22	24-MAY-22	R5786279
Boron (B)-Total	0.631		0.010	mg/L	23-MAY-22	24-MAY-22	R5786279
Cadmium (Cd)-Total	0.000102		0.0000050	mg/L	23-MAY-22	24-MAY-22	R5786279
Chromium (Cr)-Total	0.00233		0.00050	mg/L	23-MAY-22	24-MAY-22	R5786279
Copper (Cu)-Total	0.0036		0.0010	mg/L	23-MAY-22	24-MAY-22	R5786279
Iron (Fe)-Total	17.0		0.010	mg/L	23-MAY-22	24-MAY-22	R5786279
Lead (Pb)-Total	0.00182		0.000050	mg/L	23-MAY-22	24-MAY-22	R5786279
Mercury (Hg)-Total	0.0000055		0.0000050	mg/L		24-MAY-22	R5786283

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-19 SW1 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 15:25 Matrix: Surface Water							
Total Metals							
Zinc (Zn)-Total	0.0292		0.0030	mg/L	23-MAY-22	24-MAY-22	R5786279
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Manganese (Mn)-Dissolved	0.0589		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	0.0021		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	25.8		5.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	143		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0018		0.0010	mg/L		25-MAY-22	R5788076
L2707633-20 SW2 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 16:41 Matrix: Surface Water							
Physical Tests							
Conductivity (EC)	254		1.0	uS/cm		20-MAY-22	R5786165
Hardness (as CaCO3)	95.6		0.50			19-MAY-22	
Hardness (as CaCO3)	95.6		0.50	mg/L		25-MAY-22	
pH	8.18		0.10	pH		20-MAY-22	R5786165
Total Suspended Solids	6.2		3.0	mg/L		20-MAY-22	R5785949
Total Dissolved Solids	151		13	mg/L		20-MAY-22	R5786195
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	112		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	112		2.0	mg/L		20-MAY-22	R5786165
Ammonia, Total (as N)	0.0117		0.0050	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	11.7		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Total Kjeldahl Nitrogen	0.723		0.050	mg/L	19-MAY-22	26-MAY-22	R5789016
Phosphorus (P)-Total	0.0282		0.0030	mg/L	20-MAY-22	24-MAY-22	R5787864
Sulfate (SO4)	<0.30		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	2.56			meq/L		25-MAY-22	
Cation Sum	2.75			meq/L		25-MAY-22	
Cation - Anion Balance	3.5			%		25-MAY-22	
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	16.6		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Total Metals							
Arsenic (As)-Total	0.00050		0.00010	mg/L	23-MAY-22	24-MAY-22	R5786279
Barium (Ba)-Total	0.0182		0.00010	mg/L	23-MAY-22	24-MAY-22	R5786279
Boron (B)-Total	0.152		0.010	mg/L	23-MAY-22	24-MAY-22	R5786279

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-20 SW2 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 16:41 Matrix: Surface Water							
Total Metals							
Cadmium (Cd)-Total	0.0000087		0.0000050	mg/L	23-MAY-22	24-MAY-22	R5786279
Chromium (Cr)-Total	0.00053		0.00050	mg/L	23-MAY-22	24-MAY-22	R5786279
Copper (Cu)-Total	<0.0010		0.0010	mg/L	23-MAY-22	24-MAY-22	R5786279
Iron (Fe)-Total	0.498		0.010	mg/L	23-MAY-22	24-MAY-22	R5786279
Lead (Pb)-Total	0.000092		0.000050	mg/L	23-MAY-22	24-MAY-22	R5786279
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		24-MAY-22	R5786283
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	23-MAY-22	24-MAY-22	R5786279
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Manganese (Mn)-Dissolved	0.0116		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	0.0014		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	49		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0012		0.0010	mg/L		25-MAY-22	R5788076
L2707633-21 SW4 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 14:48 Matrix: Surface Water							
Physical Tests							
Conductivity (EC)	643		1.0	uS/cm		20-MAY-22	R5786165
Hardness (as CaCO3)	206		0.50			19-MAY-22	
Hardness (as CaCO3)	206		0.50	mg/L		25-MAY-22	
pH	8.14		0.10	pH		20-MAY-22	R5786165
Total Suspended Solids	103		3.0	mg/L		20-MAY-22	R5785949
Total Dissolved Solids	320		20	mg/L		20-MAY-22	R5786195
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	283		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	283		2.0	mg/L		20-MAY-22	R5786165
Ammonia, Total (as N)	11.9		0.13	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	32.8		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	0.046		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	0.013		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Total Kjeldahl Nitrogen	14.8		0.25	mg/L	19-MAY-22	26-MAY-22	R5789016
Phosphorus (P)-Total	0.215		0.030	mg/L	20-MAY-22	25-MAY-22	R5787864
Sulfate (SO4)	<0.30		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	6.59			meq/L		25-MAY-22	
Cation Sum	6.13			meq/L		25-MAY-22	
Cation - Anion Balance	-3.6			%		25-MAY-22	
Organic / Inorganic Carbon							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-21 SW4 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 14:48 Matrix: Surface Water							
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	23.6	DLM	2.5	mg/L	17-MAY-22	26-MAY-22	R5788877
Total Metals							
Arsenic (As)-Total	0.00102		0.00010	mg/L	23-MAY-22	24-MAY-22	R5786279
Barium (Ba)-Total	0.109		0.00010	mg/L	23-MAY-22	24-MAY-22	R5786279
Boron (B)-Total	0.260		0.010	mg/L	23-MAY-22	24-MAY-22	R5786279
Cadmium (Cd)-Total	0.0000376		0.0000050	mg/L	23-MAY-22	24-MAY-22	R5786279
Chromium (Cr)-Total	0.00124		0.00050	mg/L	23-MAY-22	24-MAY-22	R5786279
Copper (Cu)-Total	0.0025		0.0010	mg/L	23-MAY-22	24-MAY-22	R5786279
Iron (Fe)-Total	22.3		0.010	mg/L	23-MAY-22	24-MAY-22	R5786279
Lead (Pb)-Total	0.000554		0.000050	mg/L	23-MAY-22	24-MAY-22	R5786279
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		24-MAY-22	R5786283
Zinc (Zn)-Total	0.0173		0.0030	mg/L	23-MAY-22	24-MAY-22	R5786279
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Manganese (Mn)-Dissolved	0.118		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	10.2		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	124		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0017		0.0010	mg/L		01-JUN-22	R5792956
L2707633-22 SW5 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 15:11 Matrix: Surface Water							
Physical Tests							
Conductivity (EC)	379		1.0	uS/cm		20-MAY-22	R5786165
Hardness (as CaCO3)	132		0.50			19-MAY-22	
Hardness (as CaCO3)	132		0.50	mg/L		25-MAY-22	
pH	7.98		0.10	pH		20-MAY-22	R5786165
Total Suspended Solids	84.8		3.0	mg/L		20-MAY-22	R5785949
Total Dissolved Solids	213		20	mg/L		20-MAY-22	R5786195
Anions and Nutrients							
Acceptable % Difference	PASS					25-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	168		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	168		2.0	mg/L		20-MAY-22	R5786165
Ammonia, Total (as N)	5.07		0.13	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	16.4		0.10	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrate (as N)	<0.020		0.020	mg/L	19-MAY-22	20-MAY-22	R5786609
Nitrite (as N)	<0.010		0.010	mg/L	19-MAY-22	20-MAY-22	R5786609
Total Kjeldahl Nitrogen	6.22		0.25	mg/L	19-MAY-22	26-MAY-22	R5789016

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-22 SW5 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 15:11 Matrix: Surface Water							
Anions and Nutrients							
Phosphorus (P)-Total	0.106		0.030	mg/L	20-MAY-22	25-MAY-22	R5787864
Sulfate (SO4)	0.33		0.30	mg/L	19-MAY-22	20-MAY-22	R5786609
Anion Sum	3.82			meq/L		25-MAY-22	
Cation Sum	3.67			meq/L		25-MAY-22	
Cation - Anion Balance	-2.0			%		25-MAY-22	
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	15.2		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Total Metals							
Arsenic (As)-Total	0.00106		0.00010	mg/L	23-MAY-22	24-MAY-22	R5786279
Barium (Ba)-Total	0.0736		0.00010	mg/L	23-MAY-22	24-MAY-22	R5786279
Boron (B)-Total	0.177		0.010	mg/L	23-MAY-22	24-MAY-22	R5786279
Cadmium (Cd)-Total	0.0000530		0.0000050	mg/L	23-MAY-22	24-MAY-22	R5786279
Chromium (Cr)-Total	0.00125		0.00050	mg/L	23-MAY-22	24-MAY-22	R5786279
Copper (Cu)-Total	0.0030		0.0010	mg/L	23-MAY-22	24-MAY-22	R5786279
Iron (Fe)-Total	11.1		0.010	mg/L	23-MAY-22	24-MAY-22	R5786279
Lead (Pb)-Total	0.00105		0.000050	mg/L	23-MAY-22	24-MAY-22	R5786279
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		24-MAY-22	R5786283
Zinc (Zn)-Total	0.0091		0.0030	mg/L	23-MAY-22	24-MAY-22	R5786279
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Manganese (Mn)-Dissolved	0.285		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	0.0014		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	6.7		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	72		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0014		0.0010	mg/L		01-JUN-22	R5792956
L2707633-23 SW6 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 13:17 Matrix: Surface Water							
Physical Tests							
Conductivity (EC)	62.0		1.0	uS/cm		20-MAY-22	R5786165
Hardness (as CaCO3)	29.5		0.50			19-MAY-22	
Hardness (as CaCO3)	29.5		0.50	mg/L		25-MAY-22	
pH	7.49		0.10	pH		20-MAY-22	R5786165
Total Suspended Solids	13.8		3.0	mg/L		20-MAY-22	R5785949
Total Dissolved Solids	54		10	mg/L		20-MAY-22	R5786195
Anions and Nutrients							
Acceptable % Difference	PASS					31-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	32.2		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-23 SW6 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 13:17 Matrix: Surface Water							
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	32.2		2.0	mg/L		20-MAY-22	R5786165
Ammonia, Total (as N)	0.0076		0.0050	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	0.44		0.10	mg/L	26-MAY-22	30-MAY-22	R5790937
Nitrate (as N)	<0.020		0.020	mg/L	26-MAY-22	30-MAY-22	R5790937
Nitrite (as N)	<0.010		0.010	mg/L	26-MAY-22	30-MAY-22	R5790937
Total Kjeldahl Nitrogen	0.940		0.050	mg/L	19-MAY-22	26-MAY-22	R5789016
Phosphorus (P)-Total	0.0822		0.0030	mg/L	20-MAY-22	24-MAY-22	R5787864
Sulfate (SO4)	<0.30		0.30	mg/L	26-MAY-22	30-MAY-22	R5790937
Anion Sum	0.66			meq/L		31-MAY-22	
Cation Sum	0.72			meq/L		31-MAY-22	
Cation - Anion Balance	4.3			%		31-MAY-22	
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	17.0		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Total Metals							
Arsenic (As)-Total	0.00110		0.00010	mg/L	23-MAY-22	24-MAY-22	R5786279
Barium (Ba)-Total	0.0131		0.00010	mg/L	23-MAY-22	24-MAY-22	R5786279
Boron (B)-Total	<0.010		0.010	mg/L	23-MAY-22	24-MAY-22	R5786279
Cadmium (Cd)-Total	0.0000205		0.0000050	mg/L	23-MAY-22	24-MAY-22	R5786279
Chromium (Cr)-Total	0.00071		0.00050	mg/L	23-MAY-22	24-MAY-22	R5786279
Copper (Cu)-Total	0.0014		0.0010	mg/L	23-MAY-22	24-MAY-22	R5786279
Iron (Fe)-Total	1.39		0.010	mg/L	23-MAY-22	24-MAY-22	R5786279
Lead (Pb)-Total	0.000357		0.000050	mg/L	23-MAY-22	24-MAY-22	R5786279
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		24-MAY-22	R5786283
Zinc (Zn)-Total	0.0041		0.0030	mg/L	23-MAY-22	24-MAY-22	R5786279
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Manganese (Mn)-Dissolved	0.0568		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	2.4		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	59		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0020		0.0010	mg/L		01-JUN-22	R5792956
L2707633-24 SW7 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 16:22 Matrix: Surface Water							
Physical Tests							
Conductivity (EC)	1100		1.0	uS/cm		20-MAY-22	R5786165
Hardness (as CaCO3)	261		0.50			19-MAY-22	
Hardness (as CaCO3)	261		0.50	mg/L		25-MAY-22	
pH	8.01		0.10	pH		20-MAY-22	R5786165
Total Suspended Solids	97.0		3.0	mg/L		20-MAY-22	R5785949

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2707633-24 SW7 Sampled By: Jennifer Sharpe on 17-MAY-22 @ 16:22 Matrix: Surface Water							
Physical Tests							
Total Dissolved Solids	609		20	mg/L		20-MAY-22	R5786195
Anions and Nutrients							
Acceptable % Difference	PASS					26-MAY-22	
Alkalinity, Bicarbonate (as CaCO3)	167		2.0	mg/L		18-MAY-22	
Alkalinity, Carbonate (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Hydroxide (as CaCO3)	<2.0		2.0	mg/L		18-MAY-22	
Alkalinity, Total (as CaCO3)	167		2.0	mg/L		20-MAY-22	R5786165
Ammonia, Total (as N)	0.0202		0.0050	mg/L	19-MAY-22	30-MAY-22	R5790879
Chloride (Cl)	231		0.50	mg/L	19-MAY-22	24-MAY-22	R5787166
Nitrate (as N)	<0.10	DLDS	0.10	mg/L	19-MAY-22	24-MAY-22	R5787166
Nitrite (as N)	<0.050	DLDS	0.050	mg/L	19-MAY-22	24-MAY-22	R5787166
Total Kjeldahl Nitrogen	1.47		0.050	mg/L	19-MAY-22	24-MAY-22	R5786729
Phosphorus (P)-Total	0.109		0.030	mg/L	20-MAY-22	25-MAY-22	R5787864
Sulfate (SO4)	5.1		1.5	mg/L	19-MAY-22	24-MAY-22	R5787166
Anion Sum	9.94			meq/L		26-MAY-22	
Cation Sum	10.2			meq/L		26-MAY-22	
Cation - Anion Balance	1.3			%		26-MAY-22	
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				17-MAY-22	25-MAY-22	R5786863
Dissolved Organic Carbon	16.7		0.50	mg/L	17-MAY-22	26-MAY-22	R5788877
Total Metals							
Arsenic (As)-Total	0.00064		0.00010	mg/L	23-MAY-22	24-MAY-22	R5786279
Barium (Ba)-Total	0.0589		0.00010	mg/L	23-MAY-22	24-MAY-22	R5786279
Boron (B)-Total	0.034		0.010	mg/L	23-MAY-22	24-MAY-22	R5786279
Cadmium (Cd)-Total	0.0000437		0.0000050	mg/L	23-MAY-22	24-MAY-22	R5786279
Chromium (Cr)-Total	0.00116		0.00050	mg/L	23-MAY-22	24-MAY-22	R5786279
Copper (Cu)-Total	0.0019		0.0010	mg/L	23-MAY-22	24-MAY-22	R5786279
Iron (Fe)-Total	5.83		0.010	mg/L	23-MAY-22	24-MAY-22	R5786279
Lead (Pb)-Total	0.000381		0.000050	mg/L	23-MAY-22	24-MAY-22	R5786279
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		24-MAY-22	R5786283
Zinc (Zn)-Total	0.0156		0.0030	mg/L	23-MAY-22	24-MAY-22	R5786279
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					24-MAY-22	R5786275
Manganese (Mn)-Dissolved	0.248		0.00050	mg/L	24-MAY-22	24-MAY-22	R5786474
Zinc (Zn)-Dissolved	0.0050		0.0010	mg/L	24-MAY-22	24-MAY-22	R5786474
Aggregate Organics							
Biochemical Oxygen Demand	7.8		2.0	mg/L		20-MAY-22	R5786823
Chemical Oxygen Demand	66		10	mg/L	19-MAY-22	25-MAY-22	R5786815
Phenols (4AAP)	0.0013		0.0010	mg/L		01-JUN-22	R5792956

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Phosphorus (P)-Total	DUP-H	L2707633-3, -4
Duplicate	Ammonia, Total (as N)	DUP-H,J	L2707633-1, -2
Duplicate	Ammonia, Total (as N)	DUP-H,J	L2707633-17
Laboratory Control Sample	pH	LCS-H	L2707633-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Method Blank	Ammonia, Total (as N)	MB-LOR	L2707633-1, -2
Matrix Spike	Chloride (Cl)	MS-B	L2707633-1
Matrix Spike	Chloride (Cl)	MS-B	L2707633-24
Matrix Spike	Dissolved Organic Carbon	MS-B	L2707633-10, -13, -15, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2707633-1, -2, -3, -4, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2707633-10, -11, -12, -13, -14, -15, -16, -17, -19, -20, -21, -22, -23, -24, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L2707633-10, -11, -12, -13, -14, -15, -16, -17, -19, -20, -21, -22, -23, -24, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2707633-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2707633-10, -11, -12, -13, -14, -15, -16, -17, -19, -20, -21, -22, -23, -24, -6, -7, -8, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2707633-1, -2, -3, -4, -5
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2707633-10, -11, -12, -13, -14, -15, -16, -17, -19, -20, -21, -22, -23, -24, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2707633-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2707633-10, -11, -12, -13, -14, -15, -16, -17, -19, -20, -21, -22, -23, -24, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2707633-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2707633-10, -11, -12, -13, -14, -15, -16, -17, -19, -20, -21, -22, -23, -24, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2707633-10, -11, -12, -13, -14, -15, -16, -17, -19, -20, -21, -22, -23, -24, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2707633-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2707633-10, -11, -12, -13, -14, -15, -16, -17, -19, -20, -21, -22, -23, -24, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L2707633-1, -2, -3, -4, -5
Matrix Spike	Barium (Ba)-Total	MS-B	L2707633-14, -19, -20, -21, -22, -23, -24
Matrix Spike	Iron (Fe)-Total	MS-B	L2707633-14, -19, -20, -21, -22, -23, -24
Matrix Spike	Nitrate (as N)	MS-B	L2707633-1
Matrix Spike	Phosphorus (P)-Total	MS-B	L2707633-1, -2
Matrix Spike	Phosphorus (P)-Total	MS-B	L2707633-3, -4
Matrix Spike	Phosphorus (P)-Total	MS-B	L2707633-10, -11, -12, -13, -14, -15, -16, -17, -19, -20, -21, -22, -23, -24, -5, -6, -7, -8, -9
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L2707633-1, -2
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L2707633-3, -4, -5

Sample Parameter Qualifier key listed:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
HSED	High sediment content in submitted water sample. Analysis could only proceed using aqueous fraction after decanting. Results may be biased low and may be inappropriate for regulatory or compliance purposes.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
OWP	Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment.
	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

Reference Information

PEHR	
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3-TITR-CALC-TB	Water	Alkalinity, Carbonate (as CaCO3)	CALCULATION
ALK-HCO3TITR-CALC-TB	Water	Alkalinity, Bicarbonate (as CaCO3)	CALCULATION
ALK-OH-TITR-CALC-TB	Water	Alkalinity, Hydroxide (as CaCO3)	CALCULATION
ALK-TITR-TB	Water	Alkalinity	APHA 2320B modified

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BOD-TB	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B- BIOCHEMICAL OXYGEN DEMAND

All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

CL-L-IC-N-TB	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-TOT-WT	Water	Cyanide, Total	ISO 14403-2

Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference

COD-TB	Water	Chemical Oxygen Demand	APHA 5220D

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

DOC-WT	Water	Dissolved Organic Carbon	APHA 5310B

Sample is filtered through a 0.45um filter, then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.

EC-TITR-TB	Water	Conductivity	APHA 2510 B

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

F-IC-N-TB	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-TB	Water	Hardness (as CaCO3)	CALCULATION
HARDNESS-CALC-WT	Water	Hardness	APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-WT	Water	Dissolved Mercury in Water by CVAAS	EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental

Reference Information

Protection Act (July 1, 2011).

HG-T-CVAA-WT	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-TB	Water	Ion Balance Calculation	APHA 1030 E - CALCULATION

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-WT	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

N-ORG-T-CALC-TB	Water	Total Organic Nitrogen	CALCULATION

NH3-F-TB	Water	Ammonia, Total (as N)	catnr 157/158 062217/99321057 (modified)

Ammonia is determined by Flow-injection analysis with fluorescence detection

NO2-IC-N-TB	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-N-TB	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-TB	Water	Total Phosphorus by Discrete Analyzer	APHA 4500-P B, F, G (modified)

Phosphorus in aqueous matrices is analyzed using discrete Analyzer with colourimetric detection.

PH-TITR-TB	Water	pH	APHA 4500-H

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

SO4-IC-N-TB	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-TB	Water	Total Dissolved Solids	APHA 2540 C (modified)

Aqueous matrices are analyzed using gravimetry and evaporation

Reference Information

THM-SUM-PPB-CALC-WT	Water	Total Trihalomethanes (THMs)	CALCULATION

Total Trihalomethanes (THMs) represents the sum of bromodichloromethane, bromoform, chlorodibromomethane and chloroform. For the purpose of calculation, results less than the detection limit (DL) are treated as zero.

TKN-F-TB	Water	TKN in Water by Fluorescence	catnr 157/158, 062818/99334821

Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection

TSS-TB	Water	Total Suspended Solids	APHA 2540 D (modified)

Aqueous matrices are analyzed using gravimetry

VOC-ROU-HS-WT	Water	Volatile Organic Compounds	SW846 8260

Aqueous samples are analyzed by headspace-GC/MS.

XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Total xylenes represents the sum of o-xylene and m&p-xylene.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
TB	ALS ENVIRONMENTAL - THUNDER BAY, ONTARIO, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2707633-COFC

COC Number: 17 -

Page 1 of 3

Report To	Contact and company name below will appear on the final report
Company:	Kresin Engineering Corporation
Contact:	Jennifer Sharpe
Phone:	705-949-4900
	Company address below will appear on the final report
Street:	536 Fourth Line East
City/Province:	Saulte Ste. Marie, ON
Postal Code:	P6A 5K8
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Quality Control (QC) Report with Report ☐ YES ☑ NO

☑ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: jennifer@kresinengineering.ca

Email 2:

Email 3:

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: annette@kresinengineering.ca

Email 2:

Project Information

ALS Account # / Quote #: 11353 / Q89511

Job #: Blind River Landfill

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#:

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only): L2707633

ALS Contact: Sampler:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ 3 day [P3-25%] ☐ 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Schedule 5 Column 1:	(Alk, BOD, Chloride, COD, DOC, EC,	Dissolved Hg, Dissolved As, B, Ba, Ca,	Cd, Cr, Cu, Fe, K, Mg, Mn, Na, Pb, Zn,	NH3, NO2, NO3, Total Phosph, pH,	Phenols, SO4, TDS, TKN, TSS, VOC's)	CO3, HCO3, OH	Ion Balnce, Organic Nitrogen, Hardness	Total Cyanide, Fluoride	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
-1	MW1-02	17-May-22	1:03	Groundwater	10	x						x	x	x		
-2	MW2-02		3:42	Groundwater		x						x	x	x		
-3	MW3-02		10:33	Groundwater		x						x	x	x		
-4	MW4-02		9:09am	Groundwater		x						x	x	x		
-5	MW5-02		1:37	Groundwater		x						x	x	x		
-6	MW6-02		10:45	Groundwater		x						x	x	x		
-7	MW1-03		11:07	Groundwater		x						x	x	x		
-8	MW1-15		2:13	Groundwater		x						x	x	x		
-9	MW2-15		3:19	Groundwater		x						x	x	x		
-10	MW3-15		10:05	Groundwater		x						x	x	x		
-11	MW4-15		1:56	Groundwater		x						x	x	x		
-12	MW1-17		12:22	Groundwater		x						x	x	x		

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

GW & SW samples filtered when required.
Please compare to PWQO, CWQG, ODWS where applicable.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☒ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☒

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
7.5							

SHIPMENT RELEASE (client use)

Released by: Date: May 17, 2022 Time: 5:30

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: LV Date: 5/18/22 Time: 2:42

FINAL SHIPMENT RECEPTION (lab use only)

Received by: Date: Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCT 2018 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2707633-COFC

COC Number: 17 -

Page 2 of 3

Report To	Contact and company name below will appear on the final report
Company:	Kresin Engineering Corporation
Contact:	Jennifer Sharpe
Phone:	705-949-4900
	Company address below will appear on the final report
Street:	536 Fourth Line East
City/Province:	Sault Ste. Marie, ON
Postal Code:	P6A 5K8
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ YES ☑ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: jennifer@kresinengineering.ca
Email 2:
Email 3:

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: annette@kresinengineering.ca
Email 2:

Project Information

ALS Account # / Quote #: 11353 / Q89511
Job #: Blind River Landfill
PO / AFE:
LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#:
Major/Minor Code: Routing Code:
Requisitioner:
Location:

ALS Lab Work Order # (lab use only):

ALS Contact: Sampler:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)
- 4 day [P4-20%] ☐
- 3 day [P3-25%] ☐
- 2 day [P2-50%] ☐

EMERGENCY
- 1 Business day [E - 100%] ☐
- Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Schedule 5 Column 1:	(Alk, BOD, Chloride, COD, DOC, EC,	Dissolved Hg, Dissolved As, B, Ba, Ca,	Cd, Cr, Cu, Fe, K, Mg, Mn, Na, PB, Zn,	NH3, NO2, NO3, Total Phosph, pH,	Phenols, SO4, TDS, TKN, TSS, VOC's)	CO3, HCO3, OH	Ion Balnce, Organic Nitrogen, Hardness	Total Cyanide, Fluoride	Total Metals - As, B, Ba, Cd, Cr, Cu, Fe, Pb, Zn	Total Mercury	VOC Spike			SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
-13	MW2-17	17-May-22	9:34	Groundwater	10	x						x	x	x							
-14	MW1-20		11:26	Groundwater		x						x	x	x	x	x					
-15	Duuplicate		9:40	Groundwater		x						x	x	x							
-16	Field Blank		2:45	Groundwater		x						x	x	x							
-17	Travel Blank			Groundwater		x						x	x	x							
-18	Travel VOC Spike			Groundwater													x				

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO
Are samples for human consumption/ use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

GW + SW Samples field filtered when required.
Please compare to PWQO, CWQG, ODWS where applicable.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☒ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☒

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
7.5							

SHIPMENT RELEASE (client use)

Released by: Date: May 17 2022 Time: 5:30 pm

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: LV Date: 5/18/22 Time: 2:42

FINAL SHIPMENT RECEPTION (lab use only)

Received by: Date: Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2707633-COFC

COC Number: 17 -

Report To	Contact and company name below will appear on the final report
Company:	Kresin Engineering Corporation
Contact:	Jennifer Sharpe
Phone:	705-949-4900
	Company address below will appear on the final report
Street:	536 Fourth Line East
City/Province:	Saulte Ste. Marie, ON
Postal Code:	P6A 5K8
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	☐ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report	☐ YES ☑ NO
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	jennifer@kresinengineering.ca
Email 2	
Email 3	

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	annette@kresinengineering.ca
Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	11353 / Q89511	AFE/Cost Center:	PO#
Job #:	Blind River Landfill	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only):	ALS Contact:	Sampler:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4-20%]	☐	1 Business day [E - 100%]	☐
3 day [P3-25%]	☐	Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]	☐
2 day [P2-50%]	☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Schedule 5, Coloumn 3	(Alkalinity, BOD, Cl, COD, Total Mercury	Conductivity, Total Metals (With Reportables)	NH3,NO2, NO3, Total Phosphorus, pH,	Phenols 4AAP, SO4, TDS, TKN, TSS)	CO3, HCO3, OH	Ion Balnce, Hardness	DOC	Dissolved Metals - Mn, Zn	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
-19	SW1	17-May-22	3:25	Surface Water	8	x					x	x	x	x		
-20	SW2		4:41	Surface Water		x					x	x	x	x		
	~~SW3~~ DRY			~~Surface Water~~		x					x	x	x	x		
-21	SW4		2:48	Surface Water		x					x	x	x	x		
-22	SW5		3:11	Surface Water		x					x	x	x	x		
-23	SW6		1:17	Surface Water		x					x	x	x	x		
-24	SW7		4:20	Surface Water		x					x	x	x	x		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	SW field filtered when required. Please compare to PWQO, CWQG, ODWS where applicable.
Are samples for human consumption/ use? ☐ YES ☑ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No	☐
Ice Packs	☒ Ice Cubes ☐	Custody seal intact	Yes ☐	No	☐
Cooling Initiated	☒				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
7.5					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date: May 17, 2022	Time: 5:30 pm	Received by: LV	Date: 5/18/22	Time: 2:42	Received by:	Date:	Time:

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCT 2018 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

KRESIN ENGINEERING CORP.
ATTN: Jennifer Sharpe
536 Fourth Line East
Sault Ste Marie ON P6A 5K8

Date Received: 23-SEP-22
Report Date: 10-NOV-22 14:10 (MT)
Version: FINAL

Client Phone: 705-949-4900

Certificate of Analysis

Lab Work Order #: L2734110

Project P.O. #: NOT SUBMITTED
Job Reference: BLIND RIVER LANDFILL
C of C Numbers: 1, 2
Legal Site Desc:

Stephanie Finley
Project Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-1 MW1-02 Sampled By: J. SHARPE on 21-SEP-22 @ 12:05 Matrix: WATER							
Physical Tests							
Conductivity	184		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	77.8		0.50	mg/L		27-SEP-22	
pH	7.75		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	1500	DLHC	6.0	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	162	DLDS	13	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	87.3		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	87.3		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	<0.010		0.010	mg/L		04-OCT-22	R5868716
Chloride (Cl)	0.91		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	169			uS/cm		01-OCT-22	
Conductivity % Difference	-9			%		01-OCT-22	
Fluoride (F)	0.043		0.020	mg/L		27-SEP-22	R5866782
Ion Balance	109			%		01-OCT-22	
Langelier Index	0					01-OCT-22	
Nitrate (as N)	0.085		0.020	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	0.181		0.050	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	0.181		0.050	mg/L		04-OCT-22	
Saturation pH	8.10			pH		01-OCT-22	
TDS (Calculated)	98.0			mg/L		01-OCT-22	
Sulfate (SO4)	10.4		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	1.69			me/L		01-OCT-22	
Cation Sum	1.84			me/L		01-OCT-22	
Cation - Anion Balance	4			%		01-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	23-SEP-22	R5866154
Dissolved Organic Carbon	3.20		0.50	mg/L	21-SEP-22	28-SEP-22	R5866860
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	0.0270		0.00010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	0.017		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	20.0		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	0.017		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	6.75		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Sodium (Na)-Dissolved	5.90		0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L		24-SEP-22	R5867197
COD	16		10	mg/L		27-SEP-22	R5866606

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-1 MW1-02 Sampled By: J. SHARPE on 21-SEP-22 @ 12:05 Matrix: WATER							
Aggregate Organics							
L2734110-2 MW2-02 Sampled By: J. SHARPE on 21-SEP-22 @ 14:29 Matrix: WATER							
Physical Tests							
Conductivity	3610		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	731		1.3	mg/L		27-SEP-22	
pH	7.10		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	370	DLHC	110	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	1390		400	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	1640	DLHC	5.0	mg/L		06-OCT-22	R5870305
Alkalinity, Carbonate (as CaCO3)	<5.0	DLHC	5.0	mg/L		06-OCT-22	R5870305
Alkalinity, Hydroxide (as CaCO3)	<5.0	DLHC	5.0	mg/L		06-OCT-22	R5870305
Alkalinity, Total (as CaCO3)	1640	DLHC	5.0	mg/L		06-OCT-22	R5870305
Ammonia, Total (as N)	147	DLHC	5.0	mg/L		04-OCT-22	R5868716
Chloride (Cl)	287	DLDS	2.5	mg/L		27-SEP-22	R5866782
Computed Conductivity	2960			uS/cm		20-OCT-22	
Conductivity % Difference	-20			%		20-OCT-22	
Fluoride (F)	<0.10	DLDS	0.10	mg/L		27-SEP-22	R5866782
Ion Balance	116			%		20-OCT-22	
Langelier Index	1					20-OCT-22	
Nitrate and Nitrite as N	<0.11		0.11	mg/L		20-OCT-22	
Nitrate (as N)	0.10	DLDS	0.10	mg/L		27-SEP-22	R5866782
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	164	DLHC	5.0	mg/L	03-OCT-22	04-OCT-22	R5868297
Total Organic Nitrogen	<33		33	mg/L		04-OCT-22	
Saturation pH	6.21			pH		20-OCT-22	
Phosphorus, Total	0.228		0.0030	mg/L	03-OCT-22	04-OCT-22	R5868819
TDS (Calculated)	1950			mg/L		20-OCT-22	
Sulfate (SO4)	<1.5	DLDS	1.5	mg/L		27-SEP-22	R5866782
Anion Sum	35.0			me/L		20-OCT-22	
Cation Sum	40.7			me/L		20-OCT-22	
Cation - Anion Balance	7			%		20-OCT-22	
Cyanides							
Cyanide, Total	0.0035		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	23-SEP-22	R5866154
Dissolved Organic Carbon	73.7	DLM	2.5	mg/L	21-SEP-22	28-SEP-22	R5866860
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					25-SEP-22	R5866250
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Arsenic (As)-Dissolved	<0.0010	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866410

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-2 MW2-02 Sampled By: J. SHARPE on 21-SEP-22 @ 14:29 Matrix: WATER							
Dissolved Metals							
Barium (Ba)-Dissolved	0.423	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	2.07	DLHC	0.10	mg/L	26-SEP-22	26-SEP-22	R5866410
Cadmium (Cd)-Dissolved	<0.000050	DLHC	0.000050	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	163	DLHC	0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Chromium (Cr)-Dissolved	<0.0050	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866410
Copper (Cu)-Dissolved	<0.0020	DLHC	0.0020	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	62.2	DLHC	0.10	mg/L	26-SEP-22	26-SEP-22	R5866410
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	78.6	DLHC	0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	25-SEP-22	26-SEP-22	R5866351
Potassium (K)-Dissolved	186	DLHC	0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Sodium (Na)-Dissolved	248	DLHC	0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Zinc (Zn)-Dissolved	0.011	DLHC	0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	8.1		2.0	mg/L		24-SEP-22	R5867197
COD	250		10	mg/L		27-SEP-22	R5866606
Volatile Organic Compounds							
Acetone	<20	OWP	20	ug/L		27-SEP-22	R5866421
Benzene	2.63	OWP	0.50	ug/L		27-SEP-22	R5866421
Bromodichloromethane	<1.0	OWP	1.0	ug/L		27-SEP-22	R5866421
Bromoform	<1.0	OWP	1.0	ug/L		27-SEP-22	R5866421
Bromomethane	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
Carbon Disulfide	<1.0	OWP	1.0	ug/L		27-SEP-22	R5866421
Carbon tetrachloride	<0.20	OWP	0.20	ug/L		27-SEP-22	R5866421
Chlorobenzene	5.51	OWP	0.50	ug/L		27-SEP-22	R5866421
Dibromochloromethane	<1.0	OWP	1.0	ug/L		27-SEP-22	R5866421
Chloroethane	<1.0	OWP	1.0	ug/L		27-SEP-22	R5866421
Chloroform	<1.0	OWP	1.0	ug/L		27-SEP-22	R5866421
Chloromethane	<2.0	OWP	2.0	ug/L		27-SEP-22	R5866421
1,2-Dibromoethane	<0.20	OWP	0.20	ug/L		27-SEP-22	R5866421
1,2-Dichlorobenzene	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
1,3-Dichlorobenzene	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
1,4-Dichlorobenzene	0.91	OWP	0.50	ug/L		27-SEP-22	R5866421
Dichlorodifluoromethane	<1.0	OWP	1.0	ug/L		27-SEP-22	R5866421
1,1-Dichloroethane	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
1,2-Dichloroethane	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
1,1-Dichloroethylene	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
cis-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
trans-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
Dichloromethane	<2.0	OWP	2.0	ug/L		27-SEP-22	R5866421
1,2-Dichloropropane	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-2 MW2-02 Sampled By: J. SHARPE on 21-SEP-22 @ 14:29 Matrix: WATER							
Volatile Organic Compounds							
cis-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L		27-SEP-22	R5866421
trans-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L		27-SEP-22	R5866421
Ethylbenzene	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
n-Hexane	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
2-Hexanone	<20	OWP	20	ug/L		27-SEP-22	R5866421
Methyl Ethyl Ketone	<20	OWP	20	ug/L		27-SEP-22	R5866421
Methyl Isobutyl Ketone	<20	OWP	20	ug/L		27-SEP-22	R5866421
MTBE	0.99	OWP	0.50	ug/L		27-SEP-22	R5866421
Styrene	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
1,1,1,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
1,1,2,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
Tetrachloroethylene	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
Toluene	<0.40	OWP	0.40	ug/L		27-SEP-22	R5866421
1,1,1-Trichloroethane	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
1,1,2-Trichloroethane	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
Trichloroethylene	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
Trichlorofluoromethane	<1.0	OWP	1.0	ug/L		27-SEP-22	R5866421
Vinyl chloride	<0.50	OWP	0.50	ug/L		27-SEP-22	R5866421
o-Xylene	<0.30	OWP	0.30	ug/L		27-SEP-22	R5866421
m+p-Xylenes	8.25	OWP	0.40	ug/L		27-SEP-22	R5866421
Xylenes (Total)	8.25		0.50	ug/L		27-SEP-22	
Surrogate: 4-Bromofluorobenzene	91.0		70-130	%		27-SEP-22	R5866421
Surrogate: 1,4-Difluorobenzene	97.6		70-130	%		27-SEP-22	R5866421
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		27-SEP-22	
L2734110-3 MW3-02 Sampled By: J. SHARPE on 21-SEP-22 @ 09:58 Matrix: WATER							
Physical Tests							
Conductivity	613		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	208		0.50	mg/L		27-SEP-22	
pH	8.49		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	34.6		3.0	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	372	DLDS	20	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	277		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	18.2		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	296		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	0.120		0.010	mg/L		04-OCT-22	R5868716
Chloride (Cl)	31.9		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	555			uS/cm		01-OCT-22	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-3 MW3-02 Sampled By: J. SHARPE on 21-SEP-22 @ 09:58 Matrix: WATER							
Anions and Nutrients							
Conductivity % Difference	-10			%		01-OCT-22	
Fluoride (F)	<0.020		0.020	mg/L		27-SEP-22	R5866782
Ion Balance	109			%		01-OCT-22	
Langelier Index	1					01-OCT-22	
Nitrate (as N)	<0.020		0.020	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	1.14		0.050	mg/L	03-OCT-22	04-OCT-22	R5868297
Total Organic Nitrogen	1.02		0.050	mg/L		04-OCT-22	
Saturation pH	7.22			pH		01-OCT-22	
TDS (Calculated)	346			mg/L		01-OCT-22	
Sulfate (SO4)	0.49		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	5.90			me/L		01-OCT-22	
Cation Sum	6.44			me/L		01-OCT-22	
Cation - Anion Balance	4			%		01-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	23-SEP-22	R5866154
Dissolved Organic Carbon	19.4		0.50	mg/L	21-SEP-22	28-SEP-22	R5866860
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	0.0346		0.00010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	0.355		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	55.5		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	0.097		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	17.0		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Sodium (Na)-Dissolved	35.0		0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L		24-SEP-22	R5867197
COD	61		10	mg/L		27-SEP-22	R5866606
L2734110-4 MW4-02 Sampled By: J. SHARPE on 21-SEP-22 @ 09:23 Matrix: WATER							
Physical Tests							
Conductivity	360		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	103		0.50	mg/L		27-SEP-22	
pH	8.17		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	162		3.0	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	215	DLDS	20	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	138		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-4 MW4-02 Sampled By: J. SHARPE on 21-SEP-22 @ 09:23 Matrix: WATER							
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	138		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	0.760	DLHC	0.020	mg/L		04-OCT-22	R5868716
Chloride (Cl)	33.9		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	326			uS/cm		01-OCT-22	
Conductivity % Difference	-10			%		01-OCT-22	
Fluoride (F)	0.048		0.020	mg/L		27-SEP-22	R5866782
Ion Balance	109			%		01-OCT-22	
Langelier Index	0					01-OCT-22	
Nitrate (as N)	<0.020		0.020	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	1.00		0.050	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	0.24		0.20	mg/L		04-OCT-22	
Saturation pH	7.83			pH		01-OCT-22	
TDS (Calculated)	191			mg/L		01-OCT-22	
Sulfate (SO4)	<0.30		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	3.25			me/L		01-OCT-22	
Cation Sum	3.55			me/L		01-OCT-22	
Cation - Anion Balance	4			%		01-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	23-SEP-22	R5866154
Dissolved Organic Carbon	8.12		0.50	mg/L	21-SEP-22	28-SEP-22	R5866860
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	0.0613		0.00010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	0.118		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	26.1		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	3.93		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	9.14		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Sodium (Na)-Dissolved	27.9		0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L		24-SEP-22	R5867197
COD	22		10	mg/L		27-SEP-22	R5866606
L2734110-5 MW5-02 Sampled By: J. SHARPE on 21-SEP-22 @ 12:51 Matrix: WATER							
Physical Tests							
Conductivity	121		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	47.4		0.50	mg/L		27-SEP-22	
pH	7.89		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	44.8		3.0	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	79	DLDS	13	mg/L		01-OCT-22	R5867313

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-5 MW5-02 Sampled By: J. SHARPE on 21-SEP-22 @ 12:51 Matrix: WATER							
Physical Tests							
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	49.5		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	49.5		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	<0.010		0.010	mg/L		04-OCT-22	R5868716
Chloride (Cl)	1.10		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	110			uS/cm		01-OCT-22	
Conductivity % Difference	-10			%		01-OCT-22	
Fluoride (F)	0.038		0.020	mg/L		27-SEP-22	R5866782
Ion Balance	106			%		01-OCT-22	
Langelier Index	-1					01-OCT-22	
Nitrate (as N)	0.091		0.020	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	0.057		0.050	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	0.057		0.050	mg/L		04-OCT-22	
Saturation pH	8.55			pH		01-OCT-22	
TDS (Calculated)	61.7			mg/L		01-OCT-22	
Sulfate (SO4)	9.74		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	1.06			me/L		01-OCT-22	
Cation Sum	1.12			me/L		01-OCT-22	
Cation - Anion Balance	3			%		01-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	28-SEP-22	R5866694
Dissolved Organic Carbon	1.96		0.50	mg/L	21-SEP-22	30-SEP-22	R5867796
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	0.0221		0.00010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	<0.010		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	12.1		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	0.014		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	4.19		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Sodium (Na)-Dissolved	3.41		0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L		24-SEP-22	R5867197
COD	<10		10	mg/L		27-SEP-22	R5866606
L2734110-6 MW6-02 Sampled By: J. SHARPE on 21-SEP-22 @ 09:48 Matrix: WATER							
Physical Tests							
Conductivity	528		1.0	umhos/cm		30-SEP-22	R5867290

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-6 MW6-02 Sampled By: J. SHARPE on 21-SEP-22 @ 09:48 Matrix: WATER							
Physical Tests							
Hardness (as CaCO3)	185		0.50	mg/L		27-SEP-22	
pH	8.01		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	83.3		3.0	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	325	DLDS	20	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	196		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	196		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	1.12	DLHC	0.050	mg/L		04-OCT-22	R5868716
Chloride (Cl)	54.0		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	456			uS/cm		01-OCT-22	
Conductivity % Difference	-15			%		01-OCT-22	
Fluoride (F)	0.039		0.020	mg/L		27-SEP-22	R5866782
Ion Balance	104			%		01-OCT-22	
Langelier Index	1					01-OCT-22	
Nitrate (as N)	0.072		0.020	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	1.63		0.050	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	0.51		0.33	mg/L		04-OCT-22	
Saturation pH	7.43			pH		01-OCT-22	
TDS (Calculated)	267			mg/L		01-OCT-22	
Sulfate (SO4)	<0.30		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	4.77			me/L		01-OCT-22	
Cation Sum	4.98			me/L		01-OCT-22	
Cation - Anion Balance	2			%		01-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	28-SEP-22	R5866694
Dissolved Organic Carbon	11.1		0.50	mg/L	21-SEP-22	30-SEP-22	R5867796
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	0.178		0.00010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	0.107		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	49.1		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	11.6		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	15.1		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Sodium (Na)-Dissolved	26.9		0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L		24-SEP-22	R5867197
COD	39		10	mg/L		27-SEP-22	R5866606
L2734110-7 MW1-03							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-7 MW1-03 Sampled By: J. SHARPE on 21-SEP-22 @ 10:32 Matrix: WATER							
Physical Tests							
Conductivity	1850		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	179		0.50	mg/L		27-SEP-22	
pH	7.45		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	690	DLHC	15	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	975	DLDS	20	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	195		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	195		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	1.31	DLHC	0.050	mg/L		04-OCT-22	R5868716
Chloride (Cl)	490	DLDS	2.5	mg/L		27-SEP-22	R5866782
Computed Conductivity	1600			uS/cm		01-OCT-22	
Conductivity % Difference	-15			%		01-OCT-22	
Fluoride (F)	<0.10	DLDS	0.10	mg/L		27-SEP-22	R5866782
Ion Balance	98			%		01-OCT-22	
Langelier Index	0					01-OCT-22	
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	3.09		0.050	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	1.78		0.62	mg/L		04-OCT-22	
Saturation pH	7.59			pH		01-OCT-22	
TDS (Calculated)	988			mg/L		01-OCT-22	
Sulfate (SO4)	2.6	DLDS	1.5	mg/L		27-SEP-22	R5866782
Anion Sum	17.1			me/L		01-OCT-22	
Cation Sum	16.7			me/L		01-OCT-22	
Cation - Anion Balance	-1			%		01-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	28-SEP-22	R5866694
Dissolved Organic Carbon	17.6		0.50	mg/L	21-SEP-22	30-SEP-22	R5867796
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	0.331		0.00010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	0.318		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	43.1		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	11.3		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	17.5		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Sodium (Na)-Dissolved	277		0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L		24-SEP-22	R5867197
COD	101		10	mg/L		27-SEP-22	R5866606

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-7 MW1-03 Sampled By: J. SHARPE on 21-SEP-22 @ 10:32 Matrix: WATER							
Aggregate Organics							
L2734110-8 MW1-15 Sampled By: J. SHARPE on 21-SEP-22 @ 13:29 Matrix: WATER							
Physical Tests							
Conductivity	1570		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	817		0.50	mg/L		27-SEP-22	
pH	7.02		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	1520	DLHC	15	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	949	DLDS	20	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	820		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	820		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	1.33	DLHC	0.050	mg/L		04-OCT-22	R5868716
Chloride (Cl)	83.3	DLDS	2.5	mg/L		27-SEP-22	R5866782
Computed Conductivity	1360			uS/cm		01-OCT-22	
Conductivity % Difference	-14			%		01-OCT-22	
Fluoride (F)	<0.10	DLDS	0.10	mg/L		27-SEP-22	R5866782
Ion Balance	120			%		01-OCT-22	
Langelier Index	1					01-OCT-22	
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	2.47		0.050	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	1.14		0.49	mg/L		04-OCT-22	
Saturation pH	6.36			pH		01-OCT-22	
TDS (Calculated)	913			mg/L		01-OCT-22	
Sulfate (SO4)	<1.5	DLDS	1.5	mg/L		27-SEP-22	R5866782
Anion Sum	15.8			me/L		01-OCT-22	
Cation Sum	19.0			me/L		01-OCT-22	
Cation - Anion Balance	9			%		01-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	28-SEP-22	R5866694
Dissolved Organic Carbon	23.7	DLM	2.5	mg/L	21-SEP-22	30-SEP-22	R5867796
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	0.208		0.00010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	1.34		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	191		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	10.8		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	82.5		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-8 MW1-15 Sampled By: J. SHARPE on 21-SEP-22 @ 13:29 Matrix: WATER							
Dissolved Metals							
Sodium (Na)-Dissolved	58.4		0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	3.2		2.0	mg/L		24-SEP-22	R5867197
COD	98		10	mg/L		27-SEP-22	R5866606
L2734110-9 MW3-15 Sampled By: J. SHARPE on 21-SEP-22 @ 08:40 Matrix: WATER							
Physical Tests							
Conductivity	61.3		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	12.3		0.50	mg/L		27-SEP-22	
pH	6.78		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	691	DLHC	6.0	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	129	DLDS	13	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	14.4		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	14.4		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	<0.010		0.010	mg/L		04-OCT-22	R5868716
Chloride (Cl)	4.95		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	55.9			uS/cm		01-OCT-22	
Conductivity % Difference	-9			%		01-OCT-22	
Fluoride (F)	0.046		0.020	mg/L		27-SEP-22	R5866782
Ion Balance	Low EC			%		01-OCT-22	
Langelier Index	-3					01-OCT-22	
Nitrate (as N)	0.048		0.020	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	0.266		0.050	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	0.266		0.050	mg/L		04-OCT-22	
Saturation pH	9.62			pH		01-OCT-22	
TDS (Calculated)	30.2			mg/L		01-OCT-22	
Sulfate (SO4)	5.15		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	0.49			me/L		01-OCT-22	
Cation Sum	0.54			me/L		01-OCT-22	
Cation - Anion Balance	Low EC			%		01-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	28-SEP-22	R5866694
Dissolved Organic Carbon	2.72		0.50	mg/L	21-SEP-22	30-SEP-22	R5867796
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	0.0162		0.00010	mg/L	26-SEP-22	27-SEP-22	R5866410

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-9 MW3-15 Sampled By: J. SHARPE on 21-SEP-22 @ 08:40 Matrix: WATER							
Dissolved Metals							
Boron (B)-Dissolved	0.081		0.010	mg/L	26-SEP-22	27-SEP-22	R5866410
Calcium (Ca)-Dissolved	3.22		0.050	mg/L	26-SEP-22	27-SEP-22	R5866410
Iron (Fe)-Dissolved	0.409		0.010	mg/L	26-SEP-22	27-SEP-22	R5866410
Magnesium (Mg)-Dissolved	1.03		0.050	mg/L	26-SEP-22	27-SEP-22	R5866410
Sodium (Na)-Dissolved	6.53		0.50	mg/L	26-SEP-22	27-SEP-22	R5866410
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L		24-SEP-22	R5867197
COD	27		10	mg/L		27-SEP-22	R5866606
L2734110-10 MW4-15 Sampled By: J. SHARPE on 21-SEP-22 @ 13:13 Matrix: WATER							
Physical Tests							
Conductivity	102		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	44.6		0.50	mg/L		27-SEP-22	
pH	6.84		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	1070	DLHC	6.0	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	81	DLDS	13	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	44.3		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	44.3		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	0.521	DLHC	0.020	mg/L		04-OCT-22	R5868716
Chloride (Cl)	1.40		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	94.6			uS/cm		01-OCT-22	
Conductivity % Difference	-8			%		01-OCT-22	
Fluoride (F)	0.044		0.020	mg/L		27-SEP-22	R5866782
Ion Balance	122			%		01-OCT-22	
Langelier Index	-2					01-OCT-22	
Nitrate (as N)	0.048		0.020	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	0.718		0.050	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	0.20		0.14	mg/L		04-OCT-22	
Saturation pH	8.65			pH		01-OCT-22	
TDS (Calculated)	51.9			mg/L		01-OCT-22	
Sulfate (SO4)	4.69		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	0.87			me/L		01-OCT-22	
Cation Sum	1.06			me/L		01-OCT-22	
Cation - Anion Balance	10			%		01-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	28-SEP-22	R5866694

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-10 MW4-15 Sampled By: J. SHARPE on 21-SEP-22 @ 13:13 Matrix: WATER							
Organic / Inorganic Carbon							
Dissolved Organic Carbon	2.89		0.50	mg/L	21-SEP-22	30-SEP-22	R5867796
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	0.0156		0.00010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	0.010		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	10.4		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	6.09		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	4.52		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Sodium (Na)-Dissolved	3.49		0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L		24-SEP-22	R5867197
COD	18		10	mg/L		27-SEP-22	R5866606
L2734110-11 MW1-17 Sampled By: J. SHARPE on 21-SEP-22 @ 11:30 Matrix: WATER							
Physical Tests							
Conductivity	253		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	84.6		0.50	mg/L		27-SEP-22	
pH	7.02		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	1000	DLHC	15	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	186	DLDS	20	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	94.7		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	94.7		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	1.15	DLHC	0.050	mg/L		04-OCT-22	R5868716
Chloride (Cl)	21.1		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	228			uS/cm		01-OCT-22	
Conductivity % Difference	-10			%		01-OCT-22	
Fluoride (F)	0.093		0.020	mg/L		27-SEP-22	R5866782
Ion Balance	111			%		01-OCT-22	
Langelier Index	-1					01-OCT-22	
Nitrate (as N)	0.068		0.020	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	2.15	DLM	0.50	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	1.00		0.43	mg/L		04-OCT-22	
Saturation pH	8.10			pH		01-OCT-22	
TDS (Calculated)	129			mg/L		01-OCT-22	
Sulfate (SO4)	3.69		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	2.24			me/L		01-OCT-22	
Cation Sum	2.48			me/L		01-OCT-22	
Cation - Anion Balance	5			%		01-OCT-22	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-11 MW1-17 Sampled By: J. SHARPE on 21-SEP-22 @ 11:30 Matrix: WATER							
Anions and Nutrients							
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	28-SEP-22	R5866694
Dissolved Organic Carbon	24.9		0.50	mg/L	21-SEP-22	30-SEP-22	R5867796
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	0.0547		0.00010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	0.033		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	19.3		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	15.3		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	8.83		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Sodium (Na)-Dissolved	17.1		0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L		24-SEP-22	R5867197
COD	110		10	mg/L		27-SEP-22	R5866606
L2734110-12 MW2-17 Sampled By: J. SHARPE on 21-SEP-22 @ 08:57 Matrix: WATER							
Physical Tests							
Conductivity	162		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	72.0		0.50	mg/L		27-SEP-22	
pH	7.58		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	2350	DLHC	110	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	140	DLDS	13	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	69.5		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	69.5		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	0.026		0.010	mg/L		03-OCT-22	R5868716
Chloride (Cl)	2.53		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	150			uS/cm		01-OCT-22	
Conductivity % Difference	-7			%		01-OCT-22	
Fluoride (F)	0.048		0.020	mg/L		27-SEP-22	R5866782
Ion Balance	115			%		01-OCT-22	
Langelier Index	-1					01-OCT-22	
Nitrate (as N)	0.057		0.020	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	1.12	DLM	0.50	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	1.10		0.50	mg/L		04-OCT-22	
Saturation pH	8.24			pH		01-OCT-22	
TDS (Calculated)	84.5			mg/L		01-OCT-22	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-12 MW2-17 Sampled By: J. SHARPE on 21-SEP-22 @ 08:57 Matrix: WATER							
Anions and Nutrients							
Sulfate (SO4)	10.2		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	1.44			me/L		01-OCT-22	
Cation Sum	1.64			me/L		01-OCT-22	
Cation - Anion Balance	7			%		01-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	28-SEP-22	R5866694
Dissolved Organic Carbon	2.22		0.50	mg/L	21-SEP-22	30-SEP-22	R5867796
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	0.0107		0.00010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	<0.010		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	18.3		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	6.38		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Sodium (Na)-Dissolved	4.20		0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L		24-SEP-22	R5867197
COD	74		10	mg/L		27-SEP-22	R5866606
L2734110-13 MW1-20 Sampled By: J. SHARPE on 21-SEP-22 @ 10:51 Matrix: WATER							
Physical Tests							
Conductivity	2900		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	590		0.50	mg/L		27-SEP-22	
pH	7.49		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	26400	DLHC	110	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	1620	DLDS	20	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	79.4		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	79.4		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	2.52	DLHC	0.10	mg/L		04-OCT-22	R5868716
Chloride (Cl)	863	DLDS	2.5	mg/L		27-SEP-22	R5866782
Computed Conductivity	2360			uS/cm		01-OCT-22	
Conductivity % Difference	-21			%		01-OCT-22	
Fluoride (F)	<0.10	DLDS	0.10	mg/L		27-SEP-22	R5866782
Ion Balance	98			%		01-OCT-22	
Langelier Index	0					01-OCT-22	
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		27-SEP-22	R5866782

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-13 MW1-20 Sampled By: J. SHARPE on 21-SEP-22 @ 10:51 Matrix: WATER							
Anions and Nutrients							
Total Kjeldahl Nitrogen	3.40	DLM	0.50	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	0.88		0.68	mg/L		04-OCT-22	
Saturation pH	7.48			pH		01-OCT-22	
TDS (Calculated)	1430			mg/L		01-OCT-22	
Sulfate (SO4)	<1.5	DLDS	1.5	mg/L		27-SEP-22	R5866782
Anion Sum	25.7			me/L		01-OCT-22	
Cation Sum	25.3			me/L		01-OCT-22	
Cation - Anion Balance	-1			%		01-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	29-SEP-22	R5867018
Dissolved Organic Carbon	10.9		0.50	mg/L	21-SEP-22	03-OCT-22	R5868461
Total Metals							
Arsenic (As)-Total	0.0304	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Barium (Ba)-Total	0.956	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	26-SEP-22	26-SEP-22	R5866442
Cadmium (Cd)-Total	0.000591	DLHC	0.000050	mg/L	26-SEP-22	26-SEP-22	R5866442
Chromium (Cr)-Total	0.137	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Copper (Cu)-Total	0.189	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Iron (Fe)-Total	111	DLHC	0.10	mg/L	26-SEP-22	26-SEP-22	R5866442
Lead (Pb)-Total	0.0734	DLHC	0.00050	mg/L	26-SEP-22	26-SEP-22	R5866442
Mercury (Hg)-Total	0.0000050		0.0000050	mg/L		26-SEP-22	R5866315
Zinc (Zn)-Total	0.195	DLHC	0.030	mg/L	26-SEP-22	26-SEP-22	R5866442
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	0.326		0.00010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	0.011		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	158		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	20.4		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	47.6		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Sodium (Na)-Dissolved	303		0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L		24-SEP-22	R5867197
COD	120		10	mg/L		27-SEP-22	R5866606
L2734110-14 DUPLICATE Sampled By: J. SHARPE on 21-SEP-22 @ 09:05 Matrix: WATER							
Physical Tests							
Conductivity	165		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	73.0		0.50	mg/L		27-SEP-22	
pH	7.68		0.10	pH units		30-SEP-22	R5867290

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-14 DUPLICATE Sampled By: J. SHARPE on 21-SEP-22 @ 09:05 Matrix: WATER							
Physical Tests							
Total Suspended Solids	2860	DLHC	110	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	132	DLDS	13	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	69.4		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	69.4		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	0.036		0.010	mg/L		04-OCT-22	R5868716
Chloride (Cl)	2.54		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	152			uS/cm		01-OCT-22	
Conductivity % Difference	-8			%		01-OCT-22	
Fluoride (F)	0.048		0.020	mg/L		27-SEP-22	R5866782
Ion Balance	117			%		01-OCT-22	
Langelier Index	-1					01-OCT-22	
Nitrate (as N)	0.063		0.020	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	1.66	DLM	0.50	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	1.62		0.50	mg/L		04-OCT-22	
Saturation pH	8.23			pH		01-OCT-22	
TDS (Calculated)	85.2			mg/L		01-OCT-22	
Sulfate (SO4)	10.3		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	1.44			me/L		01-OCT-22	
Cation Sum	1.68			me/L		01-OCT-22	
Cation - Anion Balance	8			%		01-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	29-SEP-22	R5867018
Dissolved Organic Carbon	1.98		0.50	mg/L	21-SEP-22	03-OCT-22	R5868461
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	0.0114		0.00010	mg/L	26-SEP-22	27-SEP-22	R5866410
Boron (B)-Dissolved	<0.010		0.010	mg/L	26-SEP-22	27-SEP-22	R5866410
Calcium (Ca)-Dissolved	18.7		0.050	mg/L	26-SEP-22	27-SEP-22	R5866410
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-SEP-22	27-SEP-22	R5866410
Magnesium (Mg)-Dissolved	6.35		0.050	mg/L	26-SEP-22	27-SEP-22	R5866410
Sodium (Na)-Dissolved	4.48		0.50	mg/L	26-SEP-22	27-SEP-22	R5866410
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L		24-SEP-22	R5867197
COD	103		10	mg/L		27-SEP-22	R5866606
L2734110-15 FIELD BLANK Sampled By: J. SHARPE on 21-SEP-22 @ 15:45 Matrix: WATER							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-15 FIELD BLANK Sampled By: J. SHARPE on 21-SEP-22 @ 15:45 Matrix: WATER							
Physical Tests							
Conductivity	<1.0		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	<0.50		0.50	mg/L		27-SEP-22	
pH	5.87		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	<3.0		3.0	mg/L	30-SEP-22	03-OCT-22	R5869478
Total Dissolved Solids	<10		10	mg/L		30-SEP-22	R5869477
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	<0.010		0.010	mg/L		03-OCT-22	R5868716
Chloride (Cl)	<0.50		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	<0.20			uS/cm		05-OCT-22	
Conductivity % Difference	<-100			%		05-OCT-22	
Fluoride (F)	<0.020		0.020	mg/L		27-SEP-22	R5866782
Ion Balance	Low TDS			%		05-OCT-22	
Langelier Index	Low Calcium					05-OCT-22	
Nitrate (as N)	<0.020		0.020	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	<0.050		0.050	mg/L		04-OCT-22	
Saturation pH	Low Calcium			pH		05-OCT-22	
TDS (Calculated)	<1.0			mg/L		05-OCT-22	
Sulfate (SO4)	<0.30		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	<0.10			me/L		05-OCT-22	
Cation Sum	<0.10			me/L		05-OCT-22	
Cation - Anion Balance	Low TDS			%		05-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	29-SEP-22	R5867018
Dissolved Organic Carbon	<0.50		0.50	mg/L	21-SEP-22	03-OCT-22	R5868461
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	<0.010		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	<0.050		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Sodium (Na)-Dissolved	<0.50		0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	<2.0		2.0	mg/L		24-SEP-22	R5867197
COD	<10		10	mg/L		27-SEP-22	R5866606

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-15 FIELD BLANK Sampled By: J. SHARPE on 21-SEP-22 @ 15:45 Matrix: WATER							
Aggregate Organics							
L2734110-16 TRAVEL BLANK Sampled By: J. SHARPE on 21-SEP-22 Matrix: WATER							
Physical Tests							
Conductivity	<1.0		1.0	umhos/cm		30-SEP-22	R5867290
Hardness (as CaCO3)	<0.50		0.50	mg/L		27-SEP-22	
pH	5.64		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	<3.0		3.0	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	<10		10	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	<0.010		0.010	mg/L		03-OCT-22	R5868716
Chloride (Cl)	<0.50		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	<0.20			uS/cm		01-OCT-22	
Conductivity % Difference	<-100			%		01-OCT-22	
Fluoride (F)	<0.020		0.020	mg/L		27-SEP-22	R5866782
Ion Balance	Low TDS			%		01-OCT-22	
Langelier Index	Low Calcium					01-OCT-22	
Nitrate (as N)	<0.020		0.020	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L	03-OCT-22	03-OCT-22	R5868297
Total Organic Nitrogen	<0.050		0.050	mg/L		04-OCT-22	
Saturation pH	Low Calcium			pH		01-OCT-22	
TDS (Calculated)	<1.0			mg/L		01-OCT-22	
Sulfate (SO4)	<0.30		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	<0.10			me/L		01-OCT-22	
Cation Sum	<0.10			me/L		01-OCT-22	
Cation - Anion Balance	Low TDS			%		01-OCT-22	
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		27-SEP-22	R5866690
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	29-SEP-22	R5867018
Dissolved Organic Carbon	<0.50		0.50	mg/L	21-SEP-22	03-OCT-22	R5868461
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866288
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-22	26-SEP-22	R5866410
Boron (B)-Dissolved	<0.010		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Magnesium (Mg)-Dissolved	<0.050		0.050	mg/L	26-SEP-22	26-SEP-22	R5866410

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-16 TRAVEL BLANK Sampled By: J. SHARPE on 21-SEP-22 Matrix: WATER							
Dissolved Metals							
Sodium (Na)-Dissolved	<0.50		0.50	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	<2.0		2.0	mg/L		24-SEP-22	R5867197
COD	<10		10	mg/L		27-SEP-22	R5866606
L2734110-17 TRAVEL VOC SPIKE Sampled By: J. SHARPE on 21-SEP-22 Matrix: WATER							
Volatile Organic Compounds							
Acetone	135		20	%		27-SEP-22	R5866421
Benzene	105		0.50	%		27-SEP-22	R5866421
Bromodichloromethane	94.9		1.0	%		27-SEP-22	R5866421
Bromoform	95.2		1.0	%		27-SEP-22	R5866421
Bromomethane	81.7		0.50	%		27-SEP-22	R5866421
Carbon Disulfide	82.4		1.0	%		27-SEP-22	R5866421
Carbon tetrachloride	84.3		0.20	%		27-SEP-22	R5866421
Chlorobenzene	96.1		0.50	%		27-SEP-22	R5866421
Dibromochloromethane	93.3		1.0	%		27-SEP-22	R5866421
Chloroethane	100		1.0	%		27-SEP-22	R5866421
Chloroform	92.6		1.0	%		27-SEP-22	R5866421
Chloromethane	93.0		2.0	%		27-SEP-22	R5866421
1,2-Dibromoethane	90.1		0.20	%		27-SEP-22	R5866421
1,2-Dichlorobenzene	91.4		0.50	%		27-SEP-22	R5866421
1,3-Dichlorobenzene	85.9		0.50	%		27-SEP-22	R5866421
1,4-Dichlorobenzene	85.5		0.50	%		27-SEP-22	R5866421
Dichlorodifluoromethane	87.5		1.0	%		27-SEP-22	R5866421
1,1-Dichloroethane	98.5		0.50	%		27-SEP-22	R5866421
1,2-Dichloroethane	93.8		0.50	%		27-SEP-22	R5866421
1,1-Dichloroethylene	88.9		0.50	%		27-SEP-22	R5866421
cis-1,2-Dichloroethylene	84.6		0.50	%		27-SEP-22	R5866421
trans-1,2-Dichloroethylene	90.4		0.50	%		27-SEP-22	R5866421
Dichloromethane	94.3		2.0	%		27-SEP-22	R5866421
1,2-Dichloropropane	98.3		0.50	%		27-SEP-22	R5866421
cis-1,3-Dichloropropene	57.5		0.30	%		27-SEP-22	R5866421
trans-1,3-Dichloropropene	54.2		0.30	%		27-SEP-22	R5866421
Ethylbenzene	90.3		0.50	%		27-SEP-22	R5866421
n-Hexane	51.2		0.50	%		27-SEP-22	R5866421
2-Hexanone	93		20	%		27-SEP-22	R5866421
Methyl Ethyl Ketone	107		20	%		27-SEP-22	R5866421
Methyl Isobutyl Ketone	97		20	%		27-SEP-22	R5866421
MTBE	105		0.50	%		27-SEP-22	R5866421
Styrene	100		0.50	%		27-SEP-22	R5866421
1,1,1,2-Tetrachloroethane	88.0		0.50	%		27-SEP-22	R5866421

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734110-17 TRAVEL VOC SPIKE Sampled By: J. SHARPE on 21-SEP-22 Matrix: WATER							
Volatile Organic Compounds							
1,1,2,2-Tetrachloroethane	92.7		0.50	%		27-SEP-22	R5866421
Tetrachloroethylene	80.0		0.50	%		27-SEP-22	R5866421
Toluene	94.1		0.40	%		27-SEP-22	R5866421
1,1,1-Trichloroethane	85.6		0.50	%		27-SEP-22	R5866421
1,1,2-Trichloroethane	96.6		0.50	%		27-SEP-22	R5866421
Trichloroethylene	85.5		0.50	%		27-SEP-22	R5866421
Trichlorofluoromethane	84.0		1.0	%		27-SEP-22	R5866421
Vinyl chloride	88.8		0.50	%		27-SEP-22	R5866421
o-Xylene	92.0		0.30	%		27-SEP-22	R5866421
m+p-Xylenes	86.2		0.40	%		27-SEP-22	R5866421
Xylenes (Total)	178		0.50	%		27-SEP-22	
Surrogate: 4-Bromofluorobenzene	90.6		70-130	%		27-SEP-22	R5866421
Surrogate: 1,4-Difluorobenzene	97.2		70-130	%		27-SEP-22	R5866421
Trihalomethanes							
Total THMs	376		2.0	%		27-SEP-22	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Dissolved Organic Carbon	MS-B	L2734110-1, -2, -3, -4
Matrix Spike	Dissolved Organic Carbon	MS-B	L2734110-10, -11, -12, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2734110-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L2734110-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2734110-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2734110-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2734110-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2734110-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2734110-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L2734110-13
Matrix Spike	Copper (Cu)-Total	MS-B	L2734110-13
Matrix Spike	Iron (Fe)-Total	MS-B	L2734110-13
Matrix Spike	Ammonia, Total (as N)	MS-B	L2734110-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Ammonia, Total (as N)	MS-B	L2734110-15, -16
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L2734110-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9

Sample Parameter Qualifier key listed:

Qualifier	Description
BODL	Limit of Reporting for BOD was increased to account for the largest volume of sample tested.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
OWP	Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-SPEC-PCT-WT	Water	Automated Speciated Alkalinity	APHA 2320B

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BOD-WT	Water	BOD	APHA 5210 B

This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CN-TOT-WT	Water	Cyanide, Total	ISO 14403-2

Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference

COD-T-WT	Water	Chemical Oxygen Demand	APHA 5220 D

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

Reference Information

DOC-WT	Water	Dissolved Organic Carbon	APHA 5310B

Sample is filtered through a 0.45um filter, then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

EC-WT	Water	Conductivity	APHA 2510 B

Water samples can be measured directly by immersing the conductivity cell into the sample.

ETL-N2N3-WT	Water	Calculate from NO2 + NO3	APHA 4110 B
F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-WT	Water	Hardness	APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-WT	Water	Dissolved Mercury in Water by CVAAS	EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

HG-T-CVAA-WT	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-OP03-WT	Water	Detailed Ion Balance Calculation	APHA 1030E, 2330B, 2510A
MET-D-CCMS-WT	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

N-T-ORG-CALC-WT	Water	Total Organic Nitrogen (Calculation)	APHA 4500-NORG (TKN)/NH3-NITROGEN (NH3)

Total Organic Nitrogen is a calculated parameter. Total Organic Nitrogen = Total Kjeldahl Nitrogen - Ammonia.

NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is deteremined colourimetrically after persulphate digestion of the sample.

PH-WT	Water	pH	APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

SOLIDS-TSS-WT	Water	Suspended solids	APHA 2540 D-Gravimetric

A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104–1°C for a minimum of four hours or until a constant weight is achieved.

THM-SUM-PPB-CALC-WT	Water	Total Trihalomethanes (THMs)	CALCULATION

Total Trihalomethanes (THMs) represents the sum of bromodichloromethane, bromoform, chlorodibromomethane and chloroform. For the purpose of calculation, results less than the detection limit (DL) are treated as zero.

TKN-F-WT	Water	TKN in Water by Fluorescence	J. ENVIRON. MONIT., 2005,7,37-42,RSC

Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection

VOC-ROU-HS-WT	Water	Volatile Organic Compounds	SW846 8260

Aqueous samples are analyzed by headspace-GC/MS.

XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Total xylenes represents the sum of o-xylene and m&p-xylene.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

1 2

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

KRESIN ENGINEERING CORP.
ATTN: Jennifer Sharpe
536 Fourth Line East
Sault Ste Marie ON P6A 5K8

Date Received: 23-SEP-22
Report Date: 24-OCT-22 10:29 (MT)
Version: FINAL

Client Phone: 705-949-4900

Certificate of Analysis

Lab Work Order #: L2734104

Project P.O. #: NOT SUBMITTED
Job Reference: BLIND RIVER LANDFILL
C of C Numbers:
Legal Site Desc:

Stephanie Finley
Project Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734104-1 SW1 Sampled By: J. SHARPE on 21-SEP-22 @ 15:19 Matrix: WATER							
Physical Tests							
Conductivity	959		1.0	umhos/cm		30-SEP-22	R5867289
pH	8.38	PEHT	0.10	pH units		30-SEP-22	R5867289
Total Suspended Solids	114	DLHC	15	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	547	DLDS	20	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	370		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Carbonate (as CaCO3)	16.6		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Total (as CaCO3)	386		1.0	mg/L		30-SEP-22	R5867289
Ammonia, Total (as N)	7.67	DLHC	0.20	mg/L		03-OCT-22	R5868716
Chloride (Cl)	81.0		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	864			uS/cm		01-OCT-22	
Conductivity % Difference	-10			%		01-OCT-22	
Hardness (as CaCO3)	311			mg/L		01-OCT-22	
Ion Balance	113			%		01-OCT-22	
Langelier Index	1					01-OCT-22	
Nitrate and Nitrite as N	0.269		0.022	mg/L		28-SEP-22	
Nitrate (as N)	0.100		0.020	mg/L		27-SEP-22	R5866782
Nitrite (as N)	0.169		0.010	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	12.2	DLHC	0.20	mg/L	03-OCT-22	04-OCT-22	R5868297
Saturation pH	6.97			pH		01-OCT-22	
Phosphorus, Total	0.161		0.0030	mg/L	03-OCT-22	04-OCT-22	R5868819
TDS (Calculated)	551			mg/L		01-OCT-22	
Sulfate (SO4)	14.3		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	9.08			me/L		01-OCT-22	
Cation Sum	10.3			me/L		01-OCT-22	
Cation - Anion Balance	6			%		01-OCT-22	
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	29-SEP-22	R5867018
Dissolved Organic Carbon	28.2	DLM	2.5	mg/L	21-SEP-22	03-OCT-22	R5868461
Total Metals							
Arsenic (As)-Total	<0.0010	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Barium (Ba)-Total	0.101	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Boron (B)-Total	0.80	DLHC	0.10	mg/L	26-SEP-22	26-SEP-22	R5866442
Cadmium (Cd)-Total	<0.000050	DLHC	0.000050	mg/L	26-SEP-22	26-SEP-22	R5866442
Chromium (Cr)-Total	<0.0050	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Cobalt (Co)-Total	0.0013	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Copper (Cu)-Total	<0.0050	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Iron (Fe)-Total	3.70	DLHC	0.10	mg/L	26-SEP-22	26-SEP-22	R5866442
Lead (Pb)-Total	<0.00050	DLHC	0.00050	mg/L	26-SEP-22	26-SEP-22	R5866442
Manganese (Mn)-Total	0.355	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		26-SEP-22	R5866315

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734104-1 SW1 Sampled By: J. SHARPE on 21-SEP-22 @ 15:19 Matrix: WATER							
Total Metals							
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	26-SEP-22	26-SEP-22	R5866442
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866281
Manganese (Mn)-Dissolved	0.225		0.00050	mg/L	26-SEP-22	26-SEP-22	R5866410
Zinc (Zn)-Dissolved	0.0021		0.0010	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	5.3		2.0	mg/L		24-SEP-22	R5867197
COD	82		10	mg/L		27-SEP-22	R5866605
Phenols (4AAP)	0.0021		0.0010	mg/L		03-OCT-22	R5868759
L2734104-2 SW2 Sampled By: J. SHARPE on 21-SEP-22 @ 16:03 Matrix: WATER							
Physical Tests							
Conductivity	536		1.0	umhos/cm		30-SEP-22	R5867289
pH	8.40	PEHT	0.10	pH units		30-SEP-22	R5867289
Total Suspended Solids	10.9		3.0	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	317	DLDS	20	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	230		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Carbonate (as CaCO3)	8.8		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Total (as CaCO3)	239		1.0	mg/L		30-SEP-22	R5867289
Ammonia, Total (as N)	0.020		0.010	mg/L		03-OCT-22	R5868716
Chloride (Cl)	34.4		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	493			uS/cm		01-OCT-22	
Conductivity % Difference	-8			%		01-OCT-22	
Hardness (as CaCO3)	164			mg/L		01-OCT-22	
Ion Balance	112			%		01-OCT-22	
Langelier Index	1					01-OCT-22	
Nitrate and Nitrite as N	<0.022		0.022	mg/L		28-SEP-22	
Nitrate (as N)	<0.020		0.020	mg/L		27-SEP-22	R5866782
Nitrite (as N)	<0.010		0.010	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	0.878		0.050	mg/L	03-OCT-22	03-OCT-22	R5868297
Saturation pH	7.40			pH		01-OCT-22	
Phosphorus, Total	0.0203		0.0030	mg/L	03-OCT-22	04-OCT-22	R5868819
TDS (Calculated)	305			mg/L		01-OCT-22	
Sulfate (SO4)	<0.30		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	4.99			me/L		01-OCT-22	
Cation Sum	5.61			me/L		01-OCT-22	
Cation - Anion Balance	6			%		01-OCT-22	
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	29-SEP-22	R5867018

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734104-2 SW2 Sampled By: J. SHARPE on 21-SEP-22 @ 16:03 Matrix: WATER							
Organic / Inorganic Carbon							
Dissolved Organic Carbon	21.1	DLM	2.5	mg/L	21-SEP-22	03-OCT-22	R5868461
Total Metals							
Arsenic (As)-Total	<0.0010	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Barium (Ba)-Total	0.0388	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Boron (B)-Total	0.38	DLHC	0.10	mg/L	26-SEP-22	26-SEP-22	R5866442
Cadmium (Cd)-Total	<0.000050	DLHC	0.000050	mg/L	26-SEP-22	26-SEP-22	R5866442
Chromium (Cr)-Total	<0.0050	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Cobalt (Co)-Total	<0.0010	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Copper (Cu)-Total	<0.0050	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Iron (Fe)-Total	0.74	DLHC	0.10	mg/L	26-SEP-22	26-SEP-22	R5866442
Lead (Pb)-Total	<0.00050	DLHC	0.00050	mg/L	26-SEP-22	26-SEP-22	R5866442
Manganese (Mn)-Total	0.0430	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		26-SEP-22	R5866315
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	26-SEP-22	26-SEP-22	R5866442
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866281
Manganese (Mn)-Dissolved	0.0326		0.00050	mg/L	26-SEP-22	26-SEP-22	R5866410
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L		24-SEP-22	R5867197
COD	56		10	mg/L		27-SEP-22	R5866605
Phenols (4AAP)	<0.0010		0.0010	mg/L		05-OCT-22	R5868759
L2734104-3 SW3 Sampled By: J. SHARPE on 21-SEP-22 @ 16:10 Matrix: WATER							
Physical Tests							
Conductivity	593		1.0	umhos/cm		30-SEP-22	R5867289
pH	8.30	PEHT	0.10	pH units		30-SEP-22	R5867289
Total Suspended Solids	89	DLHC	15	mg/L	30-SEP-22	03-OCT-22	R5869478
Total Dissolved Solids	389	DLDS	20	mg/L		30-SEP-22	R5869477
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	227		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Carbonate (as CaCO3)	3.1		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Total (as CaCO3)	230		1.0	mg/L		30-SEP-22	R5867289
Ammonia, Total (as N)	16.8	DLHC	0.50	mg/L		03-OCT-22	R5868716
Chloride (Cl)	45.3		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	549			uS/cm		05-OCT-22	
Conductivity % Difference	-8			%		05-OCT-22	
Hardness (as CaCO3)	140			mg/L		05-OCT-22	
Ion Balance	118			%		05-OCT-22	
Langelier Index	1					05-OCT-22	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734104-3 SW3 Sampled By: J. SHARPE on 21-SEP-22 @ 16:10 Matrix: WATER							
Anions and Nutrients							
Nitrate and Nitrite as N	<0.022		0.022	mg/L		28-SEP-22	
Nitrate (as N)	<0.020		0.020	mg/L		27-SEP-22	R5866782
Nitrite (as N)	<0.010		0.010	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	24.7	DLHC	0.25	mg/L	03-OCT-22	04-OCT-22	R5868297
Saturation pH	7.49			pH		05-OCT-22	
Phosphorus, Total	0.187		0.0030	mg/L	03-OCT-22	04-OCT-22	R5868819
TDS (Calculated)	297			mg/L		05-OCT-22	
Sulfate (SO4)	6.63		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	5.26			me/L		05-OCT-22	
Cation Sum	6.20			me/L		05-OCT-22	
Cation - Anion Balance	8			%		05-OCT-22	
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	29-SEP-22	R5867018
Dissolved Organic Carbon	64.9	DLM	2.5	mg/L	21-SEP-22	03-OCT-22	R5868461
Total Metals							
Arsenic (As)-Total	0.0025	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Barium (Ba)-Total	0.102	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Boron (B)-Total	0.39	DLHC	0.10	mg/L	26-SEP-22	26-SEP-22	R5866442
Cadmium (Cd)-Total	<0.000050	DLHC	0.000050	mg/L	26-SEP-22	26-SEP-22	R5866442
Chromium (Cr)-Total	<0.0050	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Cobalt (Co)-Total	0.0015	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Copper (Cu)-Total	<0.0050	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Iron (Fe)-Total	23.8	DLHC	0.10	mg/L	26-SEP-22	26-SEP-22	R5866442
Lead (Pb)-Total	0.00228	DLHC	0.00050	mg/L	26-SEP-22	26-SEP-22	R5866442
Manganese (Mn)-Total	0.0904	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		26-SEP-22	R5866315
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	26-SEP-22	26-SEP-22	R5866442
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866281
Manganese (Mn)-Dissolved	0.0506	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866410
Zinc (Zn)-Dissolved	<0.010	DLHC	0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	4.7		2.0	mg/L		24-SEP-22	R5867197
COD	195		10	mg/L		27-SEP-22	R5866605
Phenols (4AAP)	0.0030		0.0010	mg/L		03-OCT-22	R5868759
L2734104-4 SW5 Sampled By: J. SHARPE on 21-SEP-22 @ 14:54 Matrix: WATER							
Physical Tests							
Conductivity	854		1.0	umhos/cm		30-SEP-22	R5867289
pH	8.34	PEHT	0.10	pH units		30-SEP-22	R5867289
Total Suspended Solids	40	DLHC	15	mg/L	29-SEP-22	01-OCT-22	R5867299

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734104-4 SW5 Sampled By: J. SHARPE on 21-SEP-22 @ 14:54 Matrix: WATER							
Physical Tests							
Total Dissolved Solids	424	DLDS	20	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	365		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Carbonate (as CaCO3)	11.0		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Total (as CaCO3)	376		1.0	mg/L		30-SEP-22	R5867289
Ammonia, Total (as N)	24.3	DLHC	0.50	mg/L		04-OCT-22	R5868716
Chloride (Cl)	52.3		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	666			uS/cm		01-OCT-22	
Conductivity % Difference	-25			%		01-OCT-22	
Hardness (as CaCO3)	231			mg/L		01-OCT-22	
Ion Balance	91			%		01-OCT-22	
Langelier Index	1					01-OCT-22	
Nitrate and Nitrite as N	<0.022		0.022	mg/L		28-SEP-22	
Nitrate (as N)	<0.020		0.020	mg/L		27-SEP-22	R5866782
Nitrite (as N)	<0.010		0.010	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	37.6	DLHC	0.50	mg/L	03-OCT-22	04-OCT-22	R5868297
Saturation pH	7.06			pH		01-OCT-22	
Phosphorus, Total	0.265		0.0030	mg/L	03-OCT-22	04-OCT-22	R5868819
TDS (Calculated)	434			mg/L		01-OCT-22	
Sulfate (SO4)	3.26		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	7.84			me/L		01-OCT-22	
Cation Sum	7.13			me/L		01-OCT-22	
Cation - Anion Balance	-5			%		01-OCT-22	
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	29-SEP-22	R5867018
Dissolved Organic Carbon	30.2	DLM	2.5	mg/L	21-SEP-22	03-OCT-22	R5868461
Total Metals							
Arsenic (As)-Total	0.0018	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Barium (Ba)-Total	0.127	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Boron (B)-Total	0.36	DLHC	0.10	mg/L	26-SEP-22	26-SEP-22	R5866442
Cadmium (Cd)-Total	<0.000050	DLHC	0.000050	mg/L	26-SEP-22	26-SEP-22	R5866442
Chromium (Cr)-Total	<0.0050	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Cobalt (Co)-Total	0.0012	DLHC	0.0010	mg/L	26-SEP-22	26-SEP-22	R5866442
Copper (Cu)-Total	<0.0050	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Iron (Fe)-Total	16.0	DLHC	0.10	mg/L	26-SEP-22	26-SEP-22	R5866442
Lead (Pb)-Total	<0.00050	DLHC	0.00050	mg/L	26-SEP-22	26-SEP-22	R5866442
Manganese (Mn)-Total	0.544	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866442
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		26-SEP-22	R5866315
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	26-SEP-22	26-SEP-22	R5866442
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866281

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734104-4 SW5 Sampled By: J. SHARPE on 21-SEP-22 @ 14:54 Matrix: WATER							
Dissolved Metals							
Manganese (Mn)-Dissolved	0.517	DLHC	0.0050	mg/L	26-SEP-22	26-SEP-22	R5866410
Zinc (Zn)-Dissolved	<0.010	DLHC	0.010	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	4.9		2.0	mg/L		24-SEP-22	R5867197
COD	89		10	mg/L		27-SEP-22	R5866605
Phenols (4AAP)	0.0065		0.0010	mg/L		03-OCT-22	R5868759
L2734104-5 SW6 Sampled By: J. SHARPE on 21-SEP-22 @ 12:31 Matrix: WATER							
Physical Tests							
Conductivity	102		1.0	umhos/cm		30-SEP-22	R5867289
pH	7.70	PEHT	0.10	pH units		30-SEP-22	R5867289
Total Suspended Solids	18.2	DLHC	6.0	mg/L	29-SEP-22	01-OCT-22	R5867299
Total Dissolved Solids	83	DLDS	13	mg/L		01-OCT-22	R5867313
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	47.3		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867289
Alkalinity, Total (as CaCO3)	47.3		1.0	mg/L		30-SEP-22	R5867289
Ammonia, Total (as N)	0.072		0.010	mg/L		04-OCT-22	R5868716
Chloride (Cl)	1.27		0.50	mg/L		27-SEP-22	R5866782
Computed Conductivity	99.5			uS/cm		01-OCT-22	
Conductivity % Difference	-3			%		01-OCT-22	
Hardness (as CaCO3)	47.1			mg/L		01-OCT-22	
Ion Balance	131			%		01-OCT-22	
Langelier Index	-1					01-OCT-22	
Nitrate and Nitrite as N	<0.022		0.022	mg/L		28-SEP-22	
Nitrate (as N)	<0.020		0.020	mg/L		27-SEP-22	R5866782
Nitrite (as N)	<0.010		0.010	mg/L		27-SEP-22	R5866782
Total Kjeldahl Nitrogen	3.02		0.050	mg/L	03-OCT-22	03-OCT-22	R5868297
Saturation pH	8.58			pH		01-OCT-22	
Phosphorus, Total	0.202		0.0030	mg/L	03-OCT-22	04-OCT-22	R5868819
TDS (Calculated)	54.5			mg/L		01-OCT-22	
Sulfate (SO4)	3.04		0.30	mg/L		27-SEP-22	R5866782
Anion Sum	0.88			me/L		01-OCT-22	
Cation Sum	1.15			me/L		01-OCT-22	
Cation - Anion Balance	13			%		01-OCT-22	
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	29-SEP-22	R5867018
Dissolved Organic Carbon	24.9		0.50	mg/L	21-SEP-22	03-OCT-22	R5868461
Total Metals							
Arsenic (As)-Total	0.00249		0.00010	mg/L	26-SEP-22	27-SEP-22	R5866442

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734104-5 SW6 Sampled By: J. SHARPE on 21-SEP-22 @ 12:31 Matrix: WATER							
Total Metals							
Barium (Ba)-Total	0.0474		0.00010	mg/L	26-SEP-22	27-SEP-22	R5866442
Boron (B)-Total	0.015		0.010	mg/L	26-SEP-22	27-SEP-22	R5866442
Cadmium (Cd)-Total	0.0000718		0.0000050	mg/L	26-SEP-22	27-SEP-22	R5866442
Chromium (Cr)-Total	0.00247		0.00050	mg/L	26-SEP-22	27-SEP-22	R5866442
Cobalt (Co)-Total	0.00209		0.00010	mg/L	26-SEP-22	27-SEP-22	R5866442
Copper (Cu)-Total	0.0023		0.0010	mg/L	26-SEP-22	27-SEP-22	R5866442
Iron (Fe)-Total	2.18		0.010	mg/L	26-SEP-22	27-SEP-22	R5866442
Lead (Pb)-Total	0.00208		0.000050	mg/L	26-SEP-22	27-SEP-22	R5866442
Manganese (Mn)-Total	1.43		0.00050	mg/L	26-SEP-22	27-SEP-22	R5866442
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		26-SEP-22	R5866315
Zinc (Zn)-Total	0.0114		0.0030	mg/L	26-SEP-22	27-SEP-22	R5866442
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866281
Manganese (Mn)-Dissolved	0.0887		0.00050	mg/L	26-SEP-22	26-SEP-22	R5866410
Zinc (Zn)-Dissolved	0.0013		0.0010	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	13.8		2.0	mg/L		24-SEP-22	R5867197
COD	95		10	mg/L		27-SEP-22	R5866605
Phenols (4AAP)	0.0015		0.0010	mg/L		03-OCT-22	R5868759
L2734104-6 SW7 Sampled By: J. SHARPE on 21-SEP-22 @ 16:43 Matrix: WATER							
Physical Tests							
Conductivity	1440		1.0	umhos/cm		30-SEP-22	R5867290
pH	7.67		0.10	pH units		30-SEP-22	R5867290
Total Suspended Solids	271	DLHC	15	mg/L	30-SEP-22	03-OCT-22	R5869478
Total Dissolved Solids	776	DLDS	20	mg/L		30-SEP-22	R5869477
Anions and Nutrients							
Alkalinity, Bicarbonate (as CaCO3)	107		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-SEP-22	R5867290
Alkalinity, Total (as CaCO3)	107		1.0	mg/L		30-SEP-22	R5867290
Ammonia, Total (as N)	0.050		0.010	mg/L		04-OCT-22	R5868716
Chloride (Cl)	404	DLDS	2.5	mg/L		27-SEP-22	R5866782
Computed Conductivity	1280			uS/cm		05-OCT-22	
Conductivity % Difference	-11			%		05-OCT-22	
Hardness (as CaCO3)	203			mg/L		05-OCT-22	
Ion Balance	97			%		05-OCT-22	
Langelier Index	0					05-OCT-22	
Nitrate and Nitrite as N	<0.11		0.11	mg/L		28-SEP-22	
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		27-SEP-22	R5866782
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		27-SEP-22	R5866782

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2734104-6 SW7 Sampled By: J. SHARPE on 21-SEP-22 @ 16:43 Matrix: WATER							
Anions and Nutrients							
Total Kjeldahl Nitrogen	4.40		0.050	mg/L	03-OCT-22	03-OCT-22	R5868297
Saturation pH	7.72			pH		05-OCT-22	
Phosphorus, Total	0.521		0.0030	mg/L	03-OCT-22	04-OCT-22	R5868819
TDS (Calculated)	749			mg/L		05-OCT-22	
Sulfate (SO4)	6.0	DLDS	1.5	mg/L		27-SEP-22	R5866782
Anion Sum	13.3			me/L		05-OCT-22	
Cation Sum	12.8			me/L		05-OCT-22	
Cation - Anion Balance	-2			%		05-OCT-22	
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	FIELD				21-SEP-22	29-SEP-22	R5867018
Dissolved Organic Carbon	17.6		0.50	mg/L	21-SEP-22	03-OCT-22	R5868461
Total Metals							
Arsenic (As)-Total	0.00106		0.00010	mg/L	26-SEP-22	27-SEP-22	R5866442
Barium (Ba)-Total	0.0753		0.00010	mg/L	26-SEP-22	27-SEP-22	R5866442
Boron (B)-Total	0.053		0.010	mg/L	26-SEP-22	27-SEP-22	R5866442
Cadmium (Cd)-Total	0.0000094		0.0000050	mg/L	26-SEP-22	27-SEP-22	R5866442
Chromium (Cr)-Total	0.00155		0.00050	mg/L	26-SEP-22	27-SEP-22	R5866442
Cobalt (Co)-Total	0.00089		0.00010	mg/L	26-SEP-22	27-SEP-22	R5866442
Copper (Cu)-Total	0.0017		0.0010	mg/L	26-SEP-22	27-SEP-22	R5866442
Iron (Fe)-Total	4.18		0.010	mg/L	26-SEP-22	27-SEP-22	R5866442
Lead (Pb)-Total	0.000452		0.000050	mg/L	26-SEP-22	27-SEP-22	R5866442
Manganese (Mn)-Total	0.295		0.00050	mg/L	26-SEP-22	27-SEP-22	R5866442
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		26-SEP-22	R5866315
Zinc (Zn)-Total	0.0075		0.0030	mg/L	26-SEP-22	27-SEP-22	R5866442
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					26-SEP-22	R5866281
Manganese (Mn)-Dissolved	0.201		0.00050	mg/L	26-SEP-22	26-SEP-22	R5866410
Zinc (Zn)-Dissolved	0.0014		0.0010	mg/L	26-SEP-22	26-SEP-22	R5866410
Aggregate Organics							
BOD	12.5		2.0	mg/L		24-SEP-22	R5867197
COD	152		10	mg/L		27-SEP-22	R5866605
Phenols (4AAP)	0.0015		0.0010	mg/L		03-OCT-22	R5868759

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Chloride (Cl)	MS-B	L2734104-1, -2, -3, -4, -5, -6
Matrix Spike	Barium (Ba)-Total	MS-B	L2734104-1, -2, -3, -4, -5, -6
Matrix Spike	Copper (Cu)-Total	MS-B	L2734104-1, -2, -3, -4, -5, -6
Matrix Spike	Iron (Fe)-Total	MS-B	L2734104-1, -2, -3, -4, -5, -6
Matrix Spike	Manganese (Mn)-Total	MS-B	L2734104-1, -2, -3, -4, -5, -6
Matrix Spike	Ammonia, Total (as N)	MS-B	L2734104-1, -2, -3, -4, -5, -6
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L2734104-1, -2, -3, -4, -5, -6

Sample Parameter Qualifier key listed:

Qualifier	Description
BODL	Limit of Reporting for BOD was increased to account for the largest volume of sample tested.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-SPEC-PCT-WT	Water	Automated Speciated Alkalinity	APHA 2320B

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BOD-WT	Water	BOD	APHA 5210 B

This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

COD-T-WT	Water	Chemical Oxygen Demand	APHA 5220 D

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

DOC-WT	Water	Dissolved Organic Carbon	APHA 5310B

Sample is filtered through a 0.45um filter, then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

EC-WT	Water	Conductivity	APHA 2510 B

Water samples can be measured directly by immersing the conductivity cell into the sample.

ETL-N2N3-WT	Water	Calculate from NO2 + NO3	APHA 4110 B
HG-T-CVAA-WT	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-OP03-WT	Water	Detailed Ion Balance Calculation	APHA 1030E, 2330B, 2510A
MET-D-CCMS-WT	Water	Dissolved Metals in Water by CRC	APHA 3030B/6020A (mod)

Reference Information

ICPMS

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is deteremined colourimetrically after persulphate digestion of the sample.

PH-WT	Water	pH	APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

SOLIDS-TSS-WT	Water	Suspended solids	APHA 2540 D-Gravimetric

A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104–1°C for a minimum of four hours or until a constant weight is achieved.

TKN-F-WT	Water	TKN in Water by Fluorescence	J. ENVIRON. MONIT., 2005,7,37-42,RSC

Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2734104-COFC

COC Number: 17 -

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Kresin Engineering Corporation
Contact:	Jennifer Sharpe
Phone:	705-949-4900
	Company address below will appear on the final report
Street:	536 Fourth Line East
City/Province:	Saulte Ste. Marie, ON
Postal Code:	P6A 5K8
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ YES ☑ NO
☑ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax jennifer@kresinengineering.ca
Email 2
Email 3

Invoice Distribution

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax annette@kresinengineering.ca
Email 2

Project Information

ALS Account # / Quote #:	11353 / Q78965
Job #:	Blind River Landfill
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): L2734104 AP
ALS Contact: Christine Paradis **Sampler:** Jennifer Sharpe

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Schedule 5, Coloumn 3	(Alkalinity, BOD, Cl, COD, Total Mercury	Conductivity, Total Metals (With Reportables)	NH3, NO2, NO3, Total Phosphorus, pH,	Phenols 4AAP, SO4, TDS, TKN, TSS)	CO3, HCO3, OH	Ion Balnce	Dissolved Mn, dissolved Zn, hardness	DOC	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	SW1	21-Sept-22	3:19	Surface Water	8	x					x	x	x	x		
	SW2		4:03	Surface Water		x					x	x	x	x		
	SW3		4:10	Surface Water		x					x	x	x	x		
	SW4		3:39	Surface Water		x					x	x	x	x		
	SW5		2:54	Surface Water		x					x	x	x	x		
	SW6		12:31	Surface Water		x					x	x	x	x		
	SW7	↓	4:43	Surface Water	↓	x					x	x	x	x		

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

- Please compare to PWQO, CWQG, ODWS where applicable
- SW field filtered when required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | Ice Packs ☑ | Ice Cubes ☐ | Cooling Initiated ☐

SIF Observations Yes ☐ No ☐

Custody seal intact Yes ☐ No ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				12.1			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
	Sept 22, 22	9:30 am

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
	09/23/22	9:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCT 2016 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2734110-COFC

COC Number: 17 -

Page 1 of 2

Report To	Contact and company name below will appear on the final report
Company:	Kresin Engineering Corporation
Contact:	Jennifer Sharpe
Phone:	705-949-4900
	Company address below will appear on the final report
Street:	536 Fourth Line East
City/Province:	Saulte Ste. Marie, ON
Postal Code:	P6A 5K8
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Quality Control (QC) Report with Report ☐ YES ☑ NO

☑ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax jennifer@kresinengineering.ca

Email 2

Email 3

Invoice Distribution

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax annette@kresinengineering.ca

Email 2

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4-20%] ☐		1 Business day [E - 100%] ☐	
3 day [P3-25%] ☐		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐	
2 day [P2-50%] ☐			

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #: 11353 / Q89511

Job #: Blind River Landfill

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only): [illegible] R

ALS Contact: Christine Paradis

Sampler: Jennifer Sharpe

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Schedule 5 Column 1:	(Alk, BOD, Chloride, COD, DOC, EC,Dissolved Hg	Dissolved As, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, M	, Na, PB, Zn, NH3, NO2, NO3, Total Phosph, pH,	Phenols, SO4, TDS, TKN, TSS, VOC's)	Schedule 5 Column 2 :	(Alkalinity, BOD, Chloride, COD, DOC,	EC, Dissolved B, Ba, Ca, Fe, Mg, Na	NH3, NO3, pH, SO4,TDS, TSS)			CO3, HCO3, OH	Ion Balnce, Organic Nitrogen, Hardness	Total Cyanide, Fluoride	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	MW1-02	21-Sept-22	12:05	Groundwater	6						x						x	x	x		
	MW2-02	↓	2:29	Groundwater	10	x											x	x	x		
	MW3-02	↓	9:58	Groundwater	6						x						x	x	x		
	MW4-02	↓	9:23	Groundwater	↓						x						x	x	x		
	MW5-02	↓	12:51	Groundwater	↓						x						x	x	x		
	MW6-02	↓	9:48	Groundwater	↓						x						x	x	x		
	MW1-03	↓	10:32	Groundwater	↓						x						x	x	x		
	MW1-15	↓	1:29	Groundwater	↓						x						x	x	x		
	MW2-15	↓	3:07	Groundwater	↓						x						x	x	x		
	MW3-15	↓	8:40	Groundwater	↓						x						x	x	x		
	MW4-15	↓	1:13	Groundwater	↓						x						x	x	x		
	MW1-17	↓	11:30	Groundwater	↓						x						x	x	x		

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please compare to ODWS / PWQO / CWQG when applicable

GW filter when required

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C:

FINAL COOLER TEMPERATURES °C: 12.1

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: [signature]	Date: Sept. 22/22	Time: 9:30am	Received by:	Date:	Time:	Received by: [signature]	Date: 09/23/22	Time: 9:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2734110-COFC

COC Number: 17 -

Report To	Contact and company name below will appear on the final report
Company:	Kresin Engineering Corporation
Contact:	Jennifer Sharpe
Phone:	705-949-4900
	Company address below will appear on the final report
Street:	536 Fourth Line East
City/Province:	Saulte Ste. Marie, ON
Postal Code:	P6A 5K8
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Quality Control (QC) Report with Report ☐ YES ☑ NO

☑ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax jennifer@kresinengineering.ca

Email 2

Email 3

Invoice Distribution

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax annette@kresinengineering.ca

Email 2

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #: 11353 / Q89511

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Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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	MW2-17	21-Sept-22	8:57	Groundwater	6	x						x	x	x							
	MW1-20		10:51	Groundwater	8	x						x	x	x	x	x					
	Duplicate		9:05	Groundwater	6	x						x	x	x							
	Field Blank		3:45	Groundwater	6	x						x	x	x							
	Travel Blank			Groundwater	6	x						x	x	x							
	Travel VOC Spike			Groundwater													x				

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Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

1. Please compare to ODWS/PWQO/CWQG where applicable.
2. GW to be filtered when required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C				
					12.1				

SHIPMENT RELEASE (client use)

Released by: | Date: Sept. 22/22 | Time: 9:30am

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: | Date: | Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by: | Date: 09/23/22 | Time: 9:20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Appendix G
Analytical Data Summaries

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.2: Sampling Location - MW2-02 - Source Well
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

Parameter	ODWS	Units	Date of Sampling Event																		
			2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	5/23/2012 DUP	Oct-12
Miscellaneous Parameters																						
Nitrite (as N)	-	mg/L																			<0.02	<0.020
Bicarbonate (HCO3)	-	mg/L																		1350	1330	1160
Carbonate (CO3)	-	mg/L																		<5	<5	<5.0
Hydroxide (OH)	-	mg/L																		<5	<5	<5.0
Cyanide	0.2	mg/L																		NT	NT	NT
Ion Balance Calculation																						
Cation - Anion Balance	-	%																		-11.7	2.3	7.8
TDS (calculated)	-	mg/L																		1270	1400	1470
Anion Sum	-	me/L																		28.3	27.8	25.4
Cation Sum	-	me/L																		22.4	29.1	29.7
Inorganics																						
Alkalinity	500	mg/L CaCO3	1550	998	1050	1020	1020	800	854	900	1140	959	1020	1010	1110	1140	1140	1060	1190	1100	1090	1160
Ammonia	-	mg/L	179	49	0.02	44.8	45.2	49.9	1.07	49.3	64.8	50.5	58.4	64.7	75.8	54.2	71.9	74.2	78.8	70.8	80.5	77.7
Arsenic	0.025	mg/L	0.009	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	0.001	<0.001	<0.01	0.0021	0.002	<0.010	0.001	<0.010	<0.010	<0.01	NT	NT
Barium	1	mg/L	0.561	0.39	0.12	0.19	0.37	0.226	0.272	0.393	0.39	0.4	0.4	0.21	0.215	0.49	0.566	0.53	0.49	0.19	0.48	0.46
Boron	5	mg/L	1.11	1.1	0.69	1.06	0.94	1.1	1.06	1.04	1.13	1.1	0.9	1.36	1.29	1.22	1.29	1.51	1.68	0.96	1.22	1.18
Cadmium	0.0001	mg/L	1.002	<0.0001	<0.0001	0.0002	0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.0001	<0.0001	<0.0010	<0.000090	<0.00090	<0.0010	<0.00047	NT	<0.00017
Calcium	-	mg/L	362	270	202	204	210	202	201	194	180	151	216	192	206	214	217	220	205	136	189	189
Chloride	250	mg/L	245	93.2	74.2	65	73.2	85	145	99.2	125	105	128	145	172	197	206	208	240	217	212	228
Chromium	0.05	mg/L	0.074	0.008	0.006	<0.001	0.015	0.061	0.0279	0.034	0.002	0.01	0.01	0.0092	0.0043	<0.010	0.0039	<0.010	<0.010	<0.010	<0.01	<0.010
Conductivity	-	µS/cm	3790	2000	2050	1970	1880	1310	2010	1160	1950	1990	1970	2150	2130	2250	2470	2430	2790	2600	2530	2790
Copper	1	mg/L	0.064	0.011	0.001	<0.001	<0.001	<0.001	0.0023	0.0017	<0.001	<0.01	<0.01	<0.001	<0.001	<0.010	0.0018	<0.010	<0.010	<0.01	NT	<0.010
Fluoride		mg/L																				
Hardness		mg/L																				
Iron	0.3	mg/L	198	130	12.6	11.6	103	51.3	33.1	41.6	110	105	102	3.06	7.4	102	98.4	92.1	86	<0.2	79.3	89
Lead	0.01	mg/L	0.026	0.0062	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.001	<0.001	<0.010	<0.0010	<0.010	<0.010	<0.01	<0.01	<0.010
Magnesium	-	mg/L	66	51	31.1	29.8	31.2	33.4	47	32.7	31.9	31.9	43.5	41.6	46.9	46.4	49.8	45.7	50.4	34.3	45.3	47.7
Manganese	0.05	mg/L	3.37	1.1	0.827	0.899	0.839	0.81	0.893	0.727	0.774	0.71	0.62	0.566	0.578	0.63	0.525	0.635	0.536	0.43	0.583	0.44
Mercury	0.001	mg/L	ND	<0.0001	<0.0001	<0.0001	0.008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	NT	<0.000001
Nitrate	10	mg/L	ND	<0.03	<0.03	0.07	<0.07	<0.1	<0.1	<0.1	<0.03	<0.03	0.16	<0.03	0.041	<0.030	<0.030	<0.030	<0.15	<0.03	NT	<0.030
Nitrite	1	mg/L	<0.2	<0.2	<0.1	0.32	<0.1	<0.05	<0.03	<0.03	<0.02	<0.02	<0.1	<0.2	<0.2	<0.020	<0.40	<0.40	<0.10	0.023	<0.02	<0.020
Organic Nitrogen		mg/L																				
TKN	-	mg/L	9.2	56.4	47.1	42.4	47	45.3	29.6	49.6	62.3	56.4	60	66.4	87.3	64.2	75.7	72.6	85.9	73.6	NT	NT
pH	6.5-8.5	mg/L	7.17	7.17	7.1	7	6.9	6.42	6.53	6.58	7	7.02	7.13	7.67	7.17	6.97	6.86	7.15	6.87	7.18	7.28	7.34
Total Phosphorous		mg/L	3.58	NT	NT	NT	NT	0.274	0.271	0.301	0.245	0.273	0.203	0.169	1.53	0.586	0.772	0.599	0.693	1.38	NT	NT
Potassium	-	mg/L	126	65	53.9	48.1	59.3	51.6	85.4	64.2	63.2	54.6	73.8	82.7	89	108	119	145	140	107	143	156
Sodium	200	mg/L	218	100	76.1	69.3	74.7	91	140	108	110	83.2	110	115	129	137	138	148	160	114	151	157
Suspended Solids	-	mg/L	1900	489	430	240	270	570	314	274	655	208	467	247	1070	864	1340	616	546	1510	729	1380
TDS	500	mg/L	2580	1050	1120	1050	1120	1000	1210	1030	1230	1050	1060	1210	1290	1330	1360	1240	1360	1020	1310	1390
Sulfate	500	mg/L	<1.0	1.6	0.9	2.5	2.1	2.2	<1.0	<1	2.2	1.2	<0.3	0.35	2.27	<0.30	<0.30	0.82	<1.5	0.72	1.07	<0.30
Zinc	5	mg/L	3.67	0.43	0.006	0.026	0.007	0.026	0.0882	0.132	0.008	<0.03	<0.03	0.0472	0.0205	<0.030	0.0119	<0.030	0.036	<0.03	NT	NT
Volatile Organics																						
Benzene	1	µg/L	2.7	NT	NT	NT	1.2	2	1.8	1.9	2.1	1	<1	1.3	1.64	1.67	1.63	1.84	1.95	1.52	1.52	1.78
1,4 Dichlorobenzene	5	µg/L	<0.3	NT	NT	NT	NT	<0.3	<0.25	<0.25	1.2	<0.001	<0.001	1.1	1.59	1.08	1.18	1.18	1.23	0.82	0.82	1.07
Dichloromethane	50	µg/L	<0.5	NT	NT	NT	NT	<0.3	<0.25	<0.25	<0.5	<0.001	<0.01	<0.001	<0.5	<0.5	<0.50	<0.50	<0.50	<0.5	<0.5	<0.5
Toluene	24	µg/L	<0.5	NT	NT	NT	NT	0.6	<0.25	<0.25	<1	<1	<1	<0.001	<0.5	<0.5	<0.50	<0.50	<0.50	<0.5	<0.5	0.87
Vinyl Chloride	2	µg/L	<0.5	NT	NT	NT	NT	<0.3	<0.2	<0.25	<2	<2	<2	<0.002	<0.5	<0.5	<0.50	<0.50	<0.50	<0.5	<0.5	<0.5
Chlorobenzene		µg/L	NT	NT	NT	NT	NT	NT	4.19	3.99	3	2	<0.01	2.8	4.3	NT	3.39	NT	NT	NT	NT	NT
Other Organics																						
BOD_5	-	mg/L	NT	47	5	<2	15	10	20	6.8	25	8	7	8.3	14.3	11.9	9.3	8.6	10.6	7.6	8.5	13
COD	-	mg/L	6350	100	NT	102	125	70	170	66	147	161	115	114	946	401	152	187	145	134	270	392
DOC	5	mg/L	732	30.1	19	26	32	67	57.5	45	43	39	32	51.8	30.3	41.3	45.2	40.7	47.5	39	38	42.1
Phenol	-	mg/L	NT	0.001	0.017	0.013	0.017	0.028	0.0145	0.0127	0.026	0.016	0.02	0.019	0.0127	0.0141	0.0097	0.0209	0.0123	0.0165	NT	0.0078
Field Parameters																						
pH	-											6.75	6.83	6.65	6.72	6.82	7.52	7.12	6.78	6.59	6.59	6.61
Conductivity	-	uS/cm										2060	2190	2270	2420	2350	2460	2580	3.1	10.8	10.8	3.08
DO	-	%										25.5	26.1	29.7	11.5	15.7	19.4	9.5	27.9	2.94	2.94	26.6
Temp	-	°c										10.9	10.8	14	13.4	13.8	15.3	13.5	14.7	13.3	13.3	15.1
Pesticides																						
2,3,4,6-Tetrachlorophenol	0.1	mg/L					<0.0005		<0.000093		<0.0005		<0.0005							<0.5		
2,4,6-Trichlorophenol	0.005	mg/L					<0.0005		<0.000093		<0.0005		<0.0005							<0.5		
2,4-Dichlorophenol	0.9	mg/L					<0.0005		<0.000093		<0.0005		<0.0005							<0.3		
Pentachlorophenol	0.06	mg/L					<0.0005		<0.000093		<0.0005		<0.0005							<0.5		
Aldicarb	0.009	mg/L					<0.0009		<0.0027		<0.009		<0.001							<0.001		
Bendiocarb	0.04	mg/L					<0.0002		<0.001		<0.0002		<0.0002							<0.00085		
Carbaryl	0.09	mg/L					<0.0002		<0.001		<0.0002		0.0006							0.00132		
Carbofuran	0.09	mg/L					<0.0002		<0.001		<0.0002		<0.0002							<0.0002		
Diuron	0.15	mg/L					<0.01		<0.005		<0.01		<0.001							<0.0001		
Temephos	0.28	mg/L					<0.0001		<0.014		<0.0001		<0.0001							<0.0001		
4,4'-DDD	-	ug/L					NT		<0.0012		<0.1		<0.1							<1		
4,4'-DDE	-	ug/L					NT		<0.00041		<0.1		<0.01							<1		
4,4'-DDT	-	ug/L					NT		<0.00061		<0.1		<0.1							<1		
Aldrin	-	ug/L					NT		<0.00061		<0.02		<0.02							<1.18		
Dieldrin	-	ug/L					NT		<0.0016		<0.02		<0.02							<0.2		
Heptachlor	-	ug/L					NT		<0.00081		<0.1		<0.1							<1		
Heptachlor epoxide	-	ug/L					NT		<0.00081		<0.1		<0.1							<1		
Methoxychlor	0.9	ug/L					NT		<0.0016		<0.1		<0.1							<1		
o,p-DDT	-	ug/L					NT		<0.00041		<0.1		<0.1							<1		
Oxychlordane	-	ug/L					NT		NT		<0.1		<0.1							<1		
α-Chlordane	-	ug/L					NT		<0.00061		<0.1		<0.1							<1		
γ-BHC (Lindane)	-	ug/L					NT		<0.00061		<0.1		<0.1							<1		
γ-Chlordane	-	ug/L					NT		<0.00081		<0.1		<0.1							<1		
Alachlor	0.005	mg/L					<0.0001		<0.00095		<0.0001		<0.0001							<0.0001		
Atrazine	-	mg/L					<0.0001		<0.00095		<0.0001		<0.0001							<0.0001		
Azinphos-Methyl (Guthion)	0.02	mg/L					<0.0001		<0.00071		<0.0001		<0.0001							<0.0001		
Chlorpyriphos (Dursban)	0.09	mg/L					<0.0001		<0.00071		<0.0001		<0.0001							<0.0001		
Cyanazine (Bladex)	0.01	mg/L					<0.0001		<0.00071		<0.0001		<0.0001							<0.0001		
Desethyl Atrazine	-	mg/L					<0.0001		<0.0012		<0.0001		<0.0001							<0.0001		
Diazinon	0.02	mg/L					<0.0001		<0.00071		<0.0001		<0.0001							<0.0001		
Dimethoate	0.02	mg/L					<0.0001		<0.00071		<0.0001		<0.0001							<0.0001		
Malathion	0.19	mg/L					<0.0001		<0.00071		<0.0001		<0.0001							<0.0001		
Metolachlor	0.05	mg/L					<0.0001		<0.00047		<0.0001		<0.0001							<0.0001		
Metribuzin (Sencor)	0.08	mg/L					<0.0001		<0.00047		<0.0001		<0.0001							<0.0001		
Parathion	0.05	mg/L					<0.01		<0.00047		<0.0001		<0.0001							<0.0001		
Phorate	0.002	mg/L					<0.0001		<0.00049		<0.0001		<0.0001							<0.0001		
Prometryne	0.001	mg/L					<0.0001		<0.00025		<0.0001		<0.0001							<0.0001		
Simazine	0.01	mg/L					<0.0001		<0.00049		<0.0001		<0.0001							<0.0001		
Terbufos	0.001	mg/L					<0.0002		<0.00047		<0.0002		<0.0002							<0.0002		
Triallate	0.23	mg/L					<0.0001		<0.00047		<0.0001		<0.0001							<0.0001		
Trifluralin	0.045	mg/L					<0.0001		<0.00047		<0.0001		<0.0001							<0.0001		
Benzo(a)pyrene	0.00001	mg/L					<0.00001		<0.00001		0.00001		<0.00001							<0.00001		
Total PCBs	0.003	mg/L					<0.00006		<0.0001		NT		<0.00003							<0.000035		
2,4,5-T	0.28	mg/L					<0.0002		<0.000069		<0.0002		<0.0002							<0.0002		
2,4-D	0.1	mg/L					<0.0002		<0.00028		<0.0002		<0.0002							<0.0002		
Bromoxynil	0.005	mg/L					<0.0002		<0.0005		<0.0002		<0.0002							<0.0002		
Dicamba	0.12	mg/L					<0.0002		<0.00028		<0.0002		<0.0002							<0.0002		
Diclofop Methyl	0.009	mg/L					<0.0002		<0.00028		<0.0002		<0.0002							<0.0002		
Dinoseb	0.01	mg/L					<0.0002		<0.000069		<0.0002		<0.0002							<0.0002		
Picloram	0.19	mg/L					<0.0002		<0.000069		<0.0002		<0.0002							<0.0002		
Atrazine + N-dealkylated metabolites	0.005	mg/L					NT		<0.0009		NT		<0.0002							<0.0002		
Chlordane (total)	7	ug/L					NT		<0.004		<0.3		<0.3							<3		

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.2: Sampling Location - MW2-02 - Source Well
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units	Date of Sampling Event																	
			May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Miscellaneous Parameters																				
Nitrite (as N)	-	mg/L	<0.02	<0.02	<0.020	NT	<0.020	<0.2	<0.10	<0.10	<0.050	<0.050	NT	NT	NT	NT	NT	<0.20	<0.2	NT	<0.11
Bicarbonate (HCO3)	-	mg/L	1320	1550	1310	1460	1329	1359	1390	1490	1440	1550.0	1570	1590.0	1520.0	1650.0	1650.0	1640.0	1620.0	1650.0	1640.0
Carbonate (CO3)	-	mg/L	<5.0	<5.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0
Hydroxide (OH)	-	mg/L	<5.0	<5.0	<2	<2	NT	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0
Cyanide	0.2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0023	0.0035
Ion Balance Calculation																					
Cation - Anion Balance	-	%	5.53	NT	3	-1.6	-2.9	6.1	-3.7	3.2	8.1	6.5	5.3	-4.4	2	-7.2	5	-10.4	4.2	-6.5	7
TDS (calculated)	-	mg/L	1890	1590	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	1950
Anion Sum	-	me/L	31.5	NT	33.3	32	32.8	34.5	36.4	37.3	35.2	37.4	37.8	38.9	37.5	40.5	40.2	39.6	40.1	39.4	35
Cation Sum	-	me/L	37.9	NT	35.4	31	30.9	38.9	33.8	39.8	41.4	42.6	42	35.6	39.1	35.1	44.4	32.1	43.6	34.6	40.7
Inorganics																					
Alkalinity	500	mg/L CaCO3	1320	1270	1310	1260	1330	1360	1390	1490	1440	1550	1570	1590	1520	1650	1650	1640	1620	1650	1640
Ammonia	-	mg/L	73.9	86.2	77.9	91.8	86.3	98.8	107	101	108	139	118	133	135	148	130	130	134	141	147
Arsenic	0.025	mg/L	<0.01	<0.02	<0.0010	NT	<0.0010	<0.0010	<0.002	<0.0010	0.00094	0.00107	0.00107	0.00119	0.00096	NT	0.001	0.00097	<0.0010	<0.0010	<0.0010
Barium	1	mg/L	0.48	0.454	0.45	0.456	0.442	0.48	0.462	0.498	0.465	0.469	0.452	0.459	0.116	0.419	0.454	0.383	0.451	0.423	0.423
Boron	5	mg/L	1.87	1.5	1.27	1.54	1.64	1.62	1.76	1.67	1.6	1.91	1.58	2.11	1.79	1.96	1.91	1.92	1.83	2.06	2.07
Cadmium	0.0001	mg/L	<0.00017	<0.0010	<0.000017	NT	<0.00005	<0.00005	<0.0001	<0.00005	<0.000025	<0.000005	<0.0000050	<0.0000050	<0.000005	NT	<0.00005	<0.0000050	<0.000050	<0.000050	<0.000050
Calcium	-	mg/L	281	187	186	183	182	189	196	188	193	192	188	194	168	194	195	170	184	191	163
Chloride	250	mg/L	228	252	251	241	220	257	305	267	230	230	230	253	253	266	255	238	270	229	287
Chromium	0.05	mg/L	0.018	<0.002	0.0033	0.0033	0.0029	0.0033	0.0025	0.0029	0.00321	0.00354	0.0037	0.00452	0.0023	<0.0050	0.0037	0.00394	0.0033	<0.0050	<0.0050
Conductivity	-	µS/cm	3200	2930	3220	2960	3070	3060	3180	3320	3330	3620	3440	3430	3390	3450	3550	3530	3590	3670	2960
Copper	1	mg/L	<0.01	<0.02	<0.0010	NT	<0.002	<0.002	<0.004	<0.002	0.0021	<0.0002	<0.00020	<0.00020	<0.0002	NT	<0.0020	0.00032	<0.0020	NA	<0.0020
Fluoride		mg/L																		0.025	<0.10
Hardness		mg/L																		806	731
Iron	0.3	mg/L	72.1	84	77	80.6	81.3	81.6	75.5	70	73	63.7	68.9	69.6	0.282	67.3	65.8	64.8	65.7	62.9	62.2
Lead	0.01	mg/L	<0.01	<0.00009	<0.0010	<0.0010	<0.0005	<0.0005	<0.001	<0.0005	<0.00025	<0.00005	<0.000050	<0.000050	<0.00005	<0.0005	<0.0005	<0.000050	<0.00050	<0.00050	<0.00050
Magnesium	-	mg/L	85.7	52.6	53.7	59	56.8	60.1	64.2	65.3	65.1	67.9	67.7	73.4	72.1	74.2	76.4	69.2	74.1	79.8	78.6
Manganese	0.05	mg/L	0.809	0.503	0.503	0.454	0.418	0.383	0.397	0.455	0.424	0.397	0.413	0.376	0.368	0.411	0.406	0.391	0.362	0.427	0.345
Mercury	0.001	mg/L	<0.00001	<0.0001	<0.000010	NT	<0.000005	0.0000066	<0.000005	<0.000005	<0.000005	<0.000005	<0.0000050	<0.0000050	<0.000005	<0.000025	<0.000005	<0.000050	<0.000050	<0.0000050	<0.0000050
Nitrate	10	mg/L	<0.03	<0.03	0.057	<0.030	<0.040	<0.4	<0.20	0.21	<0.10	0.23	<0.20	0.28	<0.04	<0.20	<0.20	<0.40	0.48	<0.020	0.1
Nitrite	1	mg/L	<0.02	<0.02	<0.020	NT	<0.20	<0.2	<0.10	<0.10	<0.05	<0.05	<0.10	0.16	0.24	NT	NT	<0.20	<0.20	<0.010	<0.050
Organic Nitrogen		mg/L																		22	<33
TKN	-	mg/L	88.2	90.2	111	NT	90.1	81.8	96.7	96.1	117	132	133	128	135	NT	145	138	150	163	164
pH	6.5-8.5	mg/L	6.9	7.28	6.82	6.83	6.68	6.82	6.69	6.79	6.69	6.87	6.87	6.83	6.97	6.94	7.29	6.88	6.91	7.17	7.1
Total Phosphorous		mg/L	0.61	0.319	0.516	NT	0.242	0.245	0.223	0.254	0.386	0.489	0.448	0.286	0.341	NT	0.242	0.764	0.312	0.657	0.228
Potassium	-	mg/L	167	165	159	NT	168	169	185	169	179	170	183	207	177	186	193	174	176	173	186
Sodium	200	mg/L	168	176	181	198	196	203	229	224	234	225	236	249	242	252	245	230	247	246	248
Suspended Solids	-	mg/L	488	356	533	342	246	237	204	372	319	244	262	150	255	176	168	173	232	1.39	370
TDS	500	mg/L	1560	1580	1610	1450	1500	1600	1640	1570	1590	1650	1660	1680	1660	1690	1720	1460	1680	1790	1390
Sulfate	500	mg/L	167	<0.3	5.09	0.87	<6.0	<6.0	<3.0	<3.0	<1.5	<1.5	<3.0	<3.0	<6.0	<6.0	<3.0	<6.0	7.1	1.39	<1.5
Zinc	5	mg/L	<0.03	<0.2	<0.0030	NT	<0.010	<0.010	<0.020	<0.010	<0.005	0.0033	0.0015	0.0048	0.0022	NT	<0.010	0.0015	<0.010	<0.010	0.011
Volatile Organics																					
Benzene	1	µg/L	1.93	1.89	1.85	NT	2.02	2.07	2.23	2.46	2.12	2.28	2.4	2.93	2.29	2.97	2.63	2.22	2.68	2.63	2.63
1,4 Dichlorobenzene	5	µg/L	1.1	0.76	0.71	NT	0.92	1.03	1.11	1.29	1.09	1.18	0.97	1.22	1.05	1.17	1.1	0.87	1.23	1.04	0.91
Dichloromethane	50	µg/L	<0.5	<5.0	<5	NT	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<5.0	<5.0	<5.0	<5.0	<2.0
Toluene	24	µg/L	<0.5	<0.5	<0.5	NT	<0.5	<0.5	<0.5	<0.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.40	<0.50	<0.50	<0.50	<0.50	<0.40
Vinyl Chloride	2	µg/L	<0.5	<0.5	<0.5	NT	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chlorobenzene		µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	5.78	NT	NT	NT	NT	5.51
Other Organics																					
BOD_5	-	mg/L	8.3	15.3	15.2	14.1	9.4	9.9	8.3	10	10.1	8.3	9.5	5.7	10.4	9.9	12	12	11.9	9.9	8.1
COD	-	mg/L	271	236	202	224	192	215	196	239	239	240	247	240	273	228	229	256	265	284	250
DOC	5	mg/L	83	72.6	64	65.4	30.8	64.7	63.6	59.8	68.8	66.1	83.8	66.7	61	95.9	91.1	76.8	67.5	82.1	73.7
Phenol	-	mg/L	0.0053	0.004	0.0222	NT	0.004	0.0121	0.0093	<0.020	0.046	<0.020	0.0019	<0.020	0.0021	NT	NT	0.0068	0.0052	0.0053	NT
Field Parameters																					
pH	-		6.58	6.5	2.69	6.9	6.45	6.58	6.73	6.59	6.63	6.84	6.87	6.75	6.46	6.7	6.67	5.95	6.73	6.6	6.51
Conductivity	-	uS/cm	3.37	2.67	3	2.92	2.56	2.76	2.79	2.49	2.44	3.78	3.44	3.44	3.48	3.08	3.12	3.14	3.767	3.66	3.65
DO	-	%	19.5	5.2	6.7	10.6	10.4	16.1	27.5	32.5	6.6	19.1	18.6	15.5	14.2	16.2	14.6	9.5	18.1	15.8	33.2
Temp	-	°c	12.7	13	10.2	11.4	10.1	12.2	12.3	13	11	11.7	12.7	11.3	10.8	12.6	10.9	12	12.8	10.8	12.8
Pesticides																					
2,3,4,6-Tetrachlorophenol	0.1	mg/L																			
2,4,6-Trichlorophenol	0.005	mg/L																			
2,4-Dichlorophenol	0.9	mg/L																			
Pentachlorophenol	0.06	mg/L																			
Aldicarb	0.009	mg/L																			
Bendiocarb	0.04	mg/L																			
Carbaryl	0.09	mg/L																			
Carbofuran	0.09	mg/L																			
Diuron	0.15	mg/L																			
Temephos	0.28	mg/L																			
4,4'-DDD	-	ug/L																			
4,4'-DDE	-	ug/L																			
4,4'-DDT	-	ug/L																			
Aldrin	-	ug/L																			
Dieldrin	-	ug/L																			
Heptachlor	-	ug/L																			
Heptachlor epoxide	-	ug/L																			
Methoxychlor	0.9	ug/L																			
o,p-DDT	-	ug/L																			
Oxychlordane	-	ug/L																			
α-Chlordane	-	ug/L																			
γ-BHC (Lindane)	-	ug/L																			
γ-Chlordane	-	ug/L																			
Alachlor	0.005	mg/L																			
Atrazine	-	mg/L																			
Azinphos-Methyl (Guthion)	0.02	mg/L																			
Chlorpyriphos (Dursban)	0.09	mg/L																			
Cyanazine (Bladex)	0.01	mg/L																			
Desethyl Atrazine	-	mg/L																			
Diazinon	0.02	mg/L																			
Dimethoate	0.02	mg/L																			
Malathion	0.19	mg/L																			
Metolachlor	0.05	mg/L																			
Metribuzin (Sencor)	0.08	mg/L																			
Parathion	0.05	mg/L																			
Phorate	0.002	mg/L																			
Prometryne	0.001	mg/L																			
Simazine	0.01	mg/L																			
Terbufos	0.001	mg/L																			
Triallate	0.23	mg/L																			
Trifluralin	0.045	mg/L																			
Benzo(a)pyrene	0.00001	mg/L																			
Total PCBs	0.003	mg/L																			
2,4,5-T	0.28	mg/L																			
2,4-D	0.1	mg/L																			
Bromoxynil	0.005	mg/L																			
Dicamba	0.12	mg/L																			
Diclofop Methyl	0.009	mg/L																			
Dinoseb	0.01	mg/L																			
Picloram	0.19	mg/L																			
Atrazine + N-dealkylated metabolites	0.005	mg/L																			
Chlordane (total)	7	ug/L																			

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.3: Sampling Location - MW3-02
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

Parameter	ODWS	Units	Date of Sampling Event																	
			2002	Mar-04	Nov-04	May-05	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13
Miscellaneous Parameters							Dry Well				Dry Well					Dry Well	Dry Well	Dry Well		Dry Well	Dry Well
Nitrite (as N)		mg/L																			
Bicarbonate (HCO3)		mg/L																			
Carbonate (CO3)		mg/L																			
Hydroxide (OH)		mg/L																			
Cyanide	0.2	mg/L																			
Ion Balance Calculation																					
Cation - Anion Balance		%																			
TDS (calculated)		mg/L																			
Anion Sum		me/L																			
Cation Sum		me/L																			
Inorganics																					
Alkalinity	500	mg/L CaCO3	NT	NT	346	313			329	302		296	361	349	379				325		
Ammonia	-	mg/L	NT	NT	2.06	1.73			NT	0.37		NT	NT	0.458	1.06						
Arsenic	0.025	mg/L	NT	NT	0.001	0.001		0.0039	NT	NT		NT	NT	NT	NT						
Barium	1	mg/L	NT	NT	0.5	0.09		0.0763	NT	0.153		0.42	NT	0.115	0.111						
Boron	5	mg/L	NT	NT	0.31	0.35		0.431	NT	0.5		0.43	NT	0.295	0.5						
Cadmium	0.0001	mg/L	NT	NT	<0.0001	<0.0001		<0.001	NT	NT		NT	NT	NT	NT						
Calcium	-	mg/L	NT	NT	79.4	66		63.9	66.5	57.7		70.6	NT	81.6	88.4						
Chloride	250	mg/L	NT	NT	51	49.7			76.3	71.5		102	117	123	126				108		
Chromium	0.05	mg/L	NT	NT	0.002	<0.001		0.0102	NT	NT		NT	NT	NT	NT						
Conductivity	-	µS/cm	NT	NT	820	760			780	813		871	937	953	1090				969		
Copper	1	mg/L	NT	NT	0.001	<0.001		0.0238	NT	NT		NT	NT	NT	NT						
Fluoride		mg/L																			
Hardness		mg/L																			
Iron	0.3	mg/L	NT	NT	0.6	0.54		2.79	NT	0.049		0.118	NT	<0.050	0.353						
Lead	0.01	mg/L	NT	NT	<0.001	<0.001		0.0059	NT	<0.01		0.015	NT	<0.0010	<0.0010						
Magnesium	-	mg/L	NT	NT	19.9	16.4		16.6	17.6	16.1		18.3	NT	20.5	23.1						
Manganese	0.05	mg/L	NT	NT	0.412	0.418		0.178	NT	0.0155		0.0806	NT	0.262	0.341						
Mercury	0.001	mg/L	NT	NT	<0.0001	<0.0001		<0.0001	NT	NT		NT	NT	NT	NT						
Nitrate	10	mg/L	NT	NT	0.14	0.1			0.38	0.12		0.145	0.104	0.094	<0.030				0.489		
Nitrite	1	mg/L	NT	NT	<0.02	0.08			NT	NT		NT	NT	NT	NT				0.129		
Organic Nitrogen		mg/L																			
TKN	-	mg/L	NT	NT	3.05	2.4			NT	NT		NT	NT	NT	NT						
pH	6.5-8.5	mg/L	NT	NT	7.8	7.6			8	7.95		8.39	8.33	7.93	7.38				8.39		
Total Phosphorous	-	mg/L	NT	NT	NT	NT			NT	NT		NT	NT	NT	NT						
Potassium	-	mg/L	NT	NT	32.5	28.7		1.7	NT	NT		NT	NT	NT	NT						
Sodium	200	mg/L	NT	NT	50.1	55.6		6.11	63.4	55.8		65.9	NT	70.8	73.5						
Suspended Solids	-	mg/L	NT	NT	4	6			495	3380		275	152	130	5890				64		
TDS	500	mg/L	NT	NT	490	470			570	530		562	658	629	722				556		
Sulfate	500	mg/L	NT	NT	<0.2	5			9.9	11.9		5.67	3.62	2.09	0.48				2.14		
Zinc	5	mg/L	NT	NT	0.045	0.023		0.0278	NT	NT		NT	NT	NT	NT						
Volatile Organics																					
Benzene	5	µg/L	NT	NT	NT	NT			NT	NT		NT	NT	NT	NT						
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	NT			NT	NT		NT	NT	NT	NT						
Dichloromethane	50	µg/L	NT	NT	NT	NT			NT	NT		NT	NT	NT	NT						
Toluene	24	µg/L	NT	NT	NT	NT			NT	NT		NT	NT	NT	NT						
Vinyl Chloride	2	µg/L	NT	NT	NT	NT			NT	NT		NT	NT	NT	NT						
Other Organics																					
BOD_5	-	mg/L	NT	NT	<2	<2			NT	3		<2.0	2.5	2.9	6						
COD	-	mg/L	NT	NT	NT	43			NT	126		NT	NT	66.3	106						
DOC	5	mg/L	NT	NT	12	15			NT	17		NT	NT	18.5	21.6						
Phenol	-	mg/L	NT	NT	0.003	0.002			NT	NT		NT	NT	NT	NT						
Field Parameters																					
pH	-								7.75	7.41	7.88	7.54	7.66	7.62	8.04	8.02	8.09	7.86	7.82		
Conductivity	-	uS/cm							720	760	730	770	750	840	870	1000	1.04	58.3	0.94		
DO	-	%							83.5	54.9	85.4	80.2	77.3	40.3	52.8	26.5	65.3	1.03	86.7		
Temp	-	°c							11.7	11.7	8.7	11.9	7.9	16.9	10.9	11	15.2	12.7	12.3		
Pesticides																					
2,3,4,6-Tetrachlorophenol	0.1	mg/L																			
2,4,6-Trichlorophenol	0.005	mg/L																			
2,4-Dichlorophenol	0.9	mg/L																			
Pentachlorophenol	0.06	mg/L																			
Aldicarb	0.009	mg/L																			
Bendiocarb	0.04	mg/L																			
Carbaryl	0.09	mg/L																			
Carbofuran	0.09	mg/L																			
Diuron	0.15	mg/L																			
Temephos	0.28	mg/L																			
4,4'-DDD	-	ug/L																			
4,4'-DDE	-	ug/L																			
4,4'-DDT	-	ug/L																			
Aldrin	-	ug/L																			
Dieldrin	-	ug/L																			
Heptachlor	-	ug/L																			
Heptachlor epoxide	-	ug/L																			
Methoxychlor	0.9	ug/L																			
o,p-DDT	-	ug/L																			
Oxychlordane	-	ug/L																			
α-Chlordane	-	ug/L																			
γ-BHC (Lindane)	-	ug/L																			
γ-Chlordane	-	ug/L																			
Alachlor	0.005	mg/L																			
Atrazine	-	mg/L																			
Azinphos-Methyl (Guthion)	0.02	mg/L																			
Chlorpyriphos (Dursban)	0.09	mg/L																			
Cyanazine (Bladex)	0.01	mg/L																			
Desethyl Atrazine	-	mg/L																			
Diazinon	0.02	mg/L																			
Dimethoate	0.02	mg/L																			
Malathion	0.19	mg/L																			
Metolachlor	0.05	mg/L																			
Metribuzin (Sencor)	0.08	mg/L																			
Parathion	0.05	mg/L																			
Phorate	0.002	mg/L																			
Prometryne	0.001	mg/L																			
Simazine	0.01	mg/L																			
Terbufos	0.001	mg/L																			
Triallate	0.23	mg/L																			
Trifluralin	0.045	mg/L																			
Benzo(a)pyrene	0.00001	mg/L																			
Total PCBs	0.003	mg/L																			
2,4,5-T	0.28	mg/L																			
2,4-D	0.1	mg/L																			
Bromoxynil	0.005	mg/L																			
Dicamba	0.12	mg/L																			
Diclofop Methyl	0.009	mg/L																			
Dinoseb	0.01	mg/L																			
Picloram	0.19	mg/L																			
Atrazine + N-dealkylated metabolites	0.005	mg/L																			
Chlordane (total)	7	ug/L																			
Aldrin + Dieldrin	0.7	ug/L																			

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.3: Sampling Location - MW3-02
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units	Date of Sampling Event																
			May-14	Oct-14	May-15	Oct-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Miscellaneous Parameters			Dry Well	Dry Well	Dry Well		Dry Well						Frozen						
Nitrite (as N)		mg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	NT	NT
Bicarbonate (HCO3)		mg/L				337.3855		306	NT	282	250	276		228	272	188	243	277	277
Carbonate (CO3)		mg/L				<2.0		<2.0	NT	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0	18.2
Hydroxide (OH)		mg/L				<2.0		<2.0	NT	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Cyanide	0.2	mg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.0020	<0.0020
Ion Balance Calculation																			
Cation - Anion Balance		%				-0.2		1.8	NT	-2.5	-6.6	-7.1		-2.5	-0.4	2.8	-2.8	-0.8	4
TDS (calculated)		mg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	NT	346
Anion Sum		me/L				8.48		7.64	NT	7.24	8.11	8.43		6.72	7.08	5.12	6.3	6.55	5.9
Cation Sum		me/L				8.45		7.92	NT	6.89	7.1	7.31		6.39	7.03	5.42	5.96	6.45	6.44
Inorganics																			
Alkalinity	500	mg/L CaCO3				339		306	254	282	250	276		228	272	188	243	277	296
Ammonia	-	mg/L				1.09		1.21	0.275	0.286	0.138	0.462		0.163	0.198	1.16	0.21	0.198	0.12
Arsenic	0.025	mg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	0.00028	NT
Barium	1	mg/L				0.0476		0.0376	0.0264	0.0223	0.0227	0.0192		0.0154	0.0151	0.133	0.0137	0.0198	0.0346
Boron	5	mg/L				0.6		0.453	0.364	0.282	0.267	0.528		0.432	0.362	0.115	0.292	0.309	0.355
Cadmium	0.0001	mg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	1.18E-05	NT
Calcium	-	mg/L				72.8		66.9	55.9	60.9	65.6	67.2		52	54.7	48.6	49.3	58.5	55.5
Chloride	250	mg/L				56.3		44.4	70.7	54.3	109	54		68.1	56.5	47.8	49.5	36.3	31.9
Chromium	0.05	mg/L				<0.0010		0.00088	NT	0.0006	0.00111	0.00066		0.00066	0.00094	NT	0.001	0.00081	NT
Conductivity	-	µS/cm				812		718	662	704	854	713		636	666	502	602	639	555
Copper	1	mg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	NA	NT
Fluoride		mg/L																<0.02	<0.020
Hardness		mg/L																212	208
Iron	0.3	mg/L				0.79		0.809	0.576	0.3	0.061	0.183		0.035	0.086	7.5	0.135	0.467	0.097
Lead	0.01	mg/L				<0.00050		0.000118	NT	<0.00005	0.000661	<0.000050		0.000064	<0.00005	<0.000050	<0.000050	<0.000050	NT
Magnesium	-	mg/L				18.1		17.2	13.9	15.9	16.4	16.2		13.6	14.1	12.9	11.9	16.1	17
Manganese	0.05	mg/L				0.579		0.646	NT	0.367	0.288	0.226		0.0477	0.0992	0.706	0.217	0.458	0.248
Mercury	0.001	mg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.000005	NT
Nitrate	10	mg/L				0.263		0.091	0.13	0.032	0.1	0.154		0.107	0.075	0.294	0.18	0.021	<0.020
Nitrite	1	mg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	0.01	NT
Organic Nitrogen		mg/L																0.877	1.02
TKN	-	mg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	1.07	1.14
pH	6.5-8.5	mg/L				7.7		7.6	7.51	7.58	7.65	7.51		7.85	7.95	7.41	7.89	8.2	8.49
Total Phosphorous	-	mg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	0.0662	NT
Potassium	-	mg/L				NT		NT	NT	34.4	30	33.7		30.5	34.9	4.81	27.6	26.8	NT
Sodium	200	mg/L				41.4		40	47.8	37.5	38.8	39.3		43.2	51.3	29.8	41.3	33.9	35
Suspended Solids	-	mg/L				498		90.9	58.5	35.3	126	28.1		19.3	13.9	279	55	<0.30	34.6
TDS	500	mg/L				538		444	414	427	487	457		365	390	282	378	393	372
Sulfate	500	mg/L				4.48		13.1	10	3.72	1.64	66.2		11.4	2.83	<0.30	1.53	<0.30	0.49
Zinc	5	mg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	0.0092	NT
Volatile Organics																			
Benzene	5	µg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.50	NT
1,4 Dichlorobenzene	5	µg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.50	NT
Dichloromethane	50	µg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	<5.0	NT
Toluene	24	µg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.50	NT
Vinyl Chloride	2	µg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.50	NT
Other Organics																			
BOD_5	-	mg/L				7.5		4.9	<2.0	<2.0	2.4	<2.0		<2.0	<2.0	6.1	2.4	<2.0	<3.0
COD	-	mg/L				169		70	53	52	56	63		49	47	67	63	64	61
DOC	5	mg/L				24.8		18.1	15.2	18.2	21.1	15.9		13.7	18	10.3	15.8	18.2	19.4
Phenol	-	mg/L				NT		NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.0010	NT
Field Parameters																			
pH	-				7.17	7.32	6.57	6.4	6.6	7.84	7.25	7.17		7.49	7.83	7.09	7.62	6.76	6.38
Conductivity	-	uS/cm			0.72	0.65	0.62	0.57	0.56	0.74	0.7	0.71		0.56	0.61	0.58	0.673	0.622	0.641
DO	-	%			52.4	66.4	67.4	81.8	82.7	90.4	73.7	87.9		73	95.7	74	86.5	67.7	71.2
Temp	-	°c			7.5	12.9	14.5	15.1	9.3	5	9.5	5		13.1	8.2	14.9	15.3	10.3	16
Pesticides																			
2,3,4,6-Tetrachlorophenol	0.1	mg/L																	
2,4,6-Trichlorophenol	0.005	mg/L																	
2,4-Dichlorophenol	0.9	mg/L																	
Pentachlorophenol	0.06	mg/L																	
Aldicarb	0.009	mg/L																	
Bendiocarb	0.04	mg/L																	
Carbaryl	0.09	mg/L																	
Carbofuran	0.09	mg/L																	
Diuron	0.15	mg/L																	
Temephos	0.28	mg/L																	
4,4'-DDD	-	ug/L																	
4,4'-DDE	-	ug/L																	
4,4'-DDT	-	ug/L																	
Aldrin	-	ug/L																	
Dieldrin	-	ug/L																	
Heptachlor	-	ug/L																	
Heptachlor epoxide	-	ug/L																	
Methoxychlor	0.9	ug/L																	
o,p-DDT	-	ug/L																	
Oxychlordane	-	ug/L																	
α-Chlordane	-	ug/L																	
γ-BHC (Lindane)	-	ug/L																	
γ-Chlordane	-	ug/L																	
Alachlor	0.005	mg/L																	
Atrazine	-	mg/L																	
Azinphos-Methyl (Guthion)	0.02	mg/L																	
Chlorpyriphos (Dursban)	0.09	mg/L																	
Cyanazine (Bladex)	0.01	mg/L																	
Desethyl Atrazine	-	mg/L																	
Diazinon	0.02	mg/L																	
Dimethoate	0.02	mg/L																	
Malathion	0.19	mg/L																	
Metolachlor	0.05	mg/L																	
Metribuzin (Sencor)	0.08	mg/L																	
Parathion	0.05	mg/L																	
Phorate	0.002	mg/L																	
Prometryne	0.001	mg/L																	
Simazine	0.01	mg/L																	
Terbufos	0.001	mg/L																	
Triallate	0.23	mg/L																	
Trifluralin	0.045	mg/L																	
Benzo(a)pyrene	0.00001	mg/L																	
Total PCBs	0.003	mg/L																	
2,4,5-T	0.28	mg/L																	
2,4-D	0.1	mg/L																	
Bromoxynil	0.005	mg/L																	
Dicamba	0.12	mg/L																	
Diclofop Methyl	0.009	mg/L																	
Dinoseb	0.01	mg/L																	
Picloram	0.19	mg/L																	
Atrazine + N-dealkylated metabolites	0.005	mg/L																	
Chlordane (total)	7	ug/L																	
Aldrin + Dieldrin	0.7	ug/L																	

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.4: Sampling Location - MW4-02
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

Parameter	ODWS	Units	Date of Sampling Event																		
			2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	Oct-12 Duplicate	May-13
Miscellaneous Parameters																							
Nitrite (as N)	-	mg/L																		<0.02	<0.020	<0.020	0.155
Bicarbonate (HCO3)	-	mg/L																		208	115	116	113
Carbonate (CO3)	-	mg/L																		<5	<5	<5	<5.0
Hydroxide (OH)	-	mg/L																		<5	<5	<5	<5.0
Cyanide	0.2	mg/L																		NT	NT	NT	NT
Ion Balance Calculation																							
Cation - Anion Balance	-	%																		0.7	5.1	3.4	3.75
TDS (calculated)	-	mg/L																		290	284	283	188
Anion Sum	-	me/L																		5.38	4.75	4.8	3.03
Cation Sum	-	me/L																		5.45	5.27	5.14	3.75
Inorganics																							
Alkalinity	500	mg/L CaCO3	254	221	171	252	165	190	182	263	139	154	156	142	174	218	242	145	200	171	115	116	113
Ammonia	-	mg/L	1.08	0.13	1.38	2.18	1.42	1.29	0.845	1.52	1	0.83	0.84	0.801	0.905	1.15	1.34	1.1	1.36	2.86	1.06	1.07	0.717
Arsenic	0.025	mg/L	0.051	0.026	<0.001	<0.001	<0.001	<0.001	0.0022	<0.001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Barium	1	mg/L	1.03	0.98	0.12	0.2	0.09	0.114	0.223	0.125	0.419	0.084	0.081	0.073	0.169	0.182	0.196	0.162	0.125	0.128	0.093	0.092	0.058
Boron	5	mg/L	0.232	0.14	0.1	0.14	0.14	0.16	0.101	0.152	0.14	0.1	0.1	0.075	0.17	0.174	0.255	0.119	0.214	0.161	0.076	0.081	0.087
Cadmium	0.0001	mg/L	0.001	ND	<0.0001	<0.0001	<0.0001	<0.0001	0.00019	<0.0001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Calcium	-	mg/L	63.2	80	37.6	54.6	37.3	34.3	28.2	51	32	31.3	32.3	32.8	38.3	49.1	56.6	57.1	46.4	38.7	37.1	35.5	25.3
Chloride	250	mg/L	37.5	61.1	21.8	41.1	26.7	35.5	22.9	41.5	50	34.4	24.3	28.7	37.3	63.8	64.6	134	69.2	67.8	98.2	99.1	40.9
Chromium	0.05	mg/L	0.279	0.18	<0.001	<0.001	0.001	0.009	0.0164	0.0078	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0010	<0.0010	<0.0010	0.002
Conductivity	-	µS/cm	432	609	417	614	403	397	422	487	390	409	378	370	439	591	671	767	598	584	573	575	356
Copper	1	mg/L	0.932	0.72	0.001	<0.001	<0.001	0.011	0.0767	0.0057	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Fluoride		mg/L																					
Hardness		mg/L																					
Iron	0.3	mg/L	165	130	1.4	0.48	3	2.22	7.03	1.84	0.537	4.18	4.38	0.828	1.34	1.52	4.11	<0.050	4.78	3.61	4.74	4.36	4.32
Lead	0.01	mg/L	0.224	0.21	<0.001	<0.001	<0.001	0.004	0.0284	0.0014	<0.001	<0.01	<0.01	0.019	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001
Magnesium	-	mg/L	37.8	45	11.5	16.1	10.7	10.2	9.51	15.5	10	10.4	9.16	10	11.7	13.3	23.1	4.76	14	10.4	10.4	9.83	8.51
Manganese	0.05	mg/L	1.85	1.3	0.276	0.357	0.246	0.297	0.31	0.323	0.286	0.294	0.241	0.3	0.314	0.426	0.458	0.457	0.383	0.355	0.407	0.389	0.271
Mercury	0.001	mg/L	ND	ND	<0.0001	<0.0001	0.0015	<0.0001	<0.0001	<0.0001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Nitrate	10	mg/L	ND	0.1	<0.03	0.07	0.002	<0.1	<0.12	<0.1	<0.03	<0.03	<0.03	0.053	<0.03	0.034	<0.030	<0.030	0.089	<0.03	<0.030	<0.030	0.039
Nitrite	1	mg/L	ND	ND	<0.02	<0.02	0.39	<0.05	<0.03	<0.03	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.02	<0.020	<0.020	0.155
Organic Nitrogen		mg/L																					
TKN	-	mg/L	2.3	1.9	1.78	2.63	2.18	1.5	1.02	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
pH	6.5-8.5	mg/L	7.11	7.6	7.3	7.3	7.3	6.68	6.91	7.14	7.3	7.04	7.25	7.23	7.34	7.53	7.28	7.32	7.18	7.53	7.56	7.52	7.02
Total Phosphorous	-	mg/L	2.26	NT	NT	NT	NT	0.348	5.07	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Potassium	-	mg/L	21.4	26	12.5	15	13.4	1.7	10.5	18.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	18.1	10.1
Sodium	200	mg/L	31.9	48	26.9	41.3	26.9	6.11	29.4	40.4	26	27	26.9	22.6	29.9	37.2	44.8	51	50.4	39.8	46.3	46.4	34
Suspended Solids		mg/L	20.1	6830	4	8	718	1410	4410	416	410	95.6	25	66.6	142	394	404	331	266	662	176	177	112
TDS	500	mg/L	820	450	260	390	290	300	340	330	270	250	210	237	296	371	440	458	340	292	374	306	184
Sulfate	500	mg/L	ND	1.7	0.3	2.6	2.4	1	<1.0	1.3	2.5	2.7	0.3	0.55	1.53	0.62	<0.30	1.73	<0.30	2.66	4.75	4.77	0.33
Zinc	5	mg/L	0.502	0.38	0.011	0.048	0.003	0.006	0.0357	<0.001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Volatile Organics																							
Benzene	5	µg/L	NT	NT	NT	NT	ND	<0.3	<0.25	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT	NT
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	NT	NT	<0.3	<0.25	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT	NT
Dichloromethane	50	µg/L	NT	NT	NT	NT	NT	<0.3	<0.25	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT	NT
Toluene	24	µg/L	NT	NT	NT	NT	NT	<0.3	<0.25	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Vinyl Chloride	2	µg/L	NT	NT	NT	NT	NT	<0.3	<0.2	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT	NT
Other Organics																							
BOD_5	-	mg/L	NT	5	<2	<2	2	2	1.7	0.9	<2	<2	<2	<2	2	<2.0	3.5	<2.0	<2.0	2.2	<2.0	2.4	<2.0
COD	-	mg/L	837	31.6	NT	33	40	20	27	29	17	17	25	13.3	25.8	26	34.3	20.6	28.6	21.3	25	23.7	12.3
DOC	5	mg/L	432	609	417	614	403	16	12.6	13.8	9	7	7	4.3	5.5	9.2	17.1	7.1	10	7.5	6.7	8.2	8.7
Phenol	-	mg/L	NT	0.001	0.002	0.002	0.002	0.003	<0.001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Field Parameters																							
pH	-										6.87	6.71	7.04	7.06	7.27	7.45	7.55	7.24	7.31	7.11	6.86	6.86	6.51
Conductivity	-	uS/cm									360	370	330	310	390	540	540	660	0.62	0.57	0.58	38.2	0.34
DO	-	%									63.3	41.1	59.1	51.4	36.8	37.1	40.4	33.7	24.9	37.5	38.2	0.58	27.5
Temp	-	°c									10.3	7.9	10	9.2	10	10.6	11.5	7.4	12.3	8.1	11.2	11.2	6.9
Pesticides																							
2,3,4,6-Tetrachlorophenol	0.1	mg/L					<0.0005		<0.0001		<0.5		<0.0005							<0.0005			
2,4,6-Trichlorophenol	0.005	mg/L					<0.0005		<0.0001		<0.5		<0.0005							<0.0005			
2,4-Dichlorophenol	0.9	mg/L					<0.0005		<0.0001		<0.5		<0.0005							<0.0003			
Pentachlorophenol	0.06	mg/L					<0.0005		<0.0001		<0.5		<0.0005							<0.0005			
Aldicarb	0.009	mg/L					<0.0009		<0.00086		<0.009		<0.001							<0.001			
Bendiocarb	0.04	mg/L					<0.0002		<0.0023		<0.0002		<0.0002							<0.0002			
Carbaryl	0.09	mg/L					0.00018		<<0.0023		<0.0002		<0.0002							<0.0002			
Carbofuran	0.09	mg/L					<0.0002		<0.0023		<0.0002		<0.0002							<0.0002			
Diuron	0.15	mg/L					<0.01		<0.012		<0.01		<0.001							<0.001			
Temephos	0.28	mg/L					<0.0001		<0.024		<0.0001		<0.0001							<0.0001			
4,4'-DDD	-	ug/L					NT		<0.00098		<0.1		<0.1							<0.1			
4,4'-DDE	-	ug/L					NT		<0.00033		<0.1		<0.01							<0.1			
4,4'-DDT	-	ug/L					NT		<0.00049		<0.1		<0.1							<0.1			
Aldrin	-	ug/L					NT		<0.00049		<0.02		<0.02							<0.02			
Dieldrin	-	ug/L					NT		<0.0013		<0.1		<0.02							<0.02			
Heptachlor	-	ug/L					NT		<0.00066		<0.1		<0.1							<0.1			
Heptachlor epoxide	-	ug/L					NT		<0.00066		<0.1		<0.1							<0.1			
Methoxychlor	0.9	ug/L					NT		<0.0013		<0.1		<0.1							<0.1			
o,p-DDT	-	ug/L					NT		<0.00033		<0.1		<0.1							<0.1			
Oxychlordane	-	ug/L					NT		NT		<0.1		<0.1							<0.1			
α-Chlordane	-	ug/L					NT		<0.00049		<0.1		<0.1							<0.1			
γ-BHC (Lindane)	-	ug/L					NT		<0.00049		<0.1		<0.1							<0.1			
γ-Chlordane	-	ug/L					NT		<0.00066		<0.1		<0.1							<0.1			
Alachlor	0.005	mg/L					<0.0001		<0.00081		<0.0001		<0.0001							<0.0001			
Atrazine	-	mg/L					<0.0001		<0.00081		<0.0001		<0.0001							<0.0001			
Azinphos-Methyl (Guthion)	0.02	mg/L					<0.0001		<0.00061		<0.0001		<0.0001							<0.0001			
Chlorpyriphos (Dursban)	0.09	mg/L					<0.0001		<0.00061		<0.0001		<0.0001							<0.0001			
Cyanazine (Bladex)	0.01	mg/L					<0.0001		<0.00061		<0.0001		<0.0001							<0.0001			
Desethyl Atrazine	-	mg/L					<0.0001		<0.001		<0.0001		<0.0001							<0.0001			
Diazinon	0.02	mg/L					<0.0001		<0.00061		<0.0001		<0.0001							<0.0001			
Dimethoate	0.02	mg/L					<0.0001		<0.00061		<0.0001		<0.0001							<0.0001			
Malathion	0.19	mg/L					<0.0001		<0.00061		<0.0001		<0.0001							<0.0001			
Metolachlor	0.05	mg/L					<0.0001		<0.0004		<0.0001		<0.0001							<0.0001			
Metribuzin (Sencor)	0.08	mg/L					<0.0001		<0.0004		<0.0001		<0.0001							<0.0001			
Parathion	0.05	mg/L					<0.01		<0.0004		<0.0001		<0.0001							<0.0001			
Phorate	0.002	mg/L					<0.0001		<0.00048		<0.0001		<0.0001							<0.0001			
Prometryne	0.001	mg/L					<0.0001		<0.00021		<0.0001		<0.0001							<0.0001			
Simazine	0.01	mg/L					<0.0001		<0.00048		<0.0001		<0.0001							<0.0001			
Terbufos	0.001	mg/L					<0.0002		<0.0004		<0.0002		<0.0002							<0.0002			
Triallate	0.23	mg/L					<0.0001		<0.0004		<0.0001		<0.0001							<0.0001			
Trifluralin	0.045	mg/L					<0.0001		<0.0004		<0.0001		<0.0001							<0.0001			
Benzo(a)pyrene	0.00001	mg/L					<0.00001		<0.00001		<0.00001		<0.00001							<0.00001			
Total PCBs	0.003	mg/L					<0.00006		<0.00008		NT		<0.00002							<0.000035			
2,4,5-T	0.28	mg/L					<0.0002		<0.000097		<0.0002		<0.0002							<0.0002			
2,4-D	0.1	mg/L					<0.0002		<0.00039		<0.0002		<0.0002							<0.0002			
Bromoxynil	0.005	mg/L					<0.0002		<0.0005		<0.0002		<0.0002							<0.0002			
Dicamba	0.12	mg/L					<0.0002		<0.00039		<0.0003		<0.0002							<0.0002			
Diclofop Methyl	0.009	mg/L					<0.0002		<0.00039		<0.0002		<0.0002							<0.0002			
Dinoseb	0.01	mg/L					<0.0002		<0.000097		<0.0002		<0.0002							<0.0002			
Picloram	0.19	mg/L					<0.0002		<0.000097		<0.0002		<0.0002										
Atrazine + N-dealkylated metabolites	0.005	mg/L					NT		<0.0009		NT		<0.0002							<0.0002			
Chlordane (total)	7	ug/L					NT		<0.004		<0.3		<0.3							<0.3			
Aldrin + Dieldrin	0.7	ug/L					<0.04		<0.004		<0.04		<0.04							<0.04			

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.4: Sampling Location - MW4-02
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units	Date of Sampling Event																		
			Oct-13	May-14	Oct-14	May-15	May-15	Oct-15	Jun-16	Oct-16	Oct-16 Duplicate	May-17	Nov-17	May-18	Nov-18	Feb-20 Frozen	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Miscellaneous Parameters																						
Nitrite (as N)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT	NT
Bicarbonate (HCO3)	-	mg/L	163	145	150	138	135.861	161.8237	139	135	131	124	149	122	87.6		121	112	143	133	126	138
Carbonate (CO3)	-	mg/L	<5.0	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Hydroxide (OH)	-	mg/L	<5.0	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Cyanide	0.2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.0020	<0.0020
Ion Balance Calculation																						
Cation - Anion Balance	-	%	NT	-11.4	0.8	3.5	4	1.9	1.3	1.6	3	1	-1.7	-5.4	2.6		2.3	3.2	-0.7	-1	1.7	4
TDS (calculated)	-	mg/L	200	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT	191
Anion Sum	-	me/L	NT	5.08	4.08	3.94	3.77	4.44	3.9	3.75	3.62	3.25	3.81	4.27	3.73		3.2	3.1	3.89	3.42	4.01	3.25
Cation Sum	-	me/L	NT	4.03	4.15	4.22	4.08	4.61	4.01	3.86	3.84	3.32	3.68	3.83	3.93		3.35	3.3	3.83	3.35	4.15	3.55
Inorganics																						
Alkalinity	500	mg/L CaCO3	133	145	150	138	136	162	139	135	131	124	149	122	87.6		121	112	143	133	126	138
Ammonia	-	mg/L	0.897	0.884	0.86	0.961	0.861	1.06	1.18	0.803	0.789	0.645	0.766	0.607	0.595		0.84	0.646	0.589	0.817	0.424	0.76
Arsenic	0.025	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	0.00021	NT
Barium	1	mg/L	0.0769	0.088	0.084	0.0802	0.0767	0.0907	0.0743	0.0761	0.0749	0.0534	0.0715	0.0657	0.0605		0.057	0.0629	0.0642	0.0604	0.0664	0.0613
Boron	5	mg/L	0.01	0.097	0.151	0.105	0.105	0.131	0.117	0.091	0.078	0.086	0.117	0.077	0.066		0.099	0.08	0.098	0.085	0.068	0.118
Cadmium	0.0001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.0000050	NT
Calcium	-	mg/L	28.7	27.4	29.2	31.6	31.6	30.8	30.4	28.5	27.9	23.9	28.4	28.6	25.8		23.8	24	29.5	26	29.4	26.1
Chloride	250	mg/L	40.9	74.7	38.5	41.5	36.7	42.4	37.9	36.9	35	27.1	29.4	63.8	66.1		26.8	30.6	34.2	26.6	51.6	33.9
Chromium	0.05	mg/L	<0.002	<0.0010	<0.0010	0.00047	0.00034	0.00051	0.00051	0.00048	0.0004	0.00036	0.0005	0.00139	0.00047		<0.0005	0.0005	NT	0.00053	<0.00050	NT
Conductivity	-	µS/cm	378	551	435	397	411	451	360	364	356	323	373	467	378		300	303	379	328	426	326
Copper	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NA	NT
Fluoride		mg/L																			<0.02	0.048
Hardness		mg/L																			114	103
Iron	0.3	mg/L	4.58	3.42	3.22	4.02	3.97	4.17	3.69	4	4.02	4.14	4.03	3.92	4.32		3.61	3.61	3.92	4.09	5.33	3.93
Lead	0.01	mg/L	<0.00009	<0.0010	<0.0010	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000054	0.000575	<0.000050		<0.00005	<0.00005	0.014100	<0.000050	<0.000050	NT
Magnesium	-	mg/L	9.7	8.12	9.45	9.52	9.59	9.05	8.73	8.53	8.52	7.71	8.2	9.19	7.68		7.9	7.57	8.83	7.75	9.79	9.14
Manganese	0.05	mg/L	0.31	0.29	0.282	0.324	0.326	0.303	0.276	0.281	0.281	0.258	0.303	0.256	0.269		0.27	0.279	0.325	0.279	0.414	0.333
Mercury	0.001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.0000050	NT
Nitrate	10	mg/L	0.124	0.161	<0.030	<0.020	<0.020	0.031	0.022	0.032	<0.02	<0.02	<0.02	<0.020	0.026		<0.020	0.041	0.071	<0.020	<0.020	<0.020
Nitrite	1	mg/L		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.010	NT
Organic Nitrogen		mg/L																			0.765	0.24
TKN	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	1.19	1
pH	6.5-8.5	mg/L	7.28	7.29	6.87	7.02	7.02	7.05	6.96	7.04	6.94	6.93	7.04	6.9	7.07		7.44	7.29	7.05	7.31	7.45	8.17
Total Phosphorous	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	0.308	NT
Potassium	-	mg/L	12.8	14.1	NT	NT	NT	NT	NT	NT	NT	NT	11.4	8.56	8.89		11.1	9.17	7.79	10	8.02	NT
Sodium	200	mg/L	27.5	31.5	29.2	27	25.5	37	27.6	25.1	25.2	22.8	24.5	26.8	34.4		23.4	22.8	26.6	21.2	31.5	27.9
Suspended Solids	-	mg/L	126	1870	793	NT	216	298	617	208	815	280	186	230	500		333	965	916	804	1.34	162
TDS	500	mg/L	224	301	311	237	250	274	283	194	253	202	253	274	248		195	332	311	232	298	215
Sulfate	500	mg/L	0.31	2.59	<0.30	0.57	0.45	<0.30	2.86	0.45	0.52	0.71	0.63	1.63	5.62		1.48	<0.30	3.01	<0.30	1.34	<0.30
Zinc	5	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT			<0.0010	NT
Volatile Organics																						
Benzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.50	NT
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.50	NT
Dichloromethane	50	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<5.0	NT
Toluene	24	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.50	NT
Vinyl Chloride	2	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.50	NT
Other Organics																						
BOD_5	-	mg/L	5.4	2.8	2.9	<2.0	<2.0	<2.0	3.7	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0		2.1	2.4	<2.5	<2.0	3.1	<3.0
COD	-	mg/L	24.7	39	49	24	15	36	15	20	23	21	41	50	91		32	60	47	31	51	22
DOC	5	mg/L	6.8	8.1	9.3	8.2	6.8	10.6	6.7	9.9	7.1	9	7.5	21.2	4.6		7.6	7.4	7.49	6.61	6.7	8.12
Phenol	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.0010	NT
Field Parameters																						
pH	-		6.77	7.45	6.9	6.96	6.96	6.97	6.04	6.07		6.55	7.11	7.42	7.27		8.15	8.22	7.44	6.95	6.62	5.71
Conductivity	-	uS/cm	0.36	0.48	0.39	0.35	0.35	0.4	0.33	0.3		0.27	0.42	0.48	0.42		0.3	0.3	0.33	0.372	0.534	0.412
DO	-	%	35.5	21	12.2	13.5	13.5	20.7	24.4	28.8		32.3	22.2	34.8	21.2		19.3	17.5	19.2	21.9	70	26.2
Temp	-	°c	11.6	5.1	10.5	5.5	5.5	11.5	10.4	12.5		7	8.7	7.5	7.2		9.1	9	8.9	11.8	9.4	11.9
Pesticides																						
2,3,4,6-Tetrachlorophenol	0.1	mg/L																				
2,4,6-Trichlorophenol	0.005	mg/L																				
2,4-Dichlorophenol	0.9	mg/L																				
Pentachlorophenol	0.06	mg/L																				
Aldicarb	0.009	mg/L																				
Bendiocarb	0.04	mg/L																				
Carbaryl	0.09	mg/L																				
Carbofuran	0.09	mg/L																				
Diuron	0.15	mg/L																				
Temephos	0.28	mg/L																				
4,4'-DDD	-	ug/L																				
4,4'-DDE	-	ug/L																				
4,4'-DDT	-	ug/L																				
Aldrin	-	ug/L																				
Dieldrin	-	ug/L																				
Heptachlor	-	ug/L																				
Heptachlor epoxide	-	ug/L																				
Methoxychlor	0.9	ug/L																				
o,p-DDT	-	ug/L																				
Oxychlordane	-	ug/L																				
α-Chlordane	-	ug/L																				
γ-BHC (Lindane)	-	ug/L																				
γ-Chlordane	-	ug/L																				
Alachlor	0.005	mg/L																				
Atrazine	-	mg/L																				
Azinphos-Methyl (Guthion)	0.02	mg/L																				
Chlorpyriphos (Dursban)	0.09	mg/L																				
Cyanazine (Bladex)	0.01	mg/L																				
Desethyl Atrazine	-	mg/L																				
Diazinon	0.02	mg/L																				
Dimethoate	0.02	mg/L																				
Malathion	0.19	mg/L																				
Metolachlor	0.05	mg/L																				
Metribuzin (Sencor)	0.08	mg/L																				
Parathion	0.05	mg/L																				
Phorate	0.002	mg/L																				
Prometryne	0.001	mg/L																				
Simazine	0.01	mg/L																				
Terbufos	0.001	mg/L																				
Triallate	0.23	mg/L																				
Trifluralin	0.045	mg/L																				
Benzo(a)pyrene	0.00001	mg/L																				
Total PCBs	0.003	mg/L																				
2,4,5-T	0.28	mg/L																				
2,4-D	0.1	mg/L																				
Bromoxynil	0.005	mg/L																				
Dicamba	0.12	mg/L																				
Diclofop Methyl	0.009	mg/L																				
Dinoseb	0.01	mg/L																				
Picloram	0.19	mg/L																				
Atrazine + N-dealkylated metabolites	0.005	mg/L																				
Chlordane (total)	7	ug/L																				
Aldrin + Dieldrin	0.7	ug/L																				

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.5: Sampling Location - MW5-02
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

Parameter	ODWS	Units	Date of Sampling Event																		
			2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13
Miscellaneous Parameters																						
Nitrite (as N)	-	mg/L																		<0.02	<0.020	<0.02
Bicarbonate (HCO3)	-	mg/L																		53.6	49.7	40.1
Carbonate (CO3)	-	mg/L																		<2	<5.0	<5.0
Hydroxide (OH)	-	mg/L																		<5	<5.0	<5.0
Cyanide	0.2	mg/L																		NT	NT	NT
Ion Balance Calculation																						
Cation - Anion Balance	-	%																		3.2	4.6	10.68
TDS (calculated)	-	mg/L																		63.1	69.4	60.6
Anion Sum	-	me/L																		1.16	1.15	0.92
Cation Sum	-	me/L																		1.24	1.26	1.32
Inorganics																						
Alkalinity	500	mg/L CaCO3	242	57.8	52	50	54	40	40	45	50	47	51	47	50.2	49.8	44.8	42.8	45	43.9	49.7	40.1
Ammonia	-	mg/L	ND	ND	0.07	0.03	<0.02	0.02	0.118	0.192	0.05	0.02	<0.02	<0.02	<0.02	<0.020	<0.020	<0.020	0.026	<0.02	<0.020	0.281
Arsenic	0.025	mg/L	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Barium	1	mg/L	0.033	0.025	<0.01	0.07	<0.01	0.009	0.0081	0.0099	0.0206	0.031	0.01	0.118	0.072	0.041	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01
Boron	5	mg/L	0.024	0.017	<0.05	<0.05	<0.05	0.007	0.0085	0.0082	<0.05	<0.05	<0.05	<0.03	<0.05	<0.050	<0.050	<0.050	<0.050	<0.05	<0.050	<0.05
Cadmium	0.0001	mg/L	ND	ND	<0.0001	0.0001	<0.0001	0.0002	0.00011	<0.0001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Calcium	-	mg/L	20.3	16	16.1	15.1	15.9	12.5	9.59	12.3	13.8	12.6	14.8	15	15	14.4	15.5	13.7	14.4	14.3	14.3	14.6
Chloride	250	mg/L	22.5	1	1	2.9	73.2	1	0.84	0.71	2.8	1.8	1.8	2.1	0.97	1.56	1.06	0.65	0.81	0.131	0.84	0.63
Chromium	0.05	mg/L	0.004	ND	<0.001	<0.001	<0.001	0.003	0.0044	0.0024	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0026	0.0033	0.004
Conductivity	-	µS/cm	177	144	142	143	139	117	132	104	136	128	138	133	136	129	127	119	123	124	135	110
Copper	1	mg/L	0.032	0.017	0.001	0.002	0.001	0.002	0.0018	0.0024	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Fluoride		mg/L																				
Hardness		mg/L																				
Iron	0.3	mg/L	0.32	1.2	<0.05	<0.05	<0.05	0.02	0.02	<0.02	1.04	0.007	0.003	0.0233	<0.05	<0.050	<0.050	<0.050	<0.050	<0.02	<0.020	<0.02
Lead	0.01	mg/L	0.005	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.01	<0.01	0.012	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001
Magnesium	-	mg/L	4.46	5.6	4.73	4.52	4.6	3.6	3.19	3.72	4.34	3.87	4.28	4.34	4.32	4.01	4.37	4.12	4.32	4.01	4.09	4.51
Manganese	0.05	mg/L	0.361	0.88	0.325	0.276	0.312	0.135	0.054	0.0555	0.254	0.0105	0.00114	0.0045	0.0069	0.0115	0.0022	0.0025	0.0014	<0.0010	<0.0010	0.0012
Mercury	0.001	mg/L	ND	ND	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Nitrate	10	mg/L	ND	0.1	<0.03	0.16	<0.1	<0.1	<0.1	<0.1	0.13	0.08	0.1	0.114	0.157	0.099	<0.030	0.069	0.099	0.131	0.121	0.051
Nitrite	1	mg/L	ND	ND	<0.02	<0.02	<0.03	<0.05	<0.03	<0.03	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.02	<0.020	<0.02
Organic Nitrogen		mg/L																				
TKN	-	mg/L	0.6	1	0.14	0.94	0.22	0.14	0.2		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
pH	6.5-8.5	mg/L	7.27	7.67	7.4	7.8	7.4	6.59	7	7.16	7.9	7.39	7.4	7.4	7.82	7.35	7.26	7.36	7.49	7.48	7.65	7.45
Total Phosphorous	-	mg/L	0.23	NT	NT	NT	NT	0.09	0.11		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Potassium	-	mg/L	2.77	1.7	2.27	1.49	1.52	1.7	1.63	1.78	NT	NT	NT	NT	NT	NT	NT	NT	NT	1.34	1.56	1.36
Sodium	200	mg/L	9.1	6.1	4.85	7.64	5.76	6.11	4.31	4.12	6.79	5.39	6.41	4.35	4.32	4.15	4.93	4.79	5.13	3.65	3.83	3.69
Suspended Solids	-	mg/L	378	108	<2	<2	76	40	73	190	174	50.8	89.2	262	84	47.1	180	150	224	22.2	41.5	50.5
TDS	500	mg/L	153	106	100	100	110	100	130	72	140	90	100	109	120	101	122	83	88	80	76	59
Sulfate	500	mg/L	62.5	9.2	12.8	15	2.1	13	11.4	9.2	16.8	12.3	13.9	13.2	15.7	12.7	13.5	12.6	14.3	12.2	2.14	11.5
Zinc	5	mg/L	0.154	0.11	0.009	0.058	0.01	0.005	0.0027	0.0032	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Volatile Organics																						
Benzene	5	µg/L	ND	NT	NT	NT	NT	<0.3	<0.25	<0.25	NT	<0.5	NT	<0.5	NT	NT	NT	NT	NT	<0.5	NT	NT
1,4 Dichlorobenzene	5	µg/L	ND	NT	NT	NT	NT	<0.3	<0.25	<0.25	NT	<0.5	NT	<0.5	NT	NT	NT	NT	NT	<0.5	NT	NT
Dichloromethane	50	µg/L	ND	NT	NT	NT	NT	<0.3	<0.25	<0.25	NT	<0.5	NT	<0.5	NT	NT	NT	NT	NT	<0.5	NT	NT
Toluene	24	µg/L	ND	NT	NT	NT	NT	<0.3	<0.25	<0.25	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Vinyl Chloride	2	µg/L	ND	NT	NT	NT	NT	<0.3	<0.25	<0.25	NT	<0.5	NT	<0.5	NT	NT	NT	NT	NT	<0.5	NT	NT
Other Organics																						
BOD_5	-	mg/L	NT	ND	<2	<2	<2	1	3.2	1.2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0
COD	-	mg/L	20	16.4	NT	17	<3	<20	<20	<20	7	<3	5	<3	4.8	<3	<3	5.6	<3	<3	6.3	<3.0
DOC	5	mg/L	6	1.1	2	33	2	2	2.1	3.5	24	2	2	1.4	1.5	1.8	2.6	1.9	2.2	1.5	2.4	6
Phenol	-	mg/L	NT	0.001	<0.002	<0.002	<0.002	<0.001	<0.001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Field Parameters																						
pH	-										7.65	7.91	7.53	7.47	7.73	8.17	7.48	7.32	8.23	8.2	7.52	8
Conductivity	-	µS/cm									80	80	80	80	80	80	70	90	0.11	0.09	0.09	0.09
DO	-	%									64	53.3	68.8	52.3	51.5	57.2	42.9	30.6	56.2	64.7	63.2	35.8
Temp	-	°C									10.3	8.6	9.2	7.9	9.5	10.5	11.2	7.1	11.8	7.8	10.6	6.8
Pesticides																						
2,3,4,6-Tetrachlorophenol	0.1	mg/L								<0.00051		<0.0005		<0.0005						<0.0005		
2,4,6-Trichlorophenol	0.005	mg/L								<0.00051		<0.0005		<0.0005						<0.0005		
2,4-Dichlorophenol	0.9	mg/L								<0.00051		<0.0005		<0.0005						<0.0003		
Pentachlorophenol	0.06	mg/L								<0.00051		<0.0005		<0.0005						<0.0005		
Diuron	0.15	mg/L						<0.01		<0.0055		<0.01		<0.001						<0.001		
Temephos	0.28	mg/L						<0.03		<0.015		<0.0001		<0.0001						<0.0001		
Benzo(a)pyrene	0.00001	mg/L						<0.00001		NT		<0.00001		<0.00001						<0.00001		
4,4'-DDD	-	ug/L								<0.00063		<0.1		<0.1						<0.0001		
4,4'-DDE	-	ug/L								<0.00021		<0.1		<0.1						<0.0001		
4,4'-DDT	-	ug/L								<0.00031		<0.1		<0.1						<0.0001		
Aldrin	-	ug/L								<0.00031		<0.02		<0.02						<0.0002		
Dieldrin	-	ug/L								<0.00084		<0.02		<0.02						<0.0002		
Heptachlor	-	ug/L								<0.00042		<0.1		<0.1						<0.0001		
Heptachlor epoxide	-	ug/L								<0.00042		<0.1		<0.1						<0.0001		
Methoxychlor	0.9	ug/L								<0.00084		<0.1		<0.1						<0.0001		
o,p-DDT	-	ug/L								<0.00021		<0.1		<0.1						<0.0001		
Oxychlordane	-	ug/L								<0.00052		<0.1		<0.1						<0.0001		
α-Chlordane	-	ug/L								<0.00031		<0.1		<0.1						<0.0001		
γ-BHC (Lindane)	-	ug/L								<0.00031		<0.1		<0.1						<0.0001		
γ-Chlordane	-	ug/L								<0.00042		<0.1		<0.1						<0.0001		
Alachlor	0.005	mg/L								<0.00051		<0.0001		<0.0001						<0.0001		
Atrazine	-	mg/L								<0.00051		<0.0001		<0.0001						<0.0001		
Azinphos-Methyl (Guthion)	0.02	mg/L								<0.00038		<0.0001		<0.0001						<0.0001		
Chlorpyriphos (Dursban)	0.09	mg/L								<0.00038		<0.0001		<0.0001						<0.0001		
Cyanazine (Bladex)	0.01	mg/L								<0.00038		<0.0001		<0.0001						<0.0001		
Desethyl Atrazine	-	mg/L								<0.00064		<0.0001		<0.0001						<0.0001		
Diazinon	0.02	mg/L								<0.00038		<0.0002		<0.0001						<0.0001		
Dimethoate	0.02	mg/L								<0.00038		<0.0001		<0.0001						<0.0001		
Malathion	0.19	mg/L								<0.00038		<0.0001		<0.0001						<0.0001		
Metolachlor	0.05	mg/L								<0.00026		<0.0001		<0.0001						<0.0001		
Metribuzin (Sencor)	0.08	mg/L								<0.00026		<0.0001		<0.0001						<0.0001		
Parathion	0.05	mg/L								<0.00026		<0.0001		<0.0001						<0.0001		
Phorate	0.002	mg/L								<0.00038		<0.0001		<0.0001						<0.0001		
Prometryne	0.001	mg/L								<0.00026		<0.0001		<0.0001						<0.0001		
Simazine	0.01	mg/L								<0.00038		<0.0001		<0.0001						<0.0001		
Terbufos	0.001	mg/L								<0.00026		<0.0002		<0.0002						<0.0002		
Triallate	0.23	mg/L								<0.00026		<0.0001		<0.0001						<0.0001		
Trifluralin	0.045	mg/L								<0.00026		<0.0001		<0.0001						<0.0001		
Total PCBs	0.003	mg/L								<0.000052		<0.00002		<0.00002						<0.00001		
2,4,5-T	0.28	ug/L								NT		<0.2		<0.2						<0.2		
2,4-D	0.1	ug/L								NT		<0.2		<0.2						<0.2		
Bromoxynil	0.005	ug/L								NT		<0.2		<0.2						<0.2		
Dicamba	0.12	ug/L								NT		<0.2		<0.2						<0.2		
Diclofop Methyl	0.009	ug/L								NT		<0.2		<0.2						<0.2		
Dinoseb	0.01	ug/L								NT		<0.2		<0.2						<0.2		
Picloram	0.19	ug/L								NT		<0.2		<0.2						<0.2		
Atrazine + N-dealkylated metabolites	0.005	ug/L								NT		<0.2		<0.2						<0.2		
Chlordane (total)	7	ug/L								NT		<0.3		<0.3						<0.3		
Aldrin + Dieldrin	0.7	ug/L								NT		<0.04		<0.04						<0.04		
Heptachlor + Heptachlor Epoxide	3	ug/L								NT		<0.02		<0.2						<0.2		

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.5: Sampling Location - MW5-02
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units	Date of Sampling Event																	
			Oct-13	May-14	Oct-14	May-15	Oct-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Miscellaneous Parameters																				
Nitrite (as N)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.010	NT
Bicarbonate (HCO3)	-	mg/L	63.4	38.7	49.6	46.27244	52.03213	53	53.4	48.8	48.4	49.6	53.1	47.4	55.5	52.4	51.4	50.5	48.8	49.5
Carbonate (CO3)	-	mg/L	<5.0	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Hydroxide (OH)	-	mg/L	<5.0	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Cyanide	0.2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0020	<0.0020
Ion Balance Calculation																				
Cation - Anion Balance	-	%		8.2	-4.8	-7	-4.9	-2.1	-1.3	-4.7	-8.3	-9.2	-3.2	-2.2	-5.3	1.2	-7	-3.7	-3.3	3
TDS (calculated)	-	mg/L	67.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	119	NT	NT	61.7
Anion Sum	-	me/L		1.01	1.29	1.13	1.31	1.33	1.32	1.25	1.25	1.26	1.33	1.25	1.36	1.29	1.26	1.27	1.22	1.06
Cation Sum	-	me/L		1.19	1.17	0.99	1.18	1.28	1.29	1.14	1.06	1.05	1.25	1.19	1.22	1.33	1.1	1.17	1.14	1.12
Inorganics																				
Alkalinity	500	mg/L CaCO3	51.9	38.7	49.6	46.4	52.1	53	53.4	48.8	48.4	49.6	53.1	47.4	55.5	52.4	51.4	50.5	48.8	49.5
Ammonia	-	mg/L	<0.02	<0.020	<0.020	0.024	<0.020	0.055	<0.020	0.058	0.044	0.119	0.327	<0.02	0.018	<0.0050	<0.0050	0.013	0.0244	<0.010
Arsenic	0.025	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0002	NT
Barium	1	mg/L	0.00847	<0.010	<0.010	0.00705	0.0094	0.008	0.00792	0.0076	0.00715	0.00704	0.00737	0.00697	0.00785	0.00812	0.0098	0.00798	0.00762	0.0221
Boron	5	mg/L	0.01	<0.050	<0.050	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.0001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0000128	NT
Calcium	-	mg/L	13.5	14.1	13.4	11.5	13.6	15.6	15	12.8	12.1	11.8	14.1	13.8	13.9	15.4	12.2	13.4	12.9	12.1
Chloride	250	mg/L	0.68	0.51	0.64	0.45	0.67	0.66	0.58	1.15	0.73	0.57	0.68	0.76	0.93	1.41	1.08	1.22	1.05	1.1
Chromium	0.05	mg/L	0.0035	0.0031	0.003	0.00271	0.0037	0.0034	0.00106	0.00287	0.00358	0.00356	0.00368	0.00404	0.00343	0.00463	NT	0.00349	0.00408	NT
Conductivity	-	µS/cm	121	101	131	109	117	130	124	119	119	126	126	115	127	124	124	119	117	110
Copper	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NA	NT
Fluoride		mg/L																	0.022	0.038
Hardness		mg/L																	48.5	47.4
Iron	0.3	mg/L	<0.1	<0.020	<0.020	<0.010	<0.010	<0.010	0.015	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.018	<0.010	<0.010	0.014
Lead	0.01	mg/L	<0.00009	<0.0010	<0.0010	<0.00005	<0.00005	0.000202	0.000265	<0.00005	<0.00005	0.000602	<0.00005	<0.00005	0.000133	0.000058	<0.000050	<0.000050	<0.000050	NT
Magnesium	-	mg/L	4.13	3.59	3.94	3.29	3.9	3.82	4.2	3.82	3.47	3.54	4.08	4.02	4.21	4.43	3.95	3.95	3.98	4.19
Manganese	0.05	mg/L	0.0009	0.0039	0.0043	0.00071	0.0054	0.00281	0.0234	0.00468	0.001	0.00107	0.00042	0.00185	0.00083	0.00083	0.0006	0.0006	0.00076	0.00096
Mercury	0.001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0000050	NT
Nitrate	10	mg/L	0.084	0.255	0.192	0.147	0.101	0.173	0.11	0.094	0.127	0.139	0.149	0.303	0.164	0.128	0.105	0.053	0.154	0.091
Nitrite	1	mg/L		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.010	NT
Organic Nitrogen		mg/L																	0.113	0.057
TKN	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.137	0.057
pH	6.5-8.5	mg/L	7.64	7.22	7.35	7.42	7.1	7.68	7.3	7.32	7.52	7.63	7.48	7.41	7.78	7.84	7.6	7.41	7.82	7.89
Total Phosphorous	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0456	NT
Potassium	-	mg/L	1.32	1.26	NT	NT	NT	NT	NT	NT	NT	NT	NT	1.09	1.07	1.25	1.02	1.13	0.985	NT
Sodium	200	mg/L	3.58	3.49	3.43	2.72	3.49	3.41	3.68	3.35	3.24	3.04	3.46	3.37	3.46	3.64	3.16	3.45	3.3	3.41
Suspended Solids	-	mg/L	2.7	365	226	81.1	35.8	193	10.9	108	308	976	75.2	95.2	71.3	67.1	139	53	9.52	44.8
TDS	500	mg/L	85	81	116	94	82	102	91	91	116	385	111	91	100	94	119	90	89	79
Sulfate	500	mg/L	12.9	9.67	12.8	8.85	11.4	11.8	11.1	11.2	12.3	11.6	11.4	12.3	10	9.5	9.53	10.5	9.52	9.74
Zinc	5	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0065	NT
Volatile Organics																				
Benzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Dichloromethane	50	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<5.0	NT
Toluene	24	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Vinyl Chloride	2	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Other Organics																				
BOD_5	-	mg/L	<2.0	2.1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0
COD	-	mg/L	6.8	11	17	13	<10	14	<10	<10	<20	<20	30	<20	<10	<20	23	22	14	<10
DOC	5	mg/L	1.6	11.5	2	8.6	1.4	4.7	4.3	2.6	2.9	8.9	2.4	1.44	3.19	2.03	2.37	2.79	3.35	1.96
Phenol	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0016	NT
Field Parameters																				
pH	-		6.92	7.09	7.05	7.42	7.28	5.86	6.65	6.44	7.78	7.86	7.82	8.39	6.2	8.35	6	6.85	7.14	6.9
Conductivity	-	µS/cm	0.1	0.07	0.08	0.07	0.09	0.07	0.07	0.07	0.13	0.12	0.14	0.13	0.12	0.12	0.12	0.141	0.139	0.14
DO	-	%	49.4	46	50.1	39.1	53.5	67.2	43.6	61.7	79.5	59.8	75.5	58.4	58.7	73.7	61.4	65.3	55.3	63.3
Temp	-	°c	10.4	5.2	9.9	5	10.8	8.5	11.6	5.7	7.5	7.8	7.8	4.6	8.6	8.4	8.4	12	7.4	12.8
Pesticides																				
2,3,4,6-Tetrachlorophenol	0.1	mg/L																		
2,4,6-Trichlorophenol	0.005	mg/L																		
2,4-Dichlorophenol	0.9	mg/L																		
Pentachlorophenol	0.06	mg/L																		
Diuron	0.15	mg/L																		
Temephos	0.28	mg/L																		
Benzo(a)pyrene	0.00001	mg/L																		
4,4'-DDD	-	ug/L																		
4,4'-DDE	-	ug/L																		
4,4'-DDT	-	ug/L																		
Aldrin	-	ug/L																		
Dieldrin	-	ug/L																		
Heptachlor	-	ug/L																		
Heptachlor epoxide	-	ug/L																		
Methoxychlor	0.9	ug/L																		
o,p-DDT	-	ug/L																		
Oxychlordane	-	ug/L																		
α-Chlordane	-	ug/L																		
γ-BHC (Lindane)	-	ug/L																		
γ-Chlordane	-	ug/L																		
Alachlor	0.005	mg/L																		
Atrazine	-	mg/L																		
Azinphos-Methyl (Guthion)	0.02	mg/L																		
Chlorpyriphos (Dursban)	0.09	mg/L																		
Cyanazine (Bladex)	0.01	mg/L																		
Desethyl Atrazine	-	mg/L																		
Diazinon	0.02	mg/L																		
Dimethoate	0.02	mg/L																		
Malathion	0.19	mg/L																		
Metolachlor	0.05	mg/L																		
Metribuzin (Sencor)	0.08	mg/L																		
Parathion	0.05	mg/L																		
Phorate	0.002	mg/L																		
Prometryne	0.001	mg/L																		
Simazine	0.01	mg/L																		
Terbufos	0.001	mg/L																		
Triallate	0.23	mg/L																		
Trifluralin	0.045	mg/L																		
Total PCBs	0.003	mg/L																		
2,4,5-T	0.28	ug/L																		
2,4-D	0.1	ug/L																		
Bromoxynil	0.005	ug/L																		
Dicamba	0.12	ug/L																		
Diclofop Methyl	0.009	ug/L																		
Dinoseb	0.01	ug/L																		
Picloram	0.19	ug/L																		
Atrazine + N-dealkylated metabolites	0.005	ug/L																		
Chlordane (total)	7	ug/L																		
Aldrin + Dieldrin	0.7	ug/L																		
Heptachlor + Heptachlor Epoxide	3	ug/L																		

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.6: Sampling Location - MW6-02
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

Parameter	ODWS	Units	Date of Sampling Event																			
			2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13
Miscellaneous Parameters																						
Nitrite (as N)	-	mg/L																		<0.02	<0.020	0.035
Bicarbonate (HCO3)	-	mg/L																		278	218	222
Carbonate (CO3)	-	mg/L																		<5	<5.0	<5.0
Hydroxide (OH)	-	mg/L																		<5	<5.0	<5.0
Cyanide	0.2	mg/L																		NT	NT	NT
Ion Balance Calculation																						
Cation - Anion Balance	-	%																		-2.1	9.1	6.4
TDS (calculated)	-	mg/L																		309	307	318
Anion Sum	-	me/L																		6.2	5.18	5.49
Cation Sum	-	me/L																		5.94	6.21	6.3
Inorganics																						
Alkalinity	500	mg/L CaCO3	100	210	189	192	186	210	192	233	211	200	206	204	208	208	207	209	222	228	218	222
Ammonia	-	mg/L	0.73	ND	1.02	1.06	1.12	1.21	1.27	0.651	1.18	1.15	1.25	1.27	1.28	1.25	1.25	1.77	0.873	1.71	1.35	1.52
Arsenic	0.025	mg/L	0.003	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Barium	1	mg/L	0.203	0.24	0.1	0.12	0.1	0.1	0.0958	0.12	0.123	0.135	0.121	0.198	0.13	0.372	0.15	0.182	0.15	0.175	0.157	0.17
Boron	5	mg/L	NT	NT	<0.001	<0.001	<0.001	0.066	0.0833	0.0756	0.11	0.06	<0.05	0.094	0.113	0.141	0.099	0.09	<0.50	0.115	0.1	0.143
Cadmium	0.0001	mg/L	ND	ND	<0.0001	<0.0001	0.0001	0.0001	0.00012	<0.0001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Calcium		mg/L	55.2	70	52.8	54.4	53.1	43.7	32.7	51.3	48.6	45.5	53.3	55.5	53.3	55.7	54.6	58.3	57.9	57	61.3	59.3
Chloride	250	mg/L	50	55.6	43.5	45.9	52.9	47	45	43.1	50.2	48.5	47	50.2	53.2	48.9	50.3	52.5	58.7	58.1	56.7	65.2
Chromium	0.05	mg/L	0.041	0.031	<0.001	<0.001	0.004	0.01	0.015	0.008	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.001	<0.0010	<0.01
Conductivity	-	µS/cm	561	566	522	523	490	474	544	459	497	528	524	543	524	514	555	562	594	617	595	635
Copper	1	mg/L	0.046	0.039	<0.001	<0.001	<0.001	0.001	0.0016	0.0025	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Fluoride		mg/L																				
Hardness		mg/L																				
Iron	0.3	mg/L	25.2	52	0.5	0.9	22	4.15	5.99	6.61	25.6	25.9	22.5	0.524	1.36	0.374	<0.050	20.8	25	23.1	25.5	22.6
Lead	0.01	mg/L	0.034	0.016	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	0.02	0.016	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium	-	mg/L	17	22	12.9	12.3	12	10.5	9.38	12.6	12.2	11.8	12.3	13.3	13.9	13.1	14.4	15.6	16.3	14.8	14.9	17.4
Manganese	0.05	mg/L	1.1	1.3	1.01	1.33	1.04	0.847	0.685	0.934	1	0.795	0.939	0.926	0.945	0.96	1.05	1.08	1.15	1.2	1.08	1.17
Mercury	0.001	mg/L	ND	ND	<0.0001	<0.0001	0.0013	<0.0001	<0.0001	<0.0001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Nitrate	10	mg/L	ND	0.1	<0.03	0.07	<0.03	<0.1	<0.1	<0.1	<0.03	<0.03	0.07	0.082	0.108	0.34	<0.030	0.271	0.155	0.054	0.047	0.037
Nitrite	1	mg/L	ND	ND	<0.02	0.21	0.44	<0.05	<0.03	<0.03	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.02	<0.02	0.035
Organic Nitrogen		mg/L																				
TKN	-	mg/L	2.5	0.8	2.03	1.71	1.96	1.68	1.32		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
pH	6.5-8.5	mg/L	7.24	7.66	7.4	7.1	7	6.47	6.82	6.93	7.4	7.12	7.06	7.1	7.34	7.27	6.97	7.49	7	7.53	7.53	7.04
Total Phosphorous	-	mg/L	0.35	NT	NT	NT	NT	0.18	0.598		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Potassium	-	mg/L	7.35	4.9	3.65	3.07	2.95	1.7	3.22	3.39	NT	NT	NT	NT	NT	NT	NT	NT	NT	3.3	3.39	3.54
Sodium	200	mg/L	29.8	34	34.4	32.3	33.1	6.11	41.1	39.4	40.2	35	41.2	38.2	40.3	39.8	37.9	34	42	38.4	40	39.2
Suspended Solids	-	mg/L	910	1200	40	42	342	2930	3290	496	770	370	320	516	254	570	783	2400	2620	1230	812	363
TDS	500	mg/L	402	285	330	350	310	400	440	300	370	320	300	374	360	330	350	342	356	326	342	332
Sulfate	500	mg/L	ND	ND	0.5	2.5	2.4	<0.2	<1	<1	2.1	<0.3	<0.3	0.34	1.78	<0.30	<0.30	0.44	<0.30	<0.30	<0.30	0.32
Zinc	5	mg/L	0.264	0.11	0.15	0.035	0.008	0.003	0.0023	<0.0014	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Volatile Organics																						
Benzene	5	µg/L	ND	NT	NT	NT	NT	<0.3	<0.25	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT	NT
1,4 Dichlorobenzene	5	µg/L	ND	NT	NT	NT	ND	<0.3	<0.25	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT	NT
Dichloromethane	50	µg/L	ND	NT	NT	NT	NT	<0.3	<0.25	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT	NT
Toluene	24	µg/L	ND	NT	NT	NT	NT	<0.3	<0.25	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Vinyl Chloride	2	µg/L	ND	NT	NT	NT	NT	<0.3	<0.2	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT	NT
Other Organics																						
BOD_5	-	mg/L	NT	ND	3	<2	<2	3	3.6	0.88	<2	<2	<2	<2	2.3	<2.0	<2.0	2.3	<2.0	<2.0	<2.0	<2.0
COD	-	mg/L	62	34.4	NT	38	53	20	41	42	37	41	42	35	102	36.8	34.2	49.2	22.8	32.5	34.8	35.6
DOC	5	mg/L	16.4	10.3	7	11	12	20	19.3	14.1	11	13	10	7.9	8.9	11.6	15.4	10.9	13.7	13.5	10.6	19.7
Phenol	-	mg/L	NT	0.001	0.004	0.004	0.003	0.004	<0.001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Field Parameters																						
pH	-										6.99	6.92	7.06	6.9	7.03	6.58	7.72	7.56	7.23	6.92	6.87	6.63
Conductivity	-	µS/cm									540	550	500	520	510	500	530	610	0.68	0.69	0.66	28.4
DO	-										66.8	71.8	18.9	50.9	17.7	12.8	43.6	35.9	27.5	21.6	34.7	0.67
Temp	-										10	9.9	9.2	10.7	8.6	8.2	8.9	6.8	10.5	7.7	10.2	8.9
Pesticides																						
2,3,4,6-Tetrachlorophenol	0.1	mg/L					<0.0005		<0.000061		<0.0005		<0.0005							<0.0005		
2,4,6-Trichlorophenol	0.005	mg/L					<0.0005		<0.000061		<0.0005		<0.0005							<0.0005		
2,4-Dichlorophenol	0.9	mg/L					<0.0005		<0.000061		<0.0005		<0.0005							<0.0003		
Pentachlorophenol	0.06	mg/L					<0.0005		<0.000061		<0.0005		<0.0005							<0.0005		
Aldicarb	0.009	mg/L					<0.0009		<0.00085		<0.009		<0.001							<0.001		
Bendiocarb	0.04	mg/L					<0.0002		<0.0022		<0.0002		<0.0002							<0.0002		
Carbaryl	0.09	mg/L					<0.0002		<0.0022		<0.0002		<0.0002							<0.0002		
Carbofuran	0.09	mg/L					<0.0002		<0.0022		<0.0002		<0.0002							<0.0002		
Diuron	0.15	mg/L					<0.01		<0.011		<0.01		<0.001							<0.001		
Temephos	0.28	mg/L					<0.0001		<0.024		<0.0001		<0.0001							<0.001		
4,4'-DDD	-	ug/L					NT		<0.0008		<0.1		<0.1							<0.1		
4,4'-DDE	-	ug/L					NT		<0.00027		<0.1		<0.01							<0.1		
4,4'-DDT	-	ug/L					NT		<0.0004		<0.1		<0.1							<0.1		
Aldrin	-	ug/L					NT		<0.0004		<0.02		<0.02							<0.02		
Dieldrin	-	ug/L					NT		<0.0011		<0.02		<0.02							<0.02		
Heptachlor	-	ug/L					NT		<0.00053		<0.1		<0.1							<0.1		
Heptachlor epoxide	-	ug/L					NT		<0.00053		<0.1		<0.1							<0.1		
Methoxychlor	0.9	ug/L					NT		<0.0011		<0.1		<0.1							<0.1		
o,p-DDT	-	ug/L					NT		<0.00027		<0.1		<0.1							<0.1		
Oxychlordane	-	ug/L					NT		NT		<0.1		<0.1							<0.1		
α-Chlordane	-	ug/L					NT		<0.0004		<0.1		<0.1							<0.1		
γ-BHC (Lindane)	-	ug/L					NT		<0.0004		<0.1		<0.1							<0.1		
γ-Chlordane	-	ug/L					NT		<0.00053		<0.1		<0.1							<0.1		
Alachlor	0.005	mg/L					<0.0001		<0.00088		<0.0001		<0.0001							<0.0001		
Atrazine	-	mg/L					<0.0001		<0.00088		<0.0001		<0.0001							<0.0001		
Azinphos-Methyl (Guthion)	0.02	mg/L					<0.0001		<0.00066		<0.0001		<0.0001							<0.0001		
Chlorpyriphos (Dursban)	0.09	mg/L					<0.0001		<0.00066		<0.0001		<0.0001							<0.0001		
Cyanazine (Bladex)	0.01	mg/L					<0.0001		<0.00066		<0.0001		<0.0001							<0.0001		
Desethyl Atrazine	-	mg/L					<0.0001		<0.0011		<0.0001		<0.0001							<0.0001		
Diazinon	0.02	mg/L					<0.0001		<0.00066		<0.0001		<0.0001							<0.0001		
Dimethoate	0.02	mg/L					<0.0001		<0.00066		<0.0001		<0.0001							<0.0001		
Malathion	0.19	mg/L					<0.0001		<0.00066		<0.0001		<0.0001							<0.0001		
Metolachlor	0.05	mg/L					<0.0001		<0.00044		<0.0001		<0.0001							<0.0001		
Metribuzin (Sencor)	0.08	mg/L					<0.0001		<0.00044		<0.0001		<0.0001							<0.0001		
Parathion	0.05	mg/L					<0.01		<0.00044		<0.0001		<0.0001							<0.0001		
Phorate	0.002	mg/L					<0.0001		<0.0005		<0.0001		<0.0001							<0.0001		
Prometryne	0.001	mg/L					<0.0001		<0.00022		<0.0001		<0.0001							<0.0001		
Simazine	0.01	mg/L					<0.0001		<0.0005		<0.0001		<0.0001							<0.0001		
Terbufos	0.001	mg/L					<0.0002		<0.00044		<0.0002		<0.0002							<0.0002		
Triallate	0.23	mg/L					<0.0001		<0.00044		<0.0001		<0.0001							<0.0001		
Trifluralin	0.045	mg/L					<0.0001		<0.00044		<0.0001		<0.0001							<0.0001		
Benzo(a)pyrene	0.00001	mg/L					0.00001		<0.00001		<0.00001		<0.00001							<0.00001		
Total PCBs	0.003	mg/L					<0.00006		<0.00006		<0.0006		<0.00002							<0.000035		
2,4,5-T	0.28	mg/L					<0.0002		<0.000093		<0.0002		<0.0002							<0.0002		
2,4-D	0.1	mg/L					<0.0002		<0.00037		<0.0002		<0.0002							<0.0002		
Bromoxynil	0.005	mg/L					<0.0002		<0.0005		<0.0002		<0.0002							<0.0002		
Dicamba	0.12	mg/L					<0.0002		<0.00037		<0.0002		<0.0002							<0.0002		
Diclofop Methyl	0.009	mg/L					<0.0002		<0.00037		<0.0002		<0.0002							<0.0002		
Dinoseb	0.01	mg/L					<0.0002		<0.000093		<0.0002		<0.0002							<0.0002		
Picloram	0.19	mg/L					<0.0002		<0.000093		<0.0002		<0.0002							<0.0002		
Atrazine + N-dealkylated metabolites	0.005	mg/L					NT		<0.0009		NT		<0.0002							<0.0002		
Chlordane (total)	7	ug/L					NT		<0.004		<0.3		<0.3							<0.3		
Aldrin + Dieldrin	0.7	ug/L					<0.04		<0.004		<0.04		<0.04							<0.04		

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.6: Sampling Location - MW6-02
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units	Date of Sampling Event																	
			Oct-13	May-14	Oct-14	May-15	Oct-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Miscellaneous Parameters																				
Nitrite (as N)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Bicarbonate (HCO3)	-	mg/L	270	190	193	189.8576	202.8646	213	213	211	199	187	189	198	219	196	245	184	198	196
Carbonate (CO3)	-	mg/L	<5.0	<2	<2	NT	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Hydroxide (OH)	-	mg/L	<5.0	<2	<2	NT	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Cyanide	0.2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0020	<0.0020
Ion Balance Calculation																				
Cation - Anion Balance	-	%	NT	3.1	4	6.9	7.7	5.5	5.9	6.6	4.3	10.3	3.3	0.4	-3.6	1.6	-3.3	1.9	10.9	2
TDS (calculated)	-	mg/L	304	NT	N	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	333	267
Anion Sum	-	me/L	NT	5.36	5.43	5.29	5.68	6.21	6.09	6.04	5.78	5.37	5.4	5.37	6.02	5.48	6.56	4.98	5.27	4.77
Cation Sum	-	me/L	NT	5.71	5.88	6.08	6.63	6.93	6.85	6.89	6.3	6.6	5.77	5.42	5.6	5.66	6.14	5.17	6.56	4.98
Inorganics																				
Alkalinity	500	mg/L CaCO3	221	190	193	190	203	213	213	211	199	187	189	198	219	196	245	184	198	196
Ammonia	-	mg/L	1.41	1.67	1.58	1.48	1.9	2.09	1.76	1.86	1.58	1.73	1.68	0.642	1.75	0.599	0.201	1.54	2.01	1.12
Arsenic	0.025	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.00085	NT
Barium	1	mg/L	0.169	0.173	0.169	0.189	0.199	0.209	0.187	0.173	0.162	0.17	0.124	0.118	0.14	0.137	0.0167	0.141	0.189	0.178
Boron	5	mg/L	0.131	0.094	0.093	0.099	0.103	0.104	0.101	0.103	0.1	0.105	0.105	0.107	0.122	0.107	0.275	0.091	0.114	0.107
Cadmium	0.0001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0000050	NT
Calcium		mg/L	56.8	46.8	49.6	50.7	53.8	62.3	55.9	55.6	53.1	54.1	54.6	52.1	56.5	51.7	50.5	44.7	59.9	49.1
Chloride	250	mg/L	54.8	55.6	55.5	52.7	57.4	69	64.9	64.2	63.1	57.8	57.3	53.2	57.2	54.2	56.8	45.6	46.9	54
Chromium	0.05	mg/L	<0.002	<0.001	<0.001	0.00074	<0.001	0.0007	0.00055	0.0006	0.00069	0.00133	0.00042	0.00024	<0.0005	0.00041	NT	0.00045	0.00063	NT
Conductivity	-	µS/cm	595	561	556	503	565	556	567	592	579	567	524	533	551	523	635	477	533	456
Copper	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NA	NT
Fluoride		mg/L																	0.024	0.039
Hardness		mg/L																	212	185
Iron	0.3	mg/L	28	14.2	13.2	20	22.2	17.7	19.7	22.7	18.4	20.3	5.12	0.045	0.049	5.34	0.029	12.2	18.9	11.6
Lead	0.01	mg/L	<0.00009	<0.001	<0.0010	<0.00005	<0.0010	<0.00005	<0.00005	<0.00005	0.000286	0.000304	<0.000050	<0.00005	<0.00005	<0.00005	<0.000050	<0.000050	<0.000050	NT
Magnesium	-	mg/L	17	13	15.3	13.6	14	15.5	15.1	14.7	13.3	14.6	15	15.2	15.4	15.2	13.5	12.1	15.2	15.1
Manganese	0.05	mg/L	1.11	0.874	0.847	0.881	0.917	1.04	0.936	0.96	0.782	0.947	0.501	0.7	0.796	0.384	0.0208	0.926	1.07	0.716
Mercury	0.001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0000050	NT
Nitrate	10	mg/L	0.256	0.11	0.161	0.061	0.083	0.179	0.086	<0.02	0.212	0.024	0.142	1.19	0.292	0.592	0.412	0.315	<0.020	0.072
Nitrite	1	mg/L		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.014	NT
Organic Nitrogen		mg/L																	0.279	0.51
TKN	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	2.29	1.63
pH	6.5-8.5	mg/L	7.14	7.12	6.94	6.89	6.84	6.88	6.92	6.84	7.01	6.85	7	7.42	7.59	7.39	8.07	7.17	7.7	8.01
Total Phosphorous	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.405	NT
Potassium	-	mg/L	3.3	3.96	NT	NT	NT	NT	NT	NT	NT	4.6	4.78	5.19	5.71	5.49	30	4.39	5.88	NT
Sodium	200	mg/L	38.8	29.6	29.7	28	30.6	32.5	34.1	32.6	32.6	30.6	29.4	31.3	30.7	30.8	39.7	26.4	25.8	26.9
Suspended Solids	-	mg/L	334	3120	887	2570	4030	1600	562	359	620	976	185	466	314	324	61	204	<0.30	83.3
TDS	500	mg/L	409	345	392	393	377	379	347	359	361	385	327	317	345	344	354	299	333	325
Sulfate	500	mg/L	<0.3	<0.3	<0.3	<0.30	<0.3	<0.30	<0.3	0.44	0.38	<0.30	<0.30	1.73	<0.30	<0.30	1.61	<0.30	<0.30	<0.30
Zinc	5	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0025	NT
Volatile Organics																				
Benzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Dichloromethane	50	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<5.0	NT
Toluene	24	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.5	NT
Vinyl Chloride	2	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Other Organics																				
BOD_5	-	mg/L	3.9	<2	2.9	3.1	2.8	5.4	<2	2.3	3.5	<2.0	4.7	7.6	3	3.1	2.7	<2.0	6.7	<3.0
COD	-	mg/L	44.5	57	49	41	35	52	41	45	43	99	79	96	64	83	79	45	59	39
DOC	5	mg/L	15.2	13.3	13.8	19.9	13.2	14	14	13.9	12.8	18.2	9.7	10.1	14.1	11.3	14.3	10.5	13.9	11.1
Phenol	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0014	
Field Parameters																				
pH	-		6.61	6.9	6.8	6.89	6.96	6.31	6.26	6.52	7.45	7.16	7.26	7.27	7.94	8.24	7.37	7.04	6.8	6.31
Conductivity	-	µS/cm	0.65	0.54	0.56	0.51	0.54	0.53	0.53	0.59	0.64	0.62	0.57	0.55	0.59	0.53	0.47	0.583	0.678	0.65
DO	-		38.5	15	29	5.2	26.8	29.5	22.1	38.9	25.6	16.2	21.4	37	17	21.4	15.7	24.2	14.8	17.3
Temp	-		11.6	5.6	9.6	5.8	10.5	8.8	11	7.3	8.4	7.6	7.5	5.8	9.3	8.7	8.6	10.6	7.1	10.1
Pesticides																				
2,3,4,6-Tetrachlorophenol	0.1	mg/L																		
2,4,6-Trichlorophenol	0.005	mg/L																		
2,4-Dichlorophenol	0.9	mg/L																		
Pentachlorophenol	0.06	mg/L																		
Aldicarb	0.009	mg/L																		
Bendiocarb	0.04	mg/L																		
Carbaryl	0.09	mg/L																		
Carbofuran	0.09	mg/L																		
Diuron	0.15	mg/L																		
Temephos	0.28	mg/L																		
4,4'-DDD	-	ug/L																		
4,4'-DDE	-	ug/L																		
4,4'-DDT	-	ug/L																		
Aldrin	-	ug/L																		
Dieldrin	-	ug/L																		
Heptachlor	-	ug/L																		
Heptachlor epoxide	-	ug/L																		
Methoxychlor	0.9	ug/L																		
o,p-DDT	-	ug/L																		
Oxychlordane	-	ug/L																		
α-Chlordane	-	ug/L																		
γ-BHC (Lindane)	-	ug/L																		
γ-Chlordane	-	ug/L																		
Alachlor	0.005	mg/L																		
Atrazine	-	mg/L																		
Azinphos-Methyl (Guthion)	0.02	mg/L																		
Chlorpyriphos (Dursban)	0.09	mg/L																		
Cyanazine (Bladex)	0.01	mg/L																		
Desethyl Atrazine	-	mg/L																		
Diazinon	0.02	mg/L																		
Dimethoate	0.02	mg/L																		
Malathion	0.19	mg/L																		
Metolachlor	0.05	mg/L																		
Metribuzin (Sencor)	0.08	mg/L																		
Parathion	0.05	mg/L																		
Phorate	0.002	mg/L																		
Prometryne	0.001	mg/L																		
Simazine	0.01	mg/L																		
Terbufos	0.001	mg/L																		
Triallate	0.23	mg/L																		
Trifluralin	0.045	mg/L																		
Benzo(a)pyrene	0.00001	mg/L																		
Total PCBs	0.003	mg/L																		
2,4,5-T	0.28	mg/L																		
2,4-D	0.1	mg/L																		
Bromoxynil	0.005	mg/L																		
Dicamba	0.12	mg/L																		
Diclofop Methyl	0.009	mg/L																		
Dinoseb	0.01	mg/L																		
Picloram	0.19	mg/L																		
Atrazine + N-dealkylated metabolites	0.005	mg/L																		
Chlordane (total)	7	ug/L																		
Aldrin + Dieldrin	0.7	ug/L																		

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.7: Sampling Location - MW1-03
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

Parameter	ODWS	Units	Date of Sampling Event																				
			2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	Oct-13
Miscellaneous Parameters																								
																								Duplicate
Nitrite (as N)	-	mg/L																		<0.02	<0.020	<0.02	NT	NT
Bicarbonate (HCO3)	-	mg/L																		179	224	193	200	163
Carbonate (CO3)	-	mg/L																		<5	<5.0	<5.0	<5.0	<5.0
Hydroxide (OH)	-	mg/L																		<5	<5.0	<5.0	<5.0	<5.0
Cyanide	0.2	mg/L																		NT	NT	NT	NT	NT
Ion Balance Calculation																								
Cation - Anion Balance	-	%																		-2.1	8.6	3.66	NT	NT
TDS (calculated)	-	mg/L																		309	404	392	306	276
Anion Sum	-	me/L																		6.2	6.53	6.53	NT	NT
Cation Sum	-	me/L																		5.94	7.76	7.44	NT	NT
Inorganics																								
Alkalinity	500	mg/L CaCO3	NT	12.6		28	127	210	61	136	112	33	206	103	158	151	31.9	154	203	147	224	193	164	133
Ammonia	-	mg/L	NT	ND	0.52	0.32	0.67	0.68	0.522	0.662	0.59	0.31	1.52	0.617	1.08	1.14	0.364	1.08	1.61	1.04	1.53	1.37	0.948	1.05
Arsenic	0.025	mg/L	NT	0.013	<0.001	0.008	<0.001	0.002	0.0018	0.0019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Barium	1	mg/L	NT	0.42	0.11	0.28	0.1	0.209	0.101	0.13	0.153	0.077	0.2	0.152	0.209	0.168	0.075	0.169	0.197	0.196	0.255	0.242	0.178	0.173
Boron	5	mg/L	NT	ND	0.09	0.25	0.24	0.15	0.0922	0.0816	0.2	0.1	0.23	0.152	0.235	0.173	0.093	0.174	0.305	0.184	0.222	0.242	0.19	0.185
Cadmium	0.0001	mg/L	NT	ND	0.0001	0.0003	0.0003	0.0002	0.00011	<0.0001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Calcium	-	mg/L	NT	8.6	10.1	4.4	16.3	10.7	4.05	6.63	10.5	3.8	26.3	11.6	19.6	25.8	6.21	25	33.4	29.5	40.3	39.3	27.8	26.6
Chloride	250	mg/L	NT	1.14	47.2	24.7	52.9	39	22.2	15.2	61.6	25.5	67.4	41.1	55.7	55.5	35.3	79.3	91.8	86.5	101	118	89	NT
Chromium	0.05	mg/L	NT	0.04	0.004	0.005	0.004	0.01	0.008	0.0065	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0019	0.0015	<0.010	<0.002	<0.002
Conductivity	-	µS/cm	NT	69.4	681	156	425	263	191	139	418	180	600	361	472	460	206	572	675	580	780	760	612	551
Copper	1	mg/L	NT	0.22	0.002	<0.001	0.001	0.009	0.0034	0.0076	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Fluoride		mg/L																						
Hardness		mg/L																						
Iron	0.3	mg/L	NT	31	4.8	2.26	5.53	2.54	1.43	3.76	4.96	1.92	9.32	2.92	2.13	7.2	2.78	5.74	7.75	7.44	7.9	8.67	6.17	6.02
Lead	0.01	mg/L	NT	0.038	0.001	0.001	0.001	0.002	0.0014	0.0021	<0.01	<0.01	<0.01	0.011	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.000117	0.000136
Magnesium	-	mg/L	NT	7.3	5.42	1.31	7.94	4.99	1.78	2.97	9	1.94	18	9.62	13.1	14.3	3.12	16.1	19.6	15.1	20	21.3	14.5	14.1
Manganese	0.05	mg/L	NT	0.46	0.109	0.038	0.142	0.089	0.0391	0.0739	0.11	0.0266	0.27	0.0811	0.184	0.196	0.0441	0.153	0.23	0.202	0.227	0.237	0.169	0.165
Mercury	0.001	mg/L	NT	ND	<0.0001	<0.0001	0.0011	<0.0001	<0.0001	<0.0001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Nitrate	10	mg/L	NT	0.4	<0.03	0.12	<0.03	<0.1	<0.1	<0.1	<0.03	<0.03	<0.03	0.039	<0.03	<0.030	<0.030	<0.030	0.032	<0.03	<0.03	<0.03	0.031	<0.03
Nitrite	1	mg/L	NT	ND	<0.02	<0.02	0.44	<0.05	<0.03	<0.03	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.02	<0.02	<0.02		
Organic Ntrogen		mg/L																						
TKN	-	mg/L	NT	1.1	1.4	1.29	2.24	1.48	1.27		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
pH	6.5-8.5	mg/L	NT	6.24	3.1	6.1	6.5	6.25	6.06	6.33	6.8	6.26	7.03	6.8	7.03	6.95	6.13	6.74	6.93	7.22	7.32	6.87	6.86	6.8
Total Phosphorous	-	mg/L	NT	NT	NT	NT	NT	0.407/0.424	0.512		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Potassium	-	mg/L	NT	2.6	11.5	6.44	15.6	1.7	10.9	9.52	NT	NT	NT	NT	NT	NT	NT	NT	NT	24.8	38	29.6		27.3
Sodium	200	mg/L	NT	9.7	45.3	23.2	57.4	6.11	29.3	21.6	53.2	26.2	66.2	41.1	47.1	54.1	24.7	50.8	65.3	55.3	69.4	65.9	48.7	48.4
Suspended Solids	-	mg/L	NT	7900	4	<2	6620	2020	6370	3620	100	1040	299	337	731	257	479	652	241	67.6	310	147	593	5170
TDS	500	mg/L	NT	140	400	160	410	300	290	190	300	250	330	320	374	313	250	360	400	330	484	402	406	336
Sulfate	500	mg/L	NT	2.6	147	5.7	2.4	3.2	1.4	<1	5.6	6.9	0.6	4.98	2.02	0.61	0.77	0.51	0.38	<0.3	0.51	1.8	0.47	0.63
Zinc	5	mg/L	NT	0.08	0.015	0.145	0.014	0.005	0.0024	0.0069	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Volatile Organics																								
Benzene	5	µg/L	NT	NT	NT	NT	1.4	<0.3	<0.25	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT	NT	NT
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	NT	NT	<0.3	<0.25	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT	NT	NT
Dichloromethane	50	µg/L	NT	NT	NT	NT	NT	<0.3	<0.25	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT	NT	NT
Toluene	24	µg/L	NT	NT	NT	NT	NT	<0.3	<0.25	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Vinyl Chloride	2	µg/L	NT	NT	NT	NT	NT	<0.3	<0.25		<0.5	NT	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT	NT	NT
Other Organics																								
BOD_5	-	mg/L	NT	ND	<2	<2	<2	3	4	2.2	<2	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0	<2.0
COD	-	mg/L	NT	16.3	NT	94	90	50	83	<20	72	173	108	102	123	63.5	108	92.8	66.6	85.4	101	85.3	115	229
DOC	5	mg/L	NT	2.8	16	30	20	26	39.1	35.6	16	35	15	20.5	14.7	20.4	26.6	15.2	18.2	16.4	23.7	31.9	32.8	33.4
Phenol	-	mg/L	NT	0.002	0.003	0.004	0.003	0.004	<0.001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Field Parameters																								
pH	-										6.32	6.66	6.85	6.8	7.17	7.27	7.82	7.25	7.07	6.92	7.02	6.54	7.03	7.03
Conductivity	-	µS/cm									380	130	510	320	420	450	170	510	0.71	0.57	0.8	0.76	0.58	0.58
DO	-	%									25.4	35	17.1	35.4	47.7	15.3	31.3	25.1	14.3	23.1	28.6	13.1	25.8	25.8
Temp	-	°c									11.4	8.5	10.3	9.3	9.4	10	11.6	7.3	12.1	8.7	11.8	6.5	11.9	11.9
Pesticides																								
2,3,4,6-Tetrachlorophenol	0.1	mg/L					<0.0005		<0.000065				<0.0005							<0.0005				
2,4,6-Trichlorophenol	0.005	mg/L					<0.0005		<0.000065				<0.0005							<0.0005				
2,4-Dichlorophenol	0.9	mg/L					<0.0005		<0.000065				<0.0005							<0.0003				
Pentachlorophenol	0.06	mg/L					<0.0005		<0.000065				<0.0005							<0.0005				
Aldicarb	0.009	mg/L					<0.0009		<0.00067		<0.009		<0.001							<0.001				
Bendiocarb	0.04	mg/L					<0.0002		<0.0013		NT		<0.0002							<0.0002				
Carbaryl	0.09	mg/L					<0.0002		<0.0013		NT		<0.0002							<0.0002				
Carbofuran	0.09	mg/L					<0.0002		<0.0013		NT		<0.0002							<0.0002				
Diuron	0.15	mg/L					<0.01		<0.0067		<0.01		<0.001							<0.001				
Temephos	0.28	mg/L					<0.0001		<0.019				<0.0001							<0.0001				
4,4'-DDD	-	ug/L					NT		<0.001				<0.1							<0.1				
4,4'-DDE	-	ug/L					NT		<0.00034				<0.01							<0.1				
4,4'-DDT	-	ug/L					NT		<0.00051				<0.1							<0.1				
Aldrin	-	ug/L					NT		<0.00051				<0.02							<0.02				
Dieldrin	-	ug/L					NT		<0.0014				<0.02							<0.02				
Heptachlor	-	ug/L					NT		<0.00068				<0.1							<0.1				
Heptachlor epoxide	-	ug/L					NT		<0.00068				<0.1							<0.1				
Methoxychlor	0.9	ug/L					NT		<0.0014				<0.1							<0.1				
o,p-DDT	-	ug/L					NT		<0.00034				<0.1							<0.1				
Oxychlordane	-	ug/L					NT		NT				<0.1							<0.1				
α-Chlordane	-	ug/L					NT		<0.00051				<0.1							<0.1				
γ-BHC (Lindane)	-	ug/L					NT		<0.00051				<0.1							<0.1				
γ-Chlordane	-	ug/L					NT		<0.00068				<0.1							<0.1				
Alachlor	0.005	mg/L					<0.0001		<0.0007				<0.0001							<0.0001				
Atrazine	-	mg/L					<0.0001		<0.0007				<0.0001							<0.0001				
Azinphos-Methyl (Guthion)	0.02	mg/L					<0.0001		<0.00053				<0.0001							<0.0001				
Chlorpyriphos (Dursban)	0.09	mg/L					<0.0001		<0.00053				<0.0001							<0.0001				
Cyanazine (Bladex)	0.01	mg/L					<0.0001		<0.00053				<0.0001							<0.0001				
Desethyl Atrazine	-	mg/L					<0.0001		<0.00088				<0.0001							<0.0001				
Diazinon	0.02	mg/L					<0.0001		<0.00053				<0.0001							<0.0001				
Dimethoate	0.02	mg/L					<0.0001		<0.00053				<0.0001							<0.0001				
Malathion	0.19	mg/L					<0.0001		<0.00053				<0.0001							<0.0001				
Metolachlor	0.05	mg/L					<0.0001		<0.00035				<0.0001							<0.0001				
Metribuzin (Sencor)	0.08	mg/L					<0.0001		<0.00035				<0.0001							<0.0001				
Parathion	0.05	mg/L					<0.01		<0.00035				<0.0001							<0.0001				
Phorate	0.002	mg/L					<0.0001		<0.00049				<0.0001							<0.0001				
Prometryne	0.001	mg/L					<0.0001		<0.00022				<0.0001							<0.0001				
Simazine	0.01	mg/L					<0.0001		<0.00049				<0.0001							<0.0001				
Terbufos	0.001	mg/L					<0.0002		<0.00035				<0.0002							<0.0002				
Triallate	0.23	mg/L					<0.0001		<0.00035				<0.0001							<0.0001				
Trifluralin	0.045	mg/L					<0.0001		<0.00035				<0.0001							<0.0001				
Benzo(a)pyrene	0.00001	mg/L					<0.00001		<0.00001				<0.00001							<0.00001				
Total PCBs	0.003	mg/L					<0.00006		<0.00008				<0.00002							<0.000035				
2,4,5-T	0.28	mg/L					<0.0002		<0.00012				<0.0002							<0.0002				
2,4-D	0.1	mg/L					<0.0002		<0.00047				<0.0002							<0.0002				
Bromoxynil	0.005	mg/L					<0.0002		<0.0005				<0.0002							<0.0002				
Dicamba	0.12	mg/L					<0.0002		<0.00047				<0.0002							<0.0002				
Diclofop Methyl	0.009	mg/L					<0.0002		<0.00047				<0.0002							<0.0002				
Dinoseb	0.01	mg/L					<0.0002		<0.00012				<0.0002							<0.0002				
Picloram	0.19	mg/L					<0.0002		<0.00012				<0.0002							<0.0002				
Atrazine + N-dealkylated metabolites	0.005	mg/L					NT		<0.0009				<0.0002							<0.0002				
Chlordane (total)	7	ug/L					NT		<0.004				<0.3							<0.3				
Aldrin + Dieldrin	0.7	ug/L					<0.04		<0.004				<0.04							<0.04				

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.7: Sampling Location - MW1-03
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units	May-14	Oct-14	Oct-14	May-15	Oct-15	Oct-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Miscellaneous Parameters															Frozen						
					DUP	No Sample		Duplicate													
Nitrite (as N)	-	mg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT	NT
Bicarbonate (HCO3)	-	mg/L	238	190	190		212	214	246	237	251	233	219	219		157	177	224	257	225	195
Carbonate (CO3)	-	mg/L	<2	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Hydroxide (OH)	-	mg/L	<2	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Cyanide	0.2	mg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.0020	<0.0020
Ion Balance Calculation																					
Cation - Anion Balance	-	%	1.6	-3	1.7		2.8	3.4	2.1	3.6	0.4	-2	2.4	1.4		1	2.5	-0.4	-1.7	5.1	-1
TDS (calculated)	-	mg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT	988
Anion Sum	-	me/L	8.29	6.24	6.1		7.9	7.92	8.17	7.47	7.66	6.81	6.17	6.32		21.2	18.8	13	13	14.1	17.1
Cation Sum	-	me/L	8.56	5.88	6.31		8.36	8.49	8.53	8.04	7.73	6.54	6.48	6.49		21.6	19.8	12.9	12.6	15.6	16.7
Inorganics																					
Alkalinity	500	mg/L CaCO3	238	190	190		212	214	246	237	251	233	219	219		157	177	224	257	225	195
Ammonia	-	mg/L	1.66	1.38	1.36		2.17	2	2.48	2.25	2.2	2.15	1.88	2.28		3.79	2.6	1.71	1.61	1.68	1.31
Arsenic	0.025	mg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.0010	NT
Barium	1	mg/L	0.246	0.173	0.182		0.277	0.293	0.248	0.231	0.225	0.194	0.193	0.19		0.676	0.47	0.235	0.228	0.285	0.331
Boron	5	mg/L	0.193	0.209	0.233		0.243	0.255	0.242	0.258	0.22	0.221	0.233	0.27		0.28	0.287	0.255	0.285	0.29	0.318
Cadmium	0.0001	mg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.000050	NT
Calcium	-	mg/L	47.7	27.2	31		42.7	43.4	44.1	39.3	38.9	34.3	35.4	34.9		101	64.2	34	27.5	39.1	43.1
Chloride	250	mg/L	0.087	86.1	81.7		130	129	116	96.2	93.3	76	63.1	68.1		628	530	301	277	338	490
Chromium	0.05	mg/L	0.0013	0.0017	0.0017		0.00133	0.00136	0.00141	0.00145	0.00126	0.00145	0.00173	0.00129		0.00084	0.00178	NT	0.00293	<0.0050	NT
Conductivity	-	µS/cm	880	677	652		792	782	779	761	761	692	641	614		2150	2050	1430	1370	1640	1600
Copper	1	mg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NA	NT
Fluoride		mg/L																		<0.02	<0.10
Hardness		mg/L																		1640	179
Iron	0.3	mg/L	9.01	5.7	5.87		7.65	7.86	7.74	6.5	7.2	6.15	5.87	5.66		23	15.6	9.18	7.24	10.3	11.3
Lead	0.01	mg/L	<0.001	<0.0010	<0.0010		<0.00005	<0.00005	0.000181	0.000192	<0.00005	<0.00005	0.000583	<0.000050		<0.00005	<0.00005	<0.000050	<0.000050	<0.00050	NT
Magnesium	-	mg/L	20.9	14.1	15.1		19.7	20	20.4	17.7	18.1	14.7	16.1	15.5		43.7	26.6	13.3	10.3	14.1	17.5
Manganese	0.05	mg/L	0.255	0.167	0.174		0.211	0.212	0.22	0.192	0.207	0.175	0.174	0.209		0.885	0.58	0.329	0.256	0.362	0.426
Mercury	0.001	mg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.0000050	NT
Nitrate	10	mg/L	0.087	<0.030	<0.030		<0.040	<0.040	<0.020	0.021	<0.02	<0.02	<0.020	0.022		<0.10	<0.40	<0.10	<0.10	<0.020	<0.10
Nitrite	1	mg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.010	NT
Organic Ntrogen		mg/L																		0.65	1.78
TKN	-	mg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	2.33	3.09
pH	6.5-8.5	mg/L	6.8	6.72	6.73		6.64	6.59	6.62	7.08	6.79	6.88	6.86	7.06		6.73	7.13	7.16	7.22	7.99	7.45
Total Phosphorous	-	mg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	0.242	NT
Potassium	-	mg/L	29.8	NT	NT		NT	NT	NT	NT	NT	NT	28.6	33.9		60	50.5	34	33	36.9	NT
Sodium	200	mg/L	70.9	53.7	56.5		68.7	70.3	76.2	73.7	67.7	56.3	50.2	48.9		235	278	199	209	251	277
Suspended Solids	-	mg/L	356	196	358		1000	668	449	405	360	138	116	626		105	221	170	235	2.43	690
TDS	500	mg/L	496	405	372		466	451	491	447	441	410	375	380		1300	1170	753	811	895	975
Sulfate	500	mg/L	1.41	0.56	0.62		<0.60	<0.60	0.33	1.09	0.58	0.69	0.78	0.83		16	17.5	4.1	2.4	2.43	2.6
Zinc	5	mg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.010	NT
Volatile Organics																					
Benzene	5	µg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.50	NT
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.50	NT
Dichloromethane	50	µg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<5.0	NT
Toluene	24	µg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.50	NT
Vinyl Chloride	2	µg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.50	NT
Other Organics																					
BOD_5	-	mg/L	2.1	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0	2.2	<2.0	<2.0		<2.0	<2.0	<2.5	<2.0	<2.0	<3.0
COD	-	mg/L	70	68	222		79	121	79	125	85	64	61	99		59	83	95	109	85	101
DOC	5	mg/L	19	28.7	23.8		20.2	20.4	19.4	18.3	18	17.7	19.5	16.5		13.9	20.5	27	22.4	22	17.6
Phenol	-	mg/L	NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	<0.0010	NT
Field Parameters																					
pH	-		7.12	6.58	6.58	6.76	6.8	6.8	6.85	6.53	6.74	7.17	6.74	7.17		7.20	7.32	6.69	6.77	6.66	6.07
Conductivity	-	µS/cm	0.77	0.59	0.59	0.78	0.77	0.77	0.75	0.64	0.65	0.76	0.65	0.76		2.01	1.92	1.31	1.47	1.733	1.834
DO	-	%	25.1	10.1	10.1	10.3	13.1	13.1	14.3	25.9	17.1	44.4	17.1	44.4		19.2	20.8	23.2	24.6	24.3	20.5
Temp	-	°c	4.7	10.3	10.3	5.5	11.8	11.8	9	13.1	6.4	7.6	6.4	7.6		9.4	8.9	10.7	12.4	6.6	12.9
Pesticides																					
2,3,4,6-Tetrachlorophenol	0.1	mg/L																			
2,4,6-Trichlorophenol	0.005	mg/L																			
2,4-Dichlorophenol	0.9	mg/L																			
Pentachlorophenol	0.06	mg/L																			
Aldicarb	0.009	mg/L																			
Bendiocarb	0.04	mg/L																			
Carbaryl	0.09	mg/L																			
Carbofuran	0.09	mg/L																			
Diuron	0.15	mg/L																			
Temephos	0.28	mg/L																			
4,4'-DDD	-	ug/L																			
4,4'-DDE	-	ug/L																			
4,4'-DDT	-	ug/L																			
Aldrin	-	ug/L																			
Dieldrin	-	ug/L																			
Heptachlor	-	ug/L																			
Heptachlor epoxide	-	ug/L																			
Methoxychlor	0.9	ug/L																			
o,p-DDT	-	ug/L																			
Oxychlordane	-	ug/L																			
α-Chlordane	-	ug/L																			
γ-BHC (Lindane)	-	ug/L																			
γ-Chlordane	-	ug/L																			
Alachlor	0.005	mg/L																			
Atrazine	-	mg/L																			
Azinphos-Methyl (Guthion)	0.02	mg/L																			
Chlorpyriphos (Dursban)	0.09	mg/L																			
Cyanazine (Bladex)	0.01	mg/L																			
Desethyl Atrazine	-	mg/L																			
Diazinon	0.02	mg/L																			
Dimethoate	0.02	mg/L																			
Malathion	0.19	mg/L																			
Metolachlor	0.05	mg/L																			
Metribuzin (Sencor)	0.08	mg/L																			
Parathion	0.05	mg/L																			
Phorate	0.002	mg/L																			
Prometryne	0.001	mg/L																			
Simazine	0.01	mg/L																			
Terbufos	0.001	mg/L																			
Triallate	0.23	mg/L																			
Trifluralin	0.045	mg/L																			
Benzo(a)pyrene	0.00001	mg/L																			
Total PCBs	0.003	mg/L																			
2,4,5-T	0.28	mg/L																			
2,4-D	0.1	mg/L																			
Bromoxynil	0.005	mg/L																			
Dicamba	0.12	mg/L																			
Diclofop Methyl	0.009	mg/L																			
Dinoseb	0.01	mg/L																			
Picloram	0.19	mg/L																			
Atrazine + N-dealkylated metabolites	0.005	mg/L																			
Chlordane (total)	7	ug/L																			
Aldrin + Dieldrin	0.7	ug/L																			

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.9: Sampling Location - MW3-03
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units	Date of Sampling Event																								
			2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	May-13	Oct-13	May-14	May-14	Oct-14	May-15	Oct-15	2016 - 2022
																									DUP				Well Decommissioned
Miscellaneous Parameters																													
Nitrite (as N)		mg/L																		<0.02	<0.020	<0.020	<0.020	NT	NT	NT	NT	NT	
Bicarbonate (HCO3)		mg/L																		<5	<5.0	<5.0	<5.0	6	2.9	4.3	5.3	3.3	4.4
Carbonate (CO3)		mg/L																		<5	<5.0	<5.0	<5.0	<5.0	<2	<2	<2	NT	<2
Hydroxide (OH)		mg/L																		<5	<5.0	<5.0	<5.0	<5.0	<2	<2	<2	NT	<2
Ion Balance Calculation																													
Cation - Anion Balance		%																		Low EC	7.4	11.99	5.66	NT	9.2	7.3	15	0.9	7.4
TDS (calculated)		mg/L																		36.4	36.8	28	24.3	21.2	NT	NT	NT	NT	NT
Anion Sum		me/L																		0.54	0.57	0.43	0.39	NT	0.3	0.33	0.34	0.41	0.49
Cation Sum		me/L																		0.6	0.66	0.52	0.42	NT	0.36	0.38	0.46	0.42	0.57
Inorganics																													
Alkalinity	500	mg/L CaCO3	NT	NT	NT	<5	11	180	15	19	6	7	8	5.8	6.9	7.3	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	2.9	4.3	5.3	3.3	4.4
Ammonia		mg/L	NT	NT	NT	<0.02	0.07	0.066	0.0459	0.141	0.03	0.02	0.05	<0.02	<0.02	0.02	<0.020	<0.020	0.028	0.06	<0.020	<0.02	0.024	0.189	<0.020	<0.020	0.023	0.066	0.024
Arsenic	0.025	mg/L	NT	NT	NT	<0.001	<0.001	<0.001	<0.001	<0.001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Barium	1	mg/L	NT	NT	NT	0.09	0.01	0.06	0.0533	0.242	0.0325	0.04	0.028	0.091	0.083	0.02	0.021	0.016	0.045	0.017	0.017	<0.01	<0.01	0.00575	<0.010	<0.010	0.00739	0.015
Boron	5	mg/L	NT	NT	NT	<0.05	<0.05	0.002	<0.002	0.0022	<0.05	<0.05	<0.05	<0.03	<0.05	<0.050	<0.050	<0.050	<0.050	0.54	0.57	0.43	0.39	NT	0.3	0.33	0.34	0.41	0.49
Cadmium	0.0001	mg/L	NT	NT	NT	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.05	<0.050	<0.05	<0.05	<0.01	<0.05	<0.050	0.059	<0.010	<0.010
Calcium		mg/L	NT	NT	NT	6	5.3	4.7	3.1	4.06	3.7	2.3	3.9	2.51	3.4	2.99	3.92	2.43	8.64	3.25	3.16	2.21	1.26	1.35	1.71	1.82	1.94	2.52	3.82
Chloride	250	mg/L	NT	NT	NT	23.7	13.8	22.1	13.2	9.19	9.2	9.8	15	12.1	13.9	11.3	13.4	12.8	20.4	15.5	14.2	10.7	10	4.38	5.48	5.62	5.38	9.85	11.9
Chromium	0.05	mg/L	NT	NT	NT	<0.001	<0.001	0.002	0.0012	0.0014	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.001	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	0.00048	0.00045
Conductivity		µS/cm	NT	NT	NT	102	95	92	93.2	67.9	97	66	91	72.2	85.9	74.9	77.5	68.4	94.9	81.1	79.8	57.2	57.3	47.4	38.9	41.7	44.1	51.7	62.1
Copper	1	mg/L	NT	NT	NT	0.002	0.003	0.006	0.0044	0.0273	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Iron	0.3	mg/L	NT	NT	NT	<0.05	0.06	0.1	<0.02	0.278	0.019	0.077	0.051	0.156	0.81	<0.050	0.058	<0.050	0.151	<0.02	<0.020	0.067	<0.020	0.23	0.052	0.202	0.252	0.037	0.027
Lead	0.01	mg/L	NT	NT	NT	<0.001	0.001	<0.001	<0.001	0.0031	<0.001	<0.01	<0.01	0.014	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.000456	<0.001	<0.001	<0.0010	0.00009	<0.00005
Magnesium		mg/L	NT	NT	NT	1.34	1.29	0.947	0.665	0.72	0.86	0.52	0.77	0.556	0.74	0.57	0.78	30	3.92	0.626	0.646	0.588	0.33	0.328	0.456	0.419	0.379	0.509	0.658
Manganese	0.05	mg/L	NT	NT	NT	0.013	0.016	0.011	0.0057	0.0237	0.007	0.006	0.0072	0.0062	0.0094	0.0056	0.0099	0.0037	0.0417	0.0049	0.005	0.0051	0.0028	0.0115	0.004	0.0068	0.0065	0.00414	0.00523
Mercury	0.001	mg/L	NT	NT	NT	<0.0001	0.0025	<0.0001	<0.0001	<0.0001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Nitrate	10	mg/L	NT	NT	NT	0.23	0.14	<0.1	<0.1	<0.1	<0.03	<0.03	0.12	<0.03	0.082	<0.030	<0.030	<0.030	0.143	<0.03	0.154	0.043	0.033	<0.03	0.095	0.123	<0.030	0.034	0.037
Nitrite	1	mg/L	NT	NT	NT	<0.02	0.13	<0.05	<0.03	<0.03	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.020	<0.020	<0.020	NT	NT	NT	NT	NT	NT
TKN		mg/L	NT	NT	NT	0.31	2.97	0.5	0.22	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
pH	6.5-8.5	mg/L	NT	NT	NT	5.9	6.3	5.38	5.53	5.48	6.1	5.9	5.86	6	5.88	6.07	5.55	5.57	5.68	5.46	6.02	5.54	5.56	5.62	5.59	5.77	5.72	5.69	5.56
Total Phosphorous		mg/L	NT	NT	NT	NT	NT	0.86	1.24	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Potassium		mg/L	NT	NT	NT	0.71	1.17	1.7	0.45	0.9	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	<0.50	<0.50	<0.50	0.149	<0.5	<0.5	NT	NT	NT
Sodium	200	mg/L	NT	NT	NT	10.6	11.2	6.11	10.45	9.1	12.6	9.12	12.5	9.51	10.7	8.71	10.5	7.82	20.2	9.82	10.4	8.21	7.47	7.44	4.69	4.49	5.94	5.12	6.86
Suspended Solids		mg/L	NT	NT	NT	6	36900	3250	5310	27600	675	1620	32500	829	999	756	19900	4160	841	1280	817	4270	4270	7970	2130	1200	11600	2720	162
TDS	500	mg/L	NT	NT	NT	50	180	100	130	160	110	80	240	98	100	64	92	<10	80	38	70	43	48	34	32	34	60	65	52
Sulfate	500	mg/L	NT	NT	NT	6.9	9.6	5.2	5.3	4.7	7.9	6.6	8	5.6	8.62	7.61	5.9	5.33	7.13	5	7.68	6.09	5.08	7.59	3.76	3.67	3.87	2.97	3.15
Zinc	5	mg/L	NT	NT	NT	0.106	0.008	0.004	0.0026	0.0062	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Volatile Organics																													
Benzene	5	µg/L	NT	NT	NT	NT	NT	<0.3	<0.25	<0.25	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	NT	NT	<0.3	<0.25	<0.25	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	NT
Dichloromethane	50	µg/L	NT	NT	NT	NT	NT	<0.3	<0.25	<0.25	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	NT
Toluene	24	µg/L	NT	NT	NT	NT	NT	<0.3	<0.25	<0.25	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Vinyl Chloride	2	µg/L	NT	NT	NT	NT	NT	<0.3	<0.25	<0.25	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	NT
Other Organics																													
BOD_5		mg/L	NT	NT	NT	<2	<2	0.9	0.96	0.66	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2
COD		mg/L	NT	NT	NT	6	73	<20	<20	<20	3	<3	50	<3	6.9	20.5	30.3	14.5	22.9	17.6	25.2	34.7	29	140	45	27	49	62	<10
DOC	5	mg/L	NT	NT	NT	3	8	4	1.7	3.5	13	5	2	4	2.6	3.6	5.3	3.4	2.8	2.6	3.2	11	11.9	6.7	4.7	4.8	5	3.8	10.7
Phenol		mg/L	NT	NT	NT	<0.002	0.006	0.003	<0.001	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Field Parameters																													
pH											5.84	6.23	6.58	7.12	6.95	6.35	7.19	6.24	6.07	6.2	7.07	6.1	6.1	6.97	8.61		7.75	8.13	6.71
Conductivity		µS/cm									50	20	50	20	40	40	40	40	0.07	0.04	0.06	0	0	0.01	0		0	0	0.03
DO		%									89.5	58.3	74.2	81.5	65.7	86	44.6	33.7	64.4	80.6	77.5	57.8	57.8	54.6	55		62.5	59.7	53
Temp		°									12.9	9.4	12	10	12.1	11.2	14.5	8.2	14.5	8.8	13.1	7.2	7.2	13.5	6.4		12.7	6.7	13.3
Pesticides																													
2,3,4,6-Tetrachlorophenol	0.1	mg/L																		<0.0005									
2,4,6-Trichlorophenol	0.005	mg/L					<0.0005	<0.001		<0.00051		<0.0005		<0.0005						<0.0005									
2,4-Dichlorophenol	0.9	mg/L					<0.0005	<0.001		<0.00051		<0.0005		<0.0005						<0.0003									
Pentachlorophenol	0.06	mg/L					<0.0005	<0.001		<0.00051		<0.0005		<0.0005						<0.0005									
Aldicarb	0.009	mg/L					<0.0009	<0.0007		<0.00051		<0.009		<0.001						<0.001									
Bendiocarb	0.04	mg/L					<0.0002	<0.001		<0.001		<0.0002		<0.0002						<0.0002									
Carbaryl	0.09	mg/L					<0.0002	<0.001		<0.001		<0.0002		<0.0002						<0.0002									
Carbofuran	0.09	mg/L					<0.0002	<0.001		<0.001		<0.0002		<0.0002						<0.0002									
Diuron	0.15	mg/L					<0.01	<0.007		<0.0051		<0.007		<0.001						<0.001									
Temephos	0.28	mg/L					<0.0001	<0.02		<0.014		<0.0001		<0.0001						<0.0001									
4,4'-DDD	-	ug/L					NT	<0.002		<0.0009		<0.1		<0.1						<0.1									
4,4'-DDE	-	ug/L					NT	<0.0005		<0.0003		<0.1		<0.1						<0.1									
4,4'-DDT	-	ug/L					NT	<0.0008		<0.00045		<0.1		<0.1						<0.1									
Aldrin	-	ug/L					NT	<0.0008		<0.00045		<0.02		<0.02						<0.02									
Dieldrin	-	ug/L					NT	<0.002		<0.0012		<0.02		<0.02						<0.02									
Heptachlor	-	ug/L					NT	<0.001		<0.0006		<0.1		<0.1						<0.1									
Heptachlor epoxide	-	ug/L					NT	<0.001		<0.0006		<0.1		<0.1						<0.1									
Methoxychlor	0.9	ug/L					NT	<0.002		<0.0012		<0.1		<0.1						<0.1									
o,p-DDT	-	ug/L					NT	<0.0005		<0.0003		<0.1		<0.1						<0.1									
Oxychlordane	-	ug/L					NT	<0.001		<0.00075		<0.1		<0.1						<0.1									
α-Chlordane	-	ug/L					NT	<0.0008		<0.00045		<0.1		<0.1						<0.1									
γ-BHC (Lindane)	-	ug/L					NT	<0.0008		<0.00045		<0.1		<0.1						<0.1									
γ-Chlordane	-	ug/L					NT	<0.001		<0.0006		<0.1		<0.1						<0.1									
Alachlor	0.005	mg/L					<0.0001	<0.0004		<0.00056		<0.0001		<0.0001						<0.0001									
Atrazine	-	mg/L					<0.0001	<0.0004		<0.00056		<0.0001		<0.0001						<0.0001									
Azinphos-Methyl (Guthion)	0.02	mg/L					<0.0001	<0.0003		<0.00042		<0.0001		<0.0001						<0.0001									
Chlorpyriphos (Dursban)	0.09	mg/L					<0.0001	<0.0003		<0.00042		<0.0001		<0.0001						<0.0001									
Cyanazine (Bladex)	0.01	mg/L					<0.0001	<0.0003		<0.00042		<0.0001		<0.0001						<0.0001									
Desethyl Atrazine	-	mg/L					<0.0001	<0.0005		<0.0007		<0.0001		<0.0001						<0.0001									
Diazinon	0.02	mg/L					<0.0001	<0.0003		<0.00042		<0.0001		<0.0001						<0.0001									
Dimethoate	0.02	mg/L					<0.0001	<0.0003		<0.00042		<0.0001		<0.0001						<0.0001									
Malathion	0.19	mg/L					<0.0001	<0.0003		<0.00042		<0.0001		<0.0001						<0.0001									
Metolachlor	0.05	mg/L					<0.0001	<0.0002		<0.00028		<0.0001		<0.0001						<0.0001									
Metribuzin (Sencor)	0.08	mg/L					<0.0001	<0.0002		<0.00028		<0.0001		<0.0001						<0.0001									
Parathion	0.05	mg/L					<0.01	<0.0002		<0.00028		<0.0001		<0.0001						<0.0001									
Phorate	0.002	mg/L					<0.0001	<0.0003		<0.00042		<0.0001		<0.0001						<0.0001									
Prometryne	0.001	mg/L					<0.0001	<0.0002		<0.00028		<0.0001		<0.0001						<0.0001									
Simazine	0.01	mg/L					<0.0001	<0.0003		<0.00042		<0.0001		<0.0001						<0.0001									
Terbufos	0.001	mg/L					<0.0002	<0.0002		<0.00028		<0.0002		<0.0002						<0.0002									
Triallate	0.23	mg/L					<0.0001	<0.0002		<0.00028		<0.0001		<0.0001						<0.0001									
Trifluralin	0.045	mg/L					<0.0001	<0.0002		<0.00028		<0.0001		<0.0001						<0.0001									
Benzo(a)pyrene	0.00001	mg/L																		<0.00001									
Total PCBs	0.003	mg/L					<0.00006	<0.0002		<0.075		<0.0002		<0.00002						<0.000035									
2,4,5-T	0.28	mg/L					<0.0002	<0.00008		<0.000067		<0.0002		<0.0002						<0.0002									
2,4-D	0.1	mg/L					<0.0002	<0.0003		<0.00027		<0.0002		<0.0002						<0.0002									
Bromoxynil	0.005	mg/L					<0.0002	<0.0008		<0.00067		<0.0002		<0.0002						<0.0002									
Dicamba	0.12	mg/L					<0.0002	<0.0003		<0.00027		<0.0002		<0.0002						<0.0002									
Dichlofop-Methyl	0.009	mg/L					<0.0002	<0.0003		<0.00027		<0.0002		<0.0002						<0.0002									
Dinoseb	0.01	mg/L					<0.0002	<0.00008		<0.000067		<0.0002		<0.0002						<0.0002									
Picloram	0.19	mg/L					<0.0002	<0.00008		<0.000067		<0.0002		<0.0002						<0.0002									
Atrazine + N-dealkylated metabolites	0.005	mg/L					NT	<0.0009				<0.0002		<0.0002						<0.0002									
Chlordane (total)	7	ug/L					NT	<0.004				<0.3		<0.3						<0.3									
Aldrin + Dieldrin	0.7	ug/L					<0.04	<0.004				<0.04		<0.04						<0.04									
Heptachlor + Heptachlor Epoxide	3	ug/L					<0.2	<0.004						<0.2						<0.2									

Shaded concentrations exceed ODWS
ND = Not Detected
NT = Not Tested

TABLE G.10: Sampling Location - MW1-15
MECP Landfill Standards Guideline: Schedule 5 Parameters, Column 2
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units	Date of Sampling Event													
			Jun-16	Oct-16	May-17	Nov-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Miscellaneous Parameters																
			Well Constructed				Duplicate									
Nitrite (as N)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Bicarbonate (HCO3)	-	mg/L	794	874	858	817	855	824	858	814	893	881	829	879	827	820
Carbonate (CO3)	-	mg/L	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Hydroxide (OH)	-	mg/L	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Cyanide	0.2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0020	<0.0020
Ion Balance Calculation																
Cation - Anion Balance	-	%	5.9	3.3	-0.4	-0.3	-1.8	1.8	3	2.3	1.8	2.1	0.9	-2.8	-4.6	9
TDS (calculated)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	Jul-02
Anion Sum	-	me/L	18.5	20	19.6	18.7	19.6	2.31	19.6	18.6	20.2	19.8	18.8	19.7	18.4	15.8
Cation Sum	-	me/L	20.8	21.4	19.4	18.6	18.9	18.9	20.8	19.5	21	20.6	19.1	18.7	16.8	19
Inorganics																
Alkalinity	500	mg/L CaCO3	794	874	858	817	855	824	858	814	893	881	829	879	827	820
Ammonia	-	mg/L	1.39	0.417	0.33	0.317	0.195	0.243	0.266	0.198	0.171	0.315	0.349	0.692	0.479	1.33
Arsenic	0.025	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0097	NT
Barium	1	mg/L	0.23	0.218	0.178	0.17	0.177	0.184	0.179	0.16	0.189	0.184	0.163	0.193	0.158	0.208
Boron	5	mg/L	0.97	0.995	0.919	0.927	0.935	0.989	1.33	1.17	1.24	1.36	1.38	1.42	1.06	1.34
Cadmium	0.0001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.000050	NT
Calcium	-	mg/L	219	217	199	195	192	200	210	198	205	203	194	186	174	191
Chloride	250	mg/L	87	88.7	84.3	83.3	87.8	84.3	85.4	80.7	84.2	76.4	80.2	77.7	66.9	83.3
Chromium	0.05	mg/L	0.00048	0.00045	0.00041	0.00056	0.00074	0.0003	0.00059	0.0004	<0.0005	0.00056		0.00059	<0.0050	NT
Conductivity	-	µS/cm	1480	1600	1630	1640	1660	1670	1620	1540	1600	1640	1640	1640	1610	1360
Copper	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NA	NT
Fluoride		mg/L													<0.02	<0.10
Hardness		mg/L													704	Mar-02
Iron	0.3	mg/L	7.67	7.24	6.43	6.62	6.68	6.88	8.46	0.697	9.19	10.1	10.2	9.43	7.51	10.8
Lead	0.01	mg/L	<0.00005	<0.00005	<0.00005	0.000215	0.000066	0.000057	<0.000050	<0.00005	<0.0005	0.000096	0.00006	0.000051	<0.00050	NT
Magnesium	-	mg/L	81.8	89.1	78.8	72.2	76.6	80.9	84.5	82.6	87.3	84.5	74.4	74.4	65.7	82.5
Manganese	0.05	mg/L	4.01	4.55	3.95	3.97	4.12	3.86	4.55	3.74	4.47	3.91	4.16	3.49	2.83	3.75
Mercury	0.001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0000050	NT
Nitrate	10	mg/L	<0.040	<0.040	<0.040	<0.040	<0.020	<0.020	<0.020	0.196	<0.10	<0.040	<0.20	<0.10	<0.020	<0.10
Nitrite	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.027	NT
Organic Nitrogen		mg/L													2.96	1.78
TKN	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	3.44	3.09
pH	6.5-8.5	mg/L	6.66	6.74	6.65	6.83	6.81	6.7	6.74	6.93	6.86	7.09	6.81	6.86	7.14	7.45
Total Phosphorous	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	1.61	NT
Potassium	-	mg/L	3.83	4.03	NT	NT	NT	3.51	4.07	3.98	3.79	4.16	3.74	4.36	3.59	NT
Sodium	200	mg/L	57.4	59.8	55.7	53.9	55.5	53.6	60.4	58.7	64.4	63.4	58.2	57.3	49.1	58.4
Suspended Solids	-	mg/L	42700	12100	14300	16600	8620	2720	8370	1840	2020	1350	990	7060	0.66	1520
TDS	500	mg/L	1010	988	1200	892	1190	1030	878	945	989	979	949	1010	1050	949
Sulfate	500	mg/L	7.56	3.18	2.22	1.86	1.71	2.31	1.01	2.52	<1.5	0.69	<3.0	<1.5	0.66	<1.5
Zinc	5	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.010	
Volatile Organics																
Benzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.67	NT
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Dichloromethane	50	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<5.0	NT
Toluene	24	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Vinyl Chloride	2	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Other Organics																
BOD_5	-	mg/L	5.7	3.5	5.2	2.6	2.8	<2.0	<2.0	<2.0	3.6	3.2	4.4	5.5	<2.0	3.2
COD	-	mg/L	74	270	46	153	98	187	133	271	104	105	110	81	153	98
DOC	5	mg/L	10.3	16.3	17.8	19.5	18.2	34.3	20.5	15.7	18.1	30.4	27	26.2	23.1	23.7
Phenol	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0017	NT
Field Parameters																
pH	-		6.4	6.17	6.68	6.74		6.6	6.61	7.32	6.46	7.14	5.88	6.43	6.52	6.49
Conductivity	-	µS/cm	1.37	1.26	1.22	1.73		1.58	1.57	1.52	1.47	1.51	1.14	1.676	1.78	1.639
DO	-	%	14.1	15.3	9.4	20.2		11.3	20.1	11.4	12.2	16	17.3	15.2	13.4	19.4
Temp	-	°	9.8	11.9	10	10.2		10.6	9.9	9	10.3	10.3	11	11.3	10.1	11.8

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.11: Sampling Location - MW2-15
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units	Date of Sampling Event												
			Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Miscellaneous Parameters															
			Well Constructed												DRY
Nitrite (as N)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	WELL
Bicarbonate (HCO3)	-	mg/L	25.1	13.3	10.8	15.7	11	14.4	10.8	11.2	15.1	11.8	13.1	9.8	
Carbonate (CO3)	-	mg/L	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Hydroxide (OH)	-	mg/L	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Cyanide	0.2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0020	
Ion Balance Calculation															
Cation - Anion Balance	-	%	-13.3	2.7	0.9	1.5	3.5	-6	-5.9	-2.9	2.2	-3.1	3.3	1.6	
TDS (calculated)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
Anion Sum	-	me/L	0.87	0.63	0.35	0.42	0.3	0.48	0.36	0.27	0.35	0.29	0.32	0.3	
Cation Sum	-	me/L	0.67	0.67	0.36	0.43	0.32	0.43	0.32	0.26	0.37	0.27	0.34	0.31	
Inorganics															
Alkalinity	500	mg/L CaCO3	25.1	13.3	10.8	15.7	11	14.4	10.8	11.2	15.1	11.8	13.1	9.8	
Ammonia	-	mg/L	2.31	0.048	0.048	<0.020	0.05	0.061	<0.020	<0.010	<0.005	0.0063	0.0066	0.02	
Arsenic	0.025	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.00012	
Barium	1	mg/L	0.000145	0.000379	0.000975	0.00357	0.0031	0.00165	0.00251	0.0042	0.00519	0.00496	0.00445	0.00756	
Boron	5	mg/L	<0.010	0.014	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Cadmium	0.0001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0000094	
Calcium	-	mg/L	0.269	0.205	1.61	3.39	3.07	1.87	3.38	2.49	3.74	2.83	3.01	3.39	
Chloride	250	mg/L	0.74	0.8	0.94	0.57	0.43	1	1.73	<0.50	0.43	0.48	0.27	1.24	
Chromium	0.05	mg/L	0.00045	0.00026	0.00019	0.00031	0.00102	0.00037	0.00021	<0.0005	0.00032	NT	0.00035	<0.00050	
Conductivity	-	µS/cm	66.7	71.2	36.2	42.3	35.3	50.1	62.5	30.1	35.6	35.1	32.1	36	
Copper	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NA	
Fluoride		mg/L												<0.02	
Hardness		mg/L												10.6	
Iron	0.3	mg/L	0.134	0.066	0.033	0.09	0.078	0.101	0.027	0.05	0.095	0.051	0.089	0.081	
Lead	0.01	mg/L	0.000328	0.000375	0.000055	0.00008	0.000698	0.000168	<0.00005	0.000101	0.000092	<0.000050	0.000102	0.000103	
Magnesium	-	mg/L	0.0119	0.0336	0.281	0.821	0.471	0.275	0.515	0.376	0.562	0.394	0.43	0.505	
Manganese	0.05	mg/L	0.0041	0.00512	0.0197	0.0377	0.0102	0.00721	0.00694	0.00505	0.0119	0.00635	0.00792	0.00517	
Mercury	0.001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0000050	
Nitrate	10	mg/L	0.089	0.092	0.083	0.092	0.064	0.171	0.277	0.054	0.108	0.106	<0.020	0.516	
Nitrite	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.010	
Organic Nitrogen		mg/L												0.587	
TKN	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.607	
pH	6.5-8.5	mg/L	6.24	6.19	5.93	5.94	5.69	6.24	5.78	5.93	6.18	5.82	5.99	6.1	
Total Phosphorous	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.268	
Potassium	-	mg/L	0.058	0.157	NT	NT	0.291	0.383	0.271	0.319	0.328	0.27	0.42	0.335	
Sodium	200	mg/L	14.7	14.7	5.58	4.01	2.34	6.47	2.11	1.92	2.55	1.8	2.94	1.78	
Suspended Solids	-	mg/L	12500	2050	3480	2500	2130	3160	383	1190	1060	1510	1840	1.77	
TDS	500	mg/L	80	66	172	50	32	58	28	33	35	36	50	37	
Sulfate	500	mg/L	16.6	16.2	5.08	3.99	3.03	7.3	3.58	2.13	0	1.5	2.33	1.77	
Zinc	5	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0022	
Volatile Organics															
Benzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	
Dichloromethane	50	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<5.0	
Toluene	24	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	
Vinyl Chloride	2	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	
Other Organics															
BOD_5	-	mg/L	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
COD	-	mg/L	191	38	41	55	92	75	54	91	42	47	22	53	
DOC	5	mg/L	10.7	5.8	3.7	3.3	8.9	6.2	2.33	4.2	3.41	3.53	3.33	2.93	
Phenol	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.001	
Field Parameters															
pH	-		6.2	7.56	6.42	7.57	7.79	8.62	8.77	8.02	8.57	7.63	6.46	7.01	
Conductivity	-	µS/cm	0	0.06	0	0.05	0.03	N/A	0.05	0.03	0.04	0.04	0.119	0.045	
DO	-	%	64.7	93.4	89.4	68.6	56.8	87.6	65.6	56.6	58.4	44.5	68.8	78.1	
Temp	-	°	11.7	14.6	6.2	6.9	11.4	6.9	3.9	13.1	8.5	11.9	14.7	10.6	

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.12: Sampling Location - MW3-15
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units	Date of Sampling Event												
			Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	17-May-22	Sep-22
Miscellaneous Parameters															
			Well Constructed in												
Nitrite (as N)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Bicarbonate (HCO3)	-	mg/L	70.8	43	29.6	43.5	28.1	23.7	16.1	17.6	19.3	18.9	15	23	14.4
Carbonate (CO3)	-	mg/L	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Hydroxide (OH)	-	mg/L	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Cyanide	0.2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0020	<0.0020
Ion Balance Calculation															
Cation - Anion Balance	-	%	-16.7	-19.3	-7.4	14.1	16.3	6.6	14.7	-0.6	10.1	-3.7	2.6	2.2	Low EC
TDS (calculated)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	123	30.2
Anion Sum	-	me/L	1.74	1.23	0.98	1.16	1.01	0.87	0.59	0.69	0.72	0.68	0.58	0.73	0.49
Cation Sum	-	me/L	1.24	0.83	0.84	1.54	1.41	0.99	0.8	0.69	0.88	0.63	0.62	0.76	0.54
Inorganics															
Alkalinity	500	mg/L CaCO3	70.8	43	29.6	43.5	28.1	23.7	16.1	17.6	19.3	18.9	15	23	14.4
Ammonia	-	mg/L	0.2	0.16	0.263	0.218	0.371	0.254	0.237	0.012	0.0096	0.0101	0.0058	0.018	<0.010
Arsenic	0.025	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.00027	NT
Barium	1	mg/L	0.00671	0.00616	0.00516	0.0101	0.0103	0.00644	0.00289	0.00276	0.00729	0.00611	0.00564	0.00618	0.0162
Boron	5	mg/L	0.373	0.155	0.427	0.556	0.307	0.384	0.268	0.115	0.255	0.131	0.121	0.193	0.081
Cadmium	0.0001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	9.5E-06	NT
Calcium	-	mg/L	4.33	4.08	4.47	6.26	4.01	4.77	3.92	4.01	3.8	3.23	3.13	3.55	3.22
Chloride	250	mg/L	9.38	8.05	9.58	7.46	12.7	10.6	6.61	9.01	9.21	7.19	6.12	6.19	4.95
Chromium	0.05	mg/L	0.00147	0.00053	0.00125	0.00278	0.00403	0.00113	0.00094	0.00056	0.00106	NT	0.00042	0.00067	NT
Conductivity	-	µS/cm	129	112	97.9	117	109	85.2	67.7	75.9	76.7	77	65.4	73.4	55.9
Copper	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NA	NT
Fluoride		mg/L												0.03	0.046
Hardness		mg/L												13.7	12.3
Iron	0.3	mg/L	1.46	0.762	1.4	5.82	5.98	1.4	0.762	0.486	1.81	0.946	0.863	2.02	0.409
Lead	0.01	mg/L	0.00122	0.000596	0.00139	0.00199	0.00316	0.000808	0.000148	0.000163	0.000387	0.000289	0.00018	0.000285	NT
Magnesium	-	mg/L	0.932	0.983	0.995	1.78	1.24	1.53	1.28	1.18	1.39	0.989	0.998	1.18	1.03
Manganese	0.05	mg/L	0.582	0.532	0.795	1.37	1	0.954	0.668	0.605	0.881	0.427	0.356	0.642	0.23
Mercury	0.001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	7.3E-06	NT
Nitrate	10	mg/L	0.021	0.028	0.053	0.025	0.034	0.057	0.06	0.077	0.047	0.25	0.076	0.03	0.048
Nitrite	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.010	NT
Organic Nitrogen		mg/L												0.485	0.266
TKN	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.503	0.266
pH	6.5-8.5	mg/L	6.58	6.46	6.34	6.55	6.37	6.38	6.61	6.5	6.58	6.48	6.12	6.4	6.78
Total Phosphorous	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.477	NT
Potassium	-	mg/L	0.508	0.561	0.297	0.542	0.358	0.506	0.354	0.378	0.468	0.339	0.456	0.362	NT
Sodium	200	mg/L	18.8	10.5	9.31	15.5	14.6	10.8	9.11	7.49	9.69	7.05	6.88	7.72	6.53
Suspended Solids	-	mg/L	16400	3820	2400	12500	9430	3900	3280	1420	1200	2370	3840	4.27	691
TDS	500	mg/L	685	354	302	229	319	155	155	182	127	141	198	123	129
Sulfate	500	mg/L	2.83	6.97	5.47	3.89	4.48	4.26	3.88	4.01	3.3	4.06	5.12	4.27	5.15
Zinc	5	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0097	NT
Volatile Organics															
Benzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Dichloromethane	50	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<5.0	NT
Toluene	24	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Vinyl Chloride	2	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Other Organics															
BOD_5	-	mg/L	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.0	<2.0	<3.0
COD	-	mg/L	117	31	60	132	129	275	159	77	55	95	31	64	27
DOC	5	mg/L	12.5	5.4	14	22.9	18.9	12.8	8.07	10.3	8.19	4.63	4.44	5.88	2.72
Phenol	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0012	NT
Field Parameters															
pH	-		6.34	6.42	7.11	6.89	7.43	7.89	8.03	9.08	8.92	7.91	6.29	6.7	5.3
Conductivity	-	µS/cm	0.13	0.08	0.08	0.15	0.14	0.1	0.11	0.09	0.08	0.07	0.076	0.104	0.088
DO	-	%	26.7	23.8	21.8	43.8	27.6	52.5	45.6	22.5	33.3	27	31.1	24.4	39.2
Temp	-	°	9.4	13.2	7.1	11.2	7.7	8.3	6.3	11	9.9	11	13	7.5	12.7

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.13: Sampling Location - MW4-15
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units	Date of Sampling Event																
			Jun-16	Oct-16	May-17	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	Nov-20	May-21	May-21	Oct-21	Oct-21	17-May-22	Sep-22
Miscellaneous Parameters						Duplicate							Duplicate		Duplicate		Duplicate		
			Well Constructed																
Nitrite (as N)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Bicarbonate (HCO_3)	-	mg/L	44.7	48.2	40.7	40.7	39.1	35.7	40.4	38.8	39.1	35.3	36.6	35.2	36.6	49.6	47.5	37	44.3
Carbonate (CO_3)	-	mg/L	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Hydroxide (OH)	-	mg/L	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Cyanide'	0.2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0020	<0.0020
Ion Balance Calculation																			
Cation - Anion Balance	-	%	-1.5	12.1	0.5	-0.7	-4.7	-0.2	10.1	4.5	-1.6	-0.2	-2.1	-2.8	-5.9	8.6	10	-1.4	10
TDS (calculated)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	75	51.90
Anion Sum	-	me/L	1.18	1.17	1.02	1.03	0.98	0.91	1.01	0.93	0.96	0.85	0.87	0.85	0.89	1.13	1.09	0.88	0.87
Cation Sum	-	me/L	1.15	1.49	1.03	1.02	0.89	0.91	1.24	1.02	0.93	0.85	0.84	0.8	0.79	1.35	1.33	0.85	1.06
Inorganics																			
Alkalinity	500	mg/L $CaCO_3$	44.7	48.2	40.7	40.7	39.1	35.7	40.4	38.8	39.1	35.3	36.6	35.2	36.6	49.6	47.5	37	44.3
Ammonia	-	mg/L	0.78	0.476	0.44	0.442	0.663	0.343	0.84	0.497	0.141	0.11	0.0912	0.082	0.134	0.632	0.644	0.068	0.521
Arsenic	0.025	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.00055	NT
Barium	1	mg/L	0.00959	0.0121	0.00831	0.00846	0.00773	0.00653	0.00908	0.00936	0.00675	0.00631	0.00948	0.00602	0.00579	0.0105	0.0102	0.00712	0.0156
Boron	5	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	0.01
Cadmium	0.0001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0000050	NT
Calcium	-	mg/L	10.7	11.2	9.75	9.72	8.99	9.26	9.58	9.55	9.26	8.29	8.26	8.09	8.04	9.49	9.42	8.64	10.4
Chloride	250	mg/L	1.15	1.7	1.28	1.27	1.05	1.15	2.32	1.43	1.37	1.09	1	1.05	1.14	1.24	1.25	0.84	1.4
Chromium	0.05	mg/L	0.00022	0.00018	<0.0001	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0005	0.0003	0.00038		0.00021	0.00037	0.00032	<0.00050	NT
Conductivity	-	µS/cm	103	108	98.2	98.7	95.2	93.8	97.9	99.2	90.3	81.5	83.4	82.8	85.8	108	103	81.4	94.6
Copper	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NA	NT
Fluoride		mg/L																0.024	0.044
Hardness		mg/L																32.4	44.6
Iron	0.3	mg/L	2.86	6.9	1.26	1.09	0.908	0.334	4.38	0.453	0.291	0.451	0.481	0.459	0.418	5.61	5.35	0.591	6.09
Lead	0.01	mg/L	0.00033	0.000096	<0.00005	<0.00005	<0.00005	<0.000050	<0.000050	<0.00005	<0.00005	<0.00005	<0.00005	<0.000050	<0.000050	0.000058	0.000051	0.000111	NT
Magnesium	-	mg/L	3.16	3.98	3.1	3.11	2.63	2.81	3.39	3.73	3.18	2.83	2.73	2.48	2.47	3.93	3.99	2.63	4.52
Manganese	0.05	mg/L	0.317	0.798	0.279	0.297	0.24	0.135	0.633	0.856	0.217	0.224	0.223	0.185	0.188	1.01	1.02	0.158	1.03
Mercury	0.001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0000050	NT
Nitrate	10	mg/L	<0.020	0.026	0.151	0.15	0.19	0.243	0.14	0.039	0.229	0.146	0.133	0.157	0.171	<0.020	<0.020	0.124	0.048
Nitrite	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.010	NT
Organic Nitrogen		mg/L																0.399	0.2
TKN	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.467	0.718
pH	6.5-8.5	mg/L	6.36	6.11	6.35	6.32	6.45	6.29	6.39	6.46	6.53	7.20	7.19	6.78	6.5	6.33	6.6	7.25	6.84
Total Phosphorous	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.324	NT
Potassium	-	mg/L	1.17	0.807	NT	NT	NT	0.661	0.731	0.649	0.693	0.698	0.709	0.649	0.633	0.61	0.62	0.66	NT
Sodium	200	mg/L	3.58	3.4	3.49	3.46	3.41	3.39	3.38	3	3.46	3.35	3.26	3.17	3.2	3.36	3.29	3.34	3.49
Suspended Solids	-	mg/L	69500	13500	6490	10600	11700	5070	2540	464	277	416	446	277	1120	816	330	4.95	1070
TDS	500	mg/L	199	88	268	340	69	112	84	68	76	79	86	75	76	86	81	75	81
Sulfate	500	mg/L	12.4	7.51	7.48	8.15	7.45	7.07	6.27	5.58	5.75	5.2	5.05	4.9	5.45	5.08	4.97	4.95	4.69
Zinc	5	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0039	NT
Volatile Organics																			
Benzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Dichloromethane	50	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<5.0	NT
Toluene	24	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Vinyl Chloride	2	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Other Organics																			
BOD_5	-	mg/L	3.1	2.9	2.9	2.4	5	2.3	2.3	3.1	2.4	<2.0	2.3	2.5	2.6	<2.0	<2.0	<2.0	<3.0
COD	-	mg/L	124	179	13	11	122	48	89	87	15	29	47	33	42	18	27	22	18
DOC	5	mg/L	4.7	3	2.6	1.9	1.6	7.5	2.8	2.19	3.6	2.59	2.49	2.14	2.8	6.46	4.29	2.78	2.89
Phenol	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0010	
Field Parameters																			
pH	-		6.64	6.28	7.06		7.65	7.81	7.08	8.44	6.58	7.49	7.49	6.04	6.04	5.95	5.95	6.94	6.08
Conductivity	-	µS/cm	0.05	0.11	0.06		0.12	0.13	0.12	0.15	0.11	0.1	0.1	0.1	0.1	0.139	0.139	0.111	0.149
DO	-	%	12.1	15.5	18.4		30.3	47.6	24.5	17	21	24.9	24.9	27.2	27.2	24	24	44.9	38.3
Temp	-	°	7.7	11.4	7.8		9.5	11	8.9	7.6	8.5	9.4	9.4	9	9	10.9	10.9	7.8	12.2

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.14: Sampling Location - MW1-17
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units										
			Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	17-May-22	Sep-22
Miscellaneous Parameters												
			Well Constructed in									
Nitrite (as N)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Bicarbonate (HCO3)	-	mg/L	44.7	89	107	134	110	110	104	NT	80	94.7
Carbonate (CO3)	-	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NT	<2.0	<1.0
Hydroxide (OH)	-	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NT	<2.0	<1.0
Cyanide	0.2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	<0.0020	<0.0020
Ion Balance Calculation												
Cation - Anion Balance	-	%	0	-7.2	15.2	4.2	2.8	1.1	-2.8	NT	4.9	5
TDS (calculated)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	317	129
Anion Sum	-	me/L	1.22	2.2	3.59	4.25	3.22	3.3	2.84	NT	2.64	2.24
Cation Sum	-	me/L	1.22	1.9	4.87	4.62	3.4	3.37	2.69	NT	2.92	2.48
Inorganics												
Alkalinity	500	mg/L CaCO3	44.7	89	107	134	110	110	104	NT	80	94.7
Ammonia	-	mg/L	0.573	0.755	4.46	1.28	1.02	0.707	0.616	1.14	0.459	1.15
Arsenic	0.025	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.00103	NT
Barium	1	mg/L	0.0164	0.00297	0.056	0.0246	0.0281	0.0317	0.0213	0.0424	0.0252	0.0547
Boron	5	mg/L	<0.010	0.023	0.075	0.04	0.03	0.042	0.026	0.038	0.024	0.033
Cadmium	0.0001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.0000116	NT
Calcium	-	mg/L	6	0.535	31.1	25.7	16.7	16.6	11.2	20.3	14.4	19.3
Chloride	250	mg/L	8.9	9.28	27.7	14.4	17.6	11.5	8.94	NT	15.4	21.1
Chromium	0.05	mg/L	0.00152	0.00124	0.00188	0.00178	0.00111	0.00187	NT	0.00301	0.00202	NT
Conductivity	-	µS/cm	110	205	363	408	287	314	272	NT	271	228
Copper	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NA	NT
Fluoride		mg/L									0.048	0.093
Hardness		mg/L									57.7	84.6
Iron	0.3	mg/L	3.53	0.246	12.5	1.81	3.58	2.34	3.4	11.4	3.92	15.3
Lead	0.01	mg/L	0.000385	0.000975	0.00392	0.000504	0.00108	0.000751	0.000858	0.00129	0.0011	NT
Magnesium	-	mg/L	1.89	0.14	11.4	8.48	6.86	6.27	4.08	7.44	5.3	8.83
Manganese	0.05	mg/L	0.196	0.00765	1.04	0.901	0.618	0.623	0.39	0.741	0.433	0.835
Mercury	0.001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	<0.0000050	NT
Nitrate	10	mg/L	0.036	0.076	0.023	0.034	0.118	0.093	0.069	NT	0.092	0.068
Nitrite	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	<0.010	NT
Organic Nitrogen		mg/L									3.7	1
TKN	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	4.2	2.15
pH	6.5-8.5	mg/L	6.41	6.78	6.82	6.79	7.05	6.91	6.78	NT	7.13	7.02
Total Phosphorous	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.87	NT
Potassium	-	mg/L	0.641	0.227	0.937	1.05	1.62	1.75	1.16	2.11	1.16	NT
Sodium	200	mg/L	11.6	40.6	30.5	54.7	39.2	40.4	34.6	28	33.6	17.1
Suspended Solids	-	mg/L	12800	18700	328000	32600	6660	3000	1790	NT	29	1000
TDS	500	mg/L	151	328	2340	410	364	263	283	NT	317	186
Sulfate	500	mg/L	3.56	7.45	31.7	56	25.1	37.7	24.4	NT	29	3.69
Zinc	5	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.0121	NT
Volatile Organics												
Benzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Dichloromethane	50	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	<5.0	NT
Toluene	24	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Vinyl Chloride	2	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	NT
Other Organics												
BOD_5	-	mg/L	9.4	6.2	13.4	6.9	3.9	6	8.2	NT	4.3	<3.0
COD	-	mg/L	1150	476	2980	1520	242	83	113	96	66	110
DOC	5	mg/L	12.2	15.5	29.4	19.5	14.7	21.7	16.4	30.9	20.9	24.9
Phenol	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	0.0026	NT
Field Parameters												
pH	-		7.52	7.07	7.62	7.73	8.61	8.71	7.84	6.94	6.58	6.67
Conductivity	-	µS/cm	0.17	0.26	0.4	0.49	0.34	0.34	0.31	0.347	0.341	0.36
DO	-	%	28.5	29.8	30.2	33.6	33.3	27	38.2	21.4	33.7	55.7
Temp	-	°	5.9	10.6	6	4.4	12.7	7	11.7	14.3	10.2	16

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.15: Sampling Location - MW2-17
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units	Nov-17	May-18	May-18	Nov-18	Nov-18	Feb-20	Feb-20	Jun-20	Jun-20	Nov-20	May-21	Oct-21	17-May-22	17-May-22	Sep-22	Sep-22
Miscellaneous Parameters					DUPLICATE		DUPLICATE		DUPLICATE		DUPLICATE					Duplicate		Duplicate
Nitrite (as N)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Bicarbonate (GCO3)	-	mg/L	38.2	49.2	38.3	64.9	65.1	65.3	60	69	66.4	64.8	61.1	72	71.3	64.2	69.5	69.4
Carbonate (CO3)	-	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0
Hydroxide (OG)	-	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0
Cyanide	0.2	mg/L													<0.0020	<0.0020	<0.0020	<0.0020
Ion Balance Calculation																		
Cation - Anion Balance	-	%	3.2	-4.6	-6.4	-5.7	-5.4	0.2	3	-2.5	-1.4	-2.7	-4.8	-1.6	-4.1	-0.8	7	8
TDS (calculated)	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	236	127	84.5	85.2
Anion Sum	-	me/L	3.79	1.43	1.51	2.29	2.36	1.66	1.63	1.77	1.77	1.73	1.79	2.05	1.76	1.66	1.44	1.44
Cation Sum	-	me/L	4.04	1.3	1.33	2.04	2.12	1.67	1.73	1.69	1.72	1.64	1.63	1.99	1.62	1.64	1.64	1.68
Inorganics																		
Alkalinity	500	mg/L CaCO3	38.2	49.2	38.3	64.9	65.1	65.3	60	69	66.4	64.8	61.1	72	71.3	64.2	69.5	69.4
Ammonia	-	mg/L	0.101	0.13	0.186	0.029	0.147	<0.020	<0.020	0.026	0.03	0.0079	0.0091	0.0086	0.035	0.0255	0.026	0.036
Arsenic	0.025	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.00044	0.00044	NT	NT
Barium	1	mg/L	0.0198	0.00796	0.00797	0.0119	0.0122	0.00967	0.00981	0.0106	0.0109	0.012	0.00985	0.0127	0.0113	0.0115	0.0107	0.0114
Boron	5	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.0001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0000064	0.0000065	NT	NT
Calcium	-	mg/L	13.5	8.31	8.43	20.3	20.4	18.8	18.8	17.9	18.4	17.4	16.1	19.1	17.8	18.1	18.3	18.7
Chloride	250	mg/L	100	8.34	20.5	25.9	28.3	4.35	6.97	6.02	8.01	7.27	13.1	13	4.91	6.05	2.53	2.54
Chromium	0.05	mg/L	0.00079	0.00106	0.00092	0.00124	0.00059	0.0005	0.00059	0.00066	0.00061	0.00089	NT	0.00107	0.00069	0.00067	NT	NT
Conductivity	-	µS/cm	442	146	165	229	234	162	170	162	168	162	178	197	162	162	150	152
Copper	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NA	NT	NT	NT
Fluoride		mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.022	0.0026	0.048	0.048
Hardness		mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	66.4	67.6	72	73
Iron	0.3	mg/L	0.083	0.094	0.09	<0.010	<0.010	<0.010	<0.010	0.01	0.011	0.046	0.023	0.156	0.014	0.019	<0.010	<0.010
Lead	0.01	mg/L	0.00006	0.000149	0.000075	<0.000050	<0.000050	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000050	0.000091	<0.000050	<0.000050	NT	NT
Magnesium	-	mg/L	3.53	2.48	2.5	6.13	6.25	5.98	6.08	6.01	6.14	5.33	4.92	5.9	5.32	5.44	6.38	6.53
Manganese	0.05	mg/L	0.0076	0.00228	0.00209	0.00042	0.00036	0.00126	0.00078	0.00057	0.00073	0.00103	0.00077	0.00181	0.00056	0.00053	<0.00050	<0.00050
Mercury	0.001	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0000050	<0.0000050	NT	NT
Nitrate	10	mg/L	0.03	0.055	0.032	0.084	0.073	0.068	0.082	0.074	0.0801	0.084	0.068	0.075	0.058	0.062	0.057	0.063
Nitrite	1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.010	<0.010	NT	NT
Organic Nitrogen		mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	3.13	6.68	1.1	1.62
TKN	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	3.16	6.7	1.12	1.66
pH	6.5-8.5	mg/L	6.68	6.68	6.54	7.12	7	7.46	7.25	7.25	7.29	7.19	6.94	7.06	7.21	7.2	7.58	7.68
Total Phosphorous	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	4.1	2.4	NT	NT
Potassium	-	mg/L	0.923	0.428	0.426	0.951	0.96	0.856	0.868	0.83	0.838	0.844	0.765	0.974	0.774	0.797	NT	NT
Sodium	200	mg/L	69.8	14.6	14.9	11.4	12.7	5.02	6.14	6.41	6.4	6.86	9.05	11.6	6.27	6.02	4.2	4.48
Suspended Solids	-	mg/L	4920	2970	1810	2010	4420	566	693	363	402	1510	413	833	9.32	3210	2350	2860
TDS	500	mg/L	448	161	234	224	193	136	151	154	150	163	125	121	236	127	140	132
Sulfate	500	mg/L	9.35	10	7.65	12.3	12.3	11.1	10.9	10.5	10.3	10.7	9.4	11.7	9.32	9.66	10.2	10.3
Zinc	5	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0010	<0.0010	NT	NT
Volatile Organics																		
Benzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	<0.50	NT	NT
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	<0.50	NT	NT
Dichloromethane	50	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<5.0	<5.0	NT	NT
Toluene	24	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	<0.50	NT	NT
Vinyl Chloride	2	µg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.50	<0.50	NT	NT
OtGer Organics																		
BOD_5	-	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.0	<3.3	<5.0	<3.0	<3.0
COD	-	mg/L	131	235	275	260	281	106	90	42	50	128	64	52	16	28	74	103
DOC	5	mg/L	8.7	4.1	7.1	2	1.8	1.41	1.4	3.92	3.03	4.51	2.96	3.77	2.46	3.06	2.22	1.98
Phenol	-	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0010	0.005	NT	NT
Field Parameters																		
pH	-		7.13	8.57		7.65		7.76		8.65		8.58	7.56	6.88	6.85	6.85	4.82	4.82
Conductivity	-	µS/cm	0.42	0.15		0.19		0.17		0.16		0.16	0.18	0.181	0.178	0.178	0.178	0.178
DO	-	%	38.2	43.8		56.2		45.6		46.6		51.2	44.9	48.6	50.4	50.4	35.2	35.2
Temp	-	°	9.9	7.6		8.7		7		8.7		9.4	10.5	11.3	7.3	7.3	10.9	10.9

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.16: Sampling Location - MW1-20
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 2

KEC Project Ref. No. 2231

Parameter	ODWS	Units	Date of Sampling Event				
			Nov-20	44335	Oct-21	17-May-22	Sep-22
Miscellaneous Parameters							
			Well Constructed in Fall 2020				
Nitrite (as N)	-	mg/L	NT	NT	NT	NT	NT
Bicarbonate (HCO3)	-	mg/L	76.1	76	74.5	74.6	79.4
Carbonate (CO3)	-	mg/L	<2.0	<2.0	<2.0	<2.0	<1.0
Hydroxide (OH)	-	mg/L	<2.0	<2.0	<2.0	<2.0	<1.0
Cyanide	0.2	mg/L				<0.0020	<0.0020
Ion Balance Calculation							
Cation - Anion Balance	-	%	5.1	-2.1	0.4	7.5	-1
TDS (calculated)	-	mg/L	NT	NT	NT	NT	1430
Anion Sum	-	me/L	1.75	21.6	24.9	22.4	25.7
Cation Sum	-	me/L	1.94	20.7	25.1	26.1	25.3
Inorganics							
Alkalinity	500	mg/L CaCO3	76.1	76	74.5	74.6	79.4
Ammonia	-	mg/L	<0.0050	1.91	1.93	2.33	2.52
Arsenic	0.025	mg/L	NT	NT	NT	0.0027	NT
Barium	1	mg/L	0.0136	0.23	0.312	0.347	0.326
Boron	5	mg/L	0.018	<0.010	<0.010	<0.10	0.011
Cadmium	0.0001	mg/L	NT	NT	NT	<0.000050	NT
Calcium	-	mg/L	21.6	133	141	183	158
Chloride	250	mg/L	0.77	711	830	742	863
Chromium	0.05	mg/L	0.00058	0.00092	0.00069	<0.0050	NT
Conductivity	-	µS/cm	162	2410	2760	2720	2360
Copper	1	mg/L	NT	NT	NT	NA	NT
Fluoride						<0.02	<0.10
Hardness						656	590
Iron	0.3	mg/L	0.061	17.1	20.8	21.3	20.4
Lead	0.01	mg/L	<0.00005	<0.000050	<0.000050	<0.00050	NT
Magnesium	-	mg/L	6.66	37.7	41.1	48.7	47.6
Manganese	0.05	mg/L	0.0163	5.29	5.4	6.73	6.48
Mercury	0.001	mg/L	NT	NT	NT	<0.0000050	NT
Nitrate	10	mg/L	0.091	<0.20	<0.20	<0.020	<0.10
Nitrite	1	mg/L	NT	NT	NT	<0.010	NT
Organic Nitrogen						0.772	0.88
TKN	-	mg/L	NT	NT	NT	3.11	3.4
pH	6.5-8.5	mg/L	7.36	6.64	6.75	7.35	7.49
Total Phosphorous	-	mg/L	NT	NT	NT	6.5	NT
Potassium	-	mg/L	1.66	1.84	2.21	2.09	NT
Sodium	200	mg/L	6.17	225	303	265	303
Suspended Solids	-	mg/L	388	15400	10400	<0.30	26400
TDS	500	mg/L	162	1610	1560	1700	1620
Sulfate	500	mg/L	9.85	<3.0	<3.0	<0.30	<1.5
Zinc	5	mg/L	NT	NT	NT	<0.010	NT
Total Metals							
Arsenic		mg/L				0.0204	0.0304
Barium		mg/L				0.79	0.956
Boron		mg/L				<0.10	<0.10
Cadmium		mg/L				0.000417	0.000591
Chromium		mg/L				0.112	0.137
Copper		mg/L				0.154	0.189
Iron		mg/L				90.6	111
Lead		mg/L				0.0554	0.0734
Mercury		mg/L				0.000015	0.000005
Zinc		mg/L				0.163	0.195
Volatile Organics							
Benzene	5	µg/L	NT	NT	NT	<0.50	NT
1,4 Dichlorobenzene	5	µg/L	NT	NT	NT	<0.50	NT
Dichloromethane	50	µg/L	NT	NT	NT	<5.0	NT
Toluene	24	µg/L	NT	NT	NT	<0.50	NT
Vinyl Chloride	2	µg/L	NT	NT	NT	<0.50	NT
Other Organics							
BOD_5	-	mg/L	<2.0	<15	<5.0	<5.0	<3.0
COD	-	mg/L	67	178	84	73	120
DOC	5	mg/L	2.63	14.4	14.2	13.3	10.9
Phenol	-	mg/L	NT	NT	NT	0.0015	NT
Field Parameters							
pH	-		7.75	6.95	6.68	6.48	6.36
Conductivity	-	µS/cm	2.31	2.06	2.947	2.608	2.845
DO	-	%	22	20.1	27.1	16.2	26
Temp	-	°	7.6	9.1	9.2	7	8.9

Shaded concentrations exceed ODWS
NT = Not Tested
ND = Not Detected

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.17: Sampling Location - SW1
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 3

Parameter	PWQO	Units	Date of Sampling Event																		
			Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14
Miscellaneous Parameters																						
Nitrite (as N)		mg/L																0.139	0.378	0.096	0.027	0.047
Bicarbonate (HCO3)		mg/L																722	508	436	686	NT
Carbonate (CO3)		mg/L																<5	<5.0	<5.0	<5.0	NT
Hydroxide (OH)		mg/L																<5	<5.0	<5.0	<5.0	NT
Ion Balance Calculation																						
Cation - Anion Balance		%																5.2	8.4	7.45	NT	6.7
TDS (calculated)		mg/L																906	1050	743	767	NT
Anion Sum		me/L																16.4	16.2	11.3	NT	8.53
Cation Sum		me/L																18.2	19.2	14.9	NT	9.76
Inorganics																						
Alkalinity		mg/L CaCO3	562	601	617	580	430	506	601	558	678	591	540	546	598	570	579	592	508	436	562	329
Ammonia		mg/L	27	26	22.2	28.6	32.5	30.1	20.5	23.8	28	29.5	27.4	24.5	23.9	28.3	24.1	29.8	11	17.1	21.4	13.7
Arsenic	0.005	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.002	0.002	0.0025	0.0018	0.003	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010	0.00061	<0.0010
Barium		mg/L	0.04	0.06	0.06	0.0865	0.0776	0.072	0.09	0.08	0.11	0.078	0.081	0.102	0.091	0.108	0.102	0.114	0.074	0.083	0.101	0.076
Boron	0.2	mg/L	0.56	0.63	0.07015	0.1403	0.428	0.599	0.64	0.51	0.56	0.694	0.736	0.649	0.638	0.73	0.923	0.762	1.03	0.683	0.719	0.619
Cadmium	0.0001	mg/L	<0.0001	0.0004	0.00036	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.000090	<0.000090	<0.000090	<0.00010	0.000029	0.000029	<0.000017	<0.000010	0.000023
Chloride		mg/L	59.8	61	101	85	83.1	80.2	109	114	164	142	174	180	143	196	193	162	238	115	112	52
Chromium		mg/L	0.006	0.001	0.002	0.002	0.0019	0.0133	<0.001	0.002	0.002	0.0014	0.0014	0.0014	0.0011	<0.0010	0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Conductivity		µS/cm	522	1280	1350	1050	1275	892	1330	1380	1630	1540	1410	1470	1470	1580	1660	1570	1820	1290	1360	832
Copper	0.005	mg/L	<0.001	<0.001	<0.001	0.001	0.00198	<0.001	0.001	<0.001	0.002	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013	0.0011	0.00054	0.001
Iron	0.3	mg/L	0.18	0.4	1.67	0.83	10.8	2.02	0.9	0.53	1.13	0.992	0.52	1.43	1.72	1.78	0.845	1.19	0.196	0.597	1.49	5.58
Lead	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.000090	<0.0010
Manganese		mg/L	0.202	0.082	0.38	NT	0.768	0.2	NT	NT	NT	NT	NT	NT	NT	0.636	0.241	0.445	NT	NT	NT	NT
Manganese (Dissolved)		mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Mercury	0.0002	mg/L	<0.0001	<0.0001	0.0009	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001	<0.000010	<0.000010	<0.00010	<0.000010
Nitrate		mg/L	<0.003	0.43	0.3	<0.1	0.18	<0.1	0.1	0.12	0.13	0.06	0.054	0.075	<0.030	0.05	0.125	0.119	1.52	0.274	<0.03	0.243
Nitrite		mg/L	<0.02	0.18	0.41	<0.05	<0.03	0.035	<0.02	0.25	<0.1	<0.2	<0.4	<0.020	<0.020	<0.40	0.161	0.139	0.378	0.096	0.027	0.047
TKN		mg/L	27.6	26	23.2	35.1	32	26.4	21.7	25.4	29	30.2	26.9	27.3	29.8	28.8	24.6	29.5	13.7	20.2	23.4	17.3
pH	6.5-8.5	mg/L	7.4	7.9	8.1	7.65	7.51	7.54	7.8	7.68	7.86	7.74	7.9	7.93	7.75	7.63	7.99	8.22	8.29	7.75	7.74	7.22
Total Phosphorous	0.01	mg/L	NT	NT	NT	0.071	0.0791	0.0908	0.032	0.026	0.086	0.0417	0.0214	0.0449	0.0985	0.0829	0.0561	0.246	0.0231	0.0403	0.0264	0.0508
Suspended Solids		mg/L	2	10	10	20	36	7	2	8.5	71.8	5.6	3.6	41.4	14.4	17.4	17.8	NT	14.1	49.2	128	40.8
TDS		mg/L	670	670	810	820	743	735	900	780	920	875	851	878	888	870	925	876	1050	669	764	433
Sulfate		mg/L	0.5	2.4	3.9	0.4	<1.0	<1	14.9	1	2.1	0.66	1.67	0.51	11	8.76	3.61	1.23	48.7	40.3	0.58	22.9
Zinc	0.02	mg/L	<0.003	0.038	<0.003	0.001	0.0038	0.0049	0.01	0.005	0.012	0.0036	0.0147	0.0038	0.0085	0.004	0.0053	0.0054	0.0084	0.0045	0.0024	0.0092
Zinc (Dissolved)		mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Other Organics																						
BOD_5		mg/L	4	<2	3	3	3.8	3.7	4	3	5	11.8	5.3	2.9	7.3	3.8	4.8	5.6	<2.0	2.6	7.3	8.4
COD		mg/L	NT	68	78	90	79	73	79	74	82	78.6	84.1	90.3	85.9	88.8	82.6	119	92.8	55.9	78.1	45
Phenols	0.001	mg/L	0.009	0.01	0.009	0.025	0.0115	0.0073	0.016	0.011	0.019	0.0109	0.0033	0.0065	0.0043	0.0124	0.0067	0.0233	0.0024	<0.0010	0.0029	0.0091
DOC		mg/L	16	21	22	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Field Parameters																						
Temperature		°C						15.2	11.7		8.9	13.1	6.8	23.9	16.2	16.2	18.6	24.3	16.6	19.7	13.3	9.9
pH								7.43	7.48		7.79	7.4	7.57	7.89	8.17	8.01	7.9	7.78	8.06	7.34	6.82	6.89
Conductivity		mS/cm							1330		1580	1300	1380	1470	1380	1530	1.76	1.7	1.85	1.31	1.36	0.76
Dissolved Oxygen		%						88.2	23.9		36.5	52.4	24.4	70.5	27.3	39.4	23.8	34.1	72.5	80.3	11.6	49.9

Shaded concentrations exceed PWQO
ND = Not Detected
NT = Not Tested

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.17: Sampling Location - SW1
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 3

KEC Project Ref. No. 2231

Parameter	PWQO	Units	Date of Sampling Event															
			Oct-14	May-15	Oct-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Miscellaneous Parameters												Frozen						
Nitrite (as N)		mg/L	0.027	0.024	0.098	0.293	0.263	0.121	0.011	0.097	0.035		0.094	0.022	0.106	0.018	<0.010	0.169
Bicarbonate (HCO3)		mg/L	416	320	311	355	249	287	213	295	198		409	353	293	386	356	370
Carbonate (CO3)		mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	9.2	16.6
Hydroxide (OH)		mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Ion Balance Calculation																		
Cation - Anion Balance		%	1.7	-6.3	-0.9	-0.5	1.2	2.9	5.7	1.2	-10.3		-0.2	-1.4	-2.3	5.1	-1	6
TDS (calculated)		mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT	547
Anion Sum		me/L	10.5	8.35	10.5	9.76	8.43	7.6	5.32	7.34	5.58		9.99	8.51	7.07	9.56	8.91	9.08
Cation Sum		me/L	10.9	7.36	10.3	9.65	8.63	8.05	5.96	7.52	4.54		9.95	8.28	6.75	10.6	8.74	10.3
Inorganics																		
Alkalinity		mg/L CaCO3	416	320	311	355	249	287	213	295	198		409	353	293	386	365	386
Ammonia		mg/L	14.3	13.5	7.56	6.33	2.61	6.94	6.26	8.93	3.88		8.28	9.27	5.61	9.25	9.2	7.67
Arsenic	0.005	mg/L	<0.0010	0.0006	0.00081	0.00062	0.00058	0.00112	0.00161	0.00043	0.0006		<0.0010	0.00048	0.00046	0.00112	0.00099	<0.0010
Barium		mg/L	0.086	0.0706	0.0984	0.0362	0.0409	0.146	0.0648	0.0616	0.0388		0.0863	0.0602	0.0692	0.126	0.126	0.101
Boron	0.2	mg/L	0.49	0.514	0.843	0.727	0.721	0.442	0.277	0.458	0.324		0.72	0.393	0.486	0.625	0.631	0.8
Cadmium	0.0001	mg/L	<0.000017	0.000017	0.000025	0.0000118	0.0000162	0.000192	0.000106	<0.0000050	<0.000030		<0.00005	0.0000071	0.0000871	0.0000285	0.000102	<0.000050
Chloride		mg/L	75.5	59.5	91.5	72.2	83	45.1	29.6	40.4	43.8		57.3	46.8	37.3	62.7	48.4	81
Chromium		mg/L	<0.0010	0.00083	0.00104	0.00073	0.00068	0.00376	0.00592	0.00064	0.00135		<0.005	0.00067	0.00057	0.00171	0.00233	<0.0050
Conductivity		µS/cm	1030	799	1000	887	837	729	533	718	517		888	793	672	911	857	864
Copper	0.005	mg/L	<0.0010	0.00085	0.00148	0.00077	0.00156	0.00548	0.0115	0.00077	0.0017		<0.005	0.00066	0.00113	0.00125	0.0036	<0.0050
Iron	0.3	mg/L	3.09	2.33	5.04	1.26	1.41	9.88	10.3	1.58	2.85		1.42	3.19	1.8	19.6	17	3.7
Lead	0.001	mg/L	<0.0010	0.000203	0.000724	0.000061	0.000251	0.00245	0.0111	0.000229	0.000623		<0.0005	0.000084	0.000126	0.00083	0.00182	<0.00050
Manganese		mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT	0.355
Manganese (Dissolved)		mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	0.0589	0.225
Mercury	0.0002	mg/L	<0.00001	<0.000005	<0.0000050	<0.000005	<0.0000050	<0.0000050	0.0000288	<0.0000050	<0.0000050		<0.000005	<0.000005	<0.0000050	0.0000062	0.0000055	<0.0000050
Nitrate		mg/L	0.071	0.085	0.304	1.41	1.2	2.06	0.517	0.826	0.265		0.227	0.527	0.999	0.205	0.999	0.169
Nitrite		mg/L	0.027	0.024	0.098	0.293	0.263	0.121	0.011	0.097	0.035		0.094	0.022	0.106	0.018	<0.010	0.1
TKN		mg/L	12.9	13.2	8.29	8.79	4.27	11.3	9.5	11	4.52		10.5	11.5	7.27	11	13	12.2
pH	6.5-8.5	mg/L	7.44	7.39	7.6	7.9	7.99	7.71	7.08	7.79	7.34		8.09	7.72	8.03	7.93	8.32	8.38
Total Phosphorous	0.01	mg/L	0.03	0.0765	0.121	0.188	0.0512	0.292	0.309	0.0537	0.0567		0.023	0.0532	0.062	0.141	0.223	0.161
Suspended Solids		mg/L	21.1	19.4	41.5	27.2	10.5	283	391	23.7	25.5		5.9	9.5	11.2	121	202	114
TDS		mg/L	561	462	587	562	494	388	282	394	348		545	444	354	520	458	551
Sulfate		mg/L	3.49	13.4	79.6	24.8	48.3	20.6	9.17	11	17.9		8.57	4.62	3.97	2.68	8.56	14.3
Zinc	0.02	mg/L	0.0065	0.0063	0.0161	0.0069	0.0068	0.043	0.033	0.0066	0.0162		<0.030	<0.030	0.0224	0.007	0.0292	<0.030
Zinc (Dissolved)		mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	0.0021	0.0021
Other Organics																		
BOD_5		mg/L	<2.0	2.8	3	12.4	4.6	21.9	10.4	3.2	2.7		<2.0	<2.0	2.7	3.5	25.8	5.3
COD		mg/L	69	68	70	72	72	147	150	57	67		69	59	70	91	143	82
Phenols	0.001	mg/L	0.01	<0.001	0.0045	0.0054	<0.020	0.042	<0.020	<0.0010	<0.020		0.0013	<0.0010	0.0018	0.0145	0.0018	0.0021
DOC		mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT		NT	NT	NT	NT	24.8	28.2
Field Parameters																		
Temperature		°C	9.7	12.1	14.3	16.6	15.2	10	3.1	18.5	2.5		16.3	9.8	19.1	17.1	19.9	25.7
pH			7.19	7.3	7.07	6.35	6.57	6.57	7.37	7.5	7.42		7.26	7.16	6.73	7.29	7.8	7.93
Conductivity		mS/cm	0.96	0.76	0.93	0.84	0.68	0.61	0.48	0.73	0.62		0.86	0.74	0.63	0.982	0.935	1.065
Dissolved Oxygen		%	30	39.4	33.1	109	73.1	104.3	34.9	137	30.4		63.1	48	108.1	51.7	142.5	136.6

Shaded concentrations exceed PWQO
ND = Not Detected
NT = Not Tested

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.18: Sampling Location - SW2
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 3

KEC Project Ref. No. 2231

Parameter	PWQO	Units	Date of Sampling Event								
			May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Miscellaneous Parameters			NOT SAMPLED		Frozen						
Nitrite (as N)		mg/L		<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bicarbonate (HCO3)		mg/L		133		146	121	120	185	112	230
Carbonate (CO3)		mg/L		<2.0		<2.0	<2.0	<2.0	<2.0	<2.0	8.8
Hydroxide (OH)		mg/L		<2.0		<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Ion Balance Calculation											
Cation - Anion Balance		%		4.8		2.6	-1.2	2.4	-1	3.5	6
TDS (calculated)		mg/L		NT		NT	NT	NT	NT	NT	317
Anion Sum		me/L		3.54		3.27	2.69	2.74	4.28	2.56	4.99
Cation Sum		me/L		3.9		3.44	2.63	2.87	4.19	2.75	5.61
Inorganics											
Alkalinity		mg/L CaCO3		133		146	121	120	185	112	239
Ammonia		mg/L		0.619		0.038	0.0171	0.013	0.0279	0.0117	0.02
Arsenic	0.005	mg/L		0.00104		0.00081	0.00049	0.00061	0.00074	0.0005	<0.0010
Barium		mg/L		0.0351		0.021	0.022	0.0288	0.0336	0.0182	0.0388
Boron	0.2	mg/L		0.291		0.184	0.097	0.133	0.198	0.152	0.38
Cadmium	0.0005	mg/L		0.0000441		0.0000057	<0.000005	0.0000195	0.0000069	0.0000087	<0.000050
Chloride		mg/L		21.9		12.4	9.64	11.6	20.4	11.7	34.4
Chromium	0.001	mg/L		0.00287		0.00065	0.0006	0.00066	0.00066	0.00053	<0.0050
Conductivity		µS/cm		332		298	252	261	404	254	493
Copper	0.005	mg/L		0.00295		<0.001	<0.0005	0.00093	<0.00050	<0.0010	<0.0050
Iron	0.3	mg/L		2.8		0.781	1.02	0.952	0.725	0.498	0.74
Lead	0.001	mg/L		0.00125		0.000061	0.00007	0.000181	0.000068	0.000092	<0.00050
Manganese		mg/L		NT		NT	NT	NT	NT	NT	0.043
Manganese (Dissolved)		mg/L								0.0116	0.0326
Mercury	0.0002	mg/L		0.0000172		<0.000005	<0.000005	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Nitrate		mg/L		0.056		<0.020	<0.020	<0.020	0.02	<0.020	<0.010
Nitrite		mg/L		<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	<0.020
TKN		mg/L		1.93		0.88	0.801	1.23	1.17	0.723	0.878
pH	6.5-8.5	mg/L		7.62		7.8	7.61	7.78	7.86	8.18	8.4
Total Phosphorous	0.01	mg/L		0.172		0.0157	0.0383	0.0986	0.0841	0.0282	0.0203
Suspended Solids		mg/L		190		<3.0	6.7	8.8	7.9	6.2	10.9
TDS		mg/L		238		221	168	135	256	151	305
Sulfate		mg/L		13.1		<0.30	<0.30	0.32	<0.30	<0.30	<0.30
Zinc	0.02	mg/L		0.0128		0.0031	<0.003	0.0051	<0.0030	<0.0030	<0.030
Zinc (Dissolved)		mg/L		NT	NT	NT	NT	NT	NT	0.0014	0.0022
Other Organics											
BOD_5		mg/L		5.8		<2.0	<2.0	3.2	2.2	<2.0	<3.0
COD		mg/L		111		63	48	59	72	49	56
Phenols	0.001	mg/L		0.04		<0.0010	<0.001	0.0014	0.0027	0.0012	<0.0010
DOC		mg/L		NT		NT	NT	NT	NT	16.6	21.1
Field Parameters											
Temperature		°C		0.5		18.3	7.3	19.6	18.8	18.6	20.9
pH				8.04		8.01	8.1	7.33	7.3	8.08	7.7
Conductivity		mS/cm		0.34		0.31	0.27	0.25	0.464	0.288	0.756
Dissolved Oxygen		%		86.1		102.4	58	110.4	56.2	114.3	79.8

Shaded concentrations exceed PWQO
ND = Not Detected
NT = Not Tested

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.19: Sampling Location - SW3
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 3

KEC Project Ref. No. 2231

Parameter	PWQO	Units	Date of Sampling Event								
			May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	17-May-22	Sep-22
Miscellaneous Parameters			NOT SAMPLED		Frozen	NOT SAMPLED		NOT SAMPLED	NOT SAMPLED	NOT SAMPLED	NOT SAMPLED
Nitrite (as N)		mg/L		<0.010			<0.010	DRY	DRY	DRY	DRY
Bicarbonate (HCO3)		mg/L		24.3			30.5				
Carbonate (CO3)		mg/L		<2.0			<2.0				
Hydroxide (OH)		mg/L		<2.0			<2.0				
Ion Balance Calculation											
Cation - Anion Balance		%		3.2			23.5				
TDS (calculated)		mg/L		NT			NT				
Anion Sum		me/L		1.45			0.84				
Cation Sum		me/L		1.54			1.36				
Inorganics											
Alkalinity		mg/L CaCO3		24.3			30.5				
Ammonia		mg/L		0.872			0.26				
Arsenic	0.005	mg/L		0.00028			0.00068				
Barium		mg/L		0.0208			0.0127				
Boron	0.2	mg/L		0.011			<0.010				
Cadmium	0.0001	mg/L		0.0000254			0.0000244				
Chloride		mg/L		24.1			7.34				
Chromium		mg/L		0.00105			0.00151				
Conductivity		µS/cm		159			83.6				
Copper	0.005	mg/L		0.00204			0.00226				
Iron	0.3	mg/L		1.36			5.83				
Lead	0.001	mg/L		0.000137			0.00022				
Manganese		mg/L		NT			NT				
Manganese (Dissolved)											
Mercury	0.0002	mg/L		0.0000054			0.0000085				
Nitrate		mg/L		0.105			0.032				
Nitrite		mg/L		<0.010			<0.010				
TKN		mg/L		1.25			0.942				
pH	6.5-8.5	mg/L		6.35			6.97				
Total Phosphorous	0.01	mg/L		0.016			0.0317				
Suspended Solids		mg/L		50.4			14.7				
TDS		mg/L		86			80				
Sulfate		mg/L		13.2			1.16				
Zinc	0.02	mg/L		0.0038			0.0202				
Zinc (Dissolved)											
Other Organics											
BOD_5		mg/L		<2.0			<2.0				
COD		mg/L		33			62				
Phenols	0.001	mg/L		0.03			<0.0010				
DOC		mg/L		NT			NT				
Field Parameters											
Temperature		°C		2.4			7.3				
pH				8.37			8.14				
Conductivity		mS/cm		0.16			0.16				
Dissolved Oxygen		%		48			59.2				

Shaded concentrations exceed PWQO
ND = Not Detected
NT = Not Tested

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.20: Sampling Location - SW4
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 3

KEC Project Ref. No. 2231

Parameter	PWQO	Units	Sampling Event	
			May-22	Sep-22
Miscellaneous Parameters				
Nitrite (as N)		mg/L	0.013	<0.010
Bicarbonate (HCO3)		mg/L	283	227
Carbonate (CO3)		mg/L	<2.0	3.1
Hydroxide (OH)		mg/L	<2.0	<1.0
Ion Balance Calculation				
Cation - Anion Balance		%	-3.6	8
TDS (calculated)		mg/L	320	389
Anion Sum		me/L	6.59	5.26
Cation Sum		me/L	6.13	6.2
Inorganics				
Alkalinity		mg/L CaCO3	283	230
Ammonia		mg/L	11.9	16.8
Arsenic	0.005	mg/L	0.00102	0.0025
Barium		mg/L	0.109	0.102
Boron	0.2	mg/L	0.26	0.39
Cadmium	0.0001	mg/L	0.0000376	<0.000050
Chloride		mg/L	32.8	45.3
Chromium		mg/L	0.00124	<0.0050
Conductivity		µS/cm	643	549
Copper	0.005	mg/L	0.0025	<0.0050
Iron	0.3	mg/L	22.3	23.8
Lead	0.001	mg/L	0.000554	0.00228
Manganese		mg/L		0.0904
Manganese (Dissolved)			0.118	0.0506
Mercury	0.0002	mg/L	<0.0000050	<0.0000050
Nitrate		mg/L	0.046	<0.010
Nitrite		mg/L	0.013	<0.020
TKN		mg/L	14.8	24.7
pH	6.5-8.5	mg/L	8.14	8.30
Total Phosphorous	0.01	mg/L	0.215	0.187
Suspended Solids		mg/L	103	89
TDS		mg/L	320	297
Sulfate		mg/L	<0.30	6.63
Zinc	0.02	mg/L	0.0173	<0.030
Zinc (Dissolved)			0.0022	<0.010
Other Organics				
BOD_5		mg/L	10.2	4.7
COD		mg/L	124	195
Phenols	0.001	mg/L	0.0017	0.003
DOC		mg/L	23.6	64.9
Field Parameters				
Temperature		°C	20.1	26.1
pH			7.23	7.6
Conductivity		mS/cm	0.705	0.645
Dissolved Oxygen		%	160.1	43.4

Shaded concentrations exceed PWQO
ND = Not Detected
NT = Not Tested

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.21: Sampling Location - SW5
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 3

KEC Project Ref. No. 2231

Parameter	PWQO	Units	Sampling Event	
			May-22	Sep-22
Miscellaneous Parameters				
Nitrite (as N)		mg/L	<0.010	<0.010
Bicarbonate (HCO3)		mg/L	168	365
Carbonate (CO3)		mg/L	<2.0	11
Hydroxide (OH)		mg/L	<2.0	<1.0
Ion Balance Calculation				
Cation - Anion Balance		%	-2	-5
TDS (calculated)		mg/L	213	424
Anion Sum		me/L	3.82	7.84
Cation Sum		me/L	3.67	7.13
Inorganics				
Alkalinity		mg/L CaCO3	168	376
Ammonia		mg/L	5.07	24.3
Arsenic	0.005	mg/L	0.00106	0.0018
Barium		mg/L	0.0736	0.127
Boron	0.2	mg/L	0.177	0.36
Cadmium	0.0001	mg/L	0.000053	<0.000050
Chloride		mg/L	16.4	52.3
Chromium		mg/L	0.00125	<0.0050
Conductivity		µS/cm	379	666
Copper	0.005	mg/L	0.003	<0.0050
Iron	0.3	mg/L	11.1	16
Lead	0.001	mg/L	0.00105	<0.00050
Manganese		mg/L		0.544
Manganese (Dissolved)		mg/L	0.285	0.517
Mercury	0.0002	mg/L	<0.0000050	<0.0000050
Nitrate		mg/L	<0.020	<0.010
Nitrite		mg/L	<0.010	<0.020
TKN		mg/L	6.22	37.6
pH	6.5-8.5	mg/L	7.98	8.34
Total Phosphorous	0.01	mg/L	0.106	0.265
Suspended Solids		mg/L	84.8	40
TDS		mg/L	213	434
Sulfate		mg/L	0.33	3.26
Zinc	0.02	mg/L	0.0091	<0.030
Zinc (Dissolved)		mg/L	0.0014	<0.010
Other Organics				
BOD_5		mg/L	6.7	4.9
COD		mg/L	72	89
Phenols	0.001	mg/L	0.0014	0.0065
DOC		mg/L	15.2	30.2
Field Parameters				
Temperature		°C	17	19.6
pH			7.32	7.39
Conductivity		mS/cm	0.456	0.906
Dissolved Oxygen		%	94.8	38.8

Shaded concentrations exceed PWQO
ND = Not Detected
NT = Not Tested

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.22: Sampling Location - SW6
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 3

KEC Project Ref. No. 2231

Parameter	PWQO	Units	Sampling Event	
			May-22	Sep-22
Miscellaneous Parameters				
Nitrite (as N)		mg/L	<0.010	<0.010
Bicarbonate (HCO3)		mg/L	32.2	47.3
Carbonate (CO3)		mg/L	<2.0	<1.0
Hydroxide (OH)		mg/L	<2.0	<1.0
Ion Balance Calculation				
Cation - Anion Balance		%	4.3	13
TDS (calculated)		mg/L	54	83
Anion Sum		me/L	0.66	0.88
Cation Sum		me/L	0.72	1.15
Inorganics				
Alkalinity		mg/L CaCO3	32.2	47.3
Ammonia		mg/L	0.0076	0.072
Arsenic	0.005	mg/L	0.0011	0.00249
Barium		mg/L	0.0131	0.0474
Boron	0.2	mg/L	<0.010	0.015
Cadmium	0.0001	mg/L	0.0000205	0.0000718
Chloride		mg/L	0.44	1.27
Chromium		mg/L	0.00071	0.00247
Conductivity		µS/cm	62	99.5
Copper	0.005	mg/L	0.0014	0.0023
Iron	0.3	mg/L	1.39	2.18
Lead	0.001	mg/L	0.000357	0.00208
Manganese		mg/L		1.43
Manganese (Dissolved)		mg/L	0.0568	0.0887
Mercury	0.0002	mg/L	<0.0000050	<0.0000050
Nitrate		mg/L	<0.020	<0.010
Nitrite		mg/L	<0.010	<0.020
TKN		mg/L	0.94	3.02
pH	6.5-8.5	mg/L	7.49	7.70
Total Phosphorous	0.01	mg/L	0.0822	0.202
Suspended Solids		mg/L	13.8	18.2
TDS		mg/L	54	54.5
Sulfate		mg/L	<0.30	3.04
Zinc	0.02	mg/L	0.0041	0.0114
Zinc (Dissolved)		mg/L	0.0022	0.0013
Other Organics				
BOD_5		mg/L	2.4	13.8
COD		mg/L	59	95
Phenols	0.001	mg/L	0.002	0.0015
DOC		mg/L	17	24.9
Field Parameters				
Temperature		°C	19.5	21.6
pH			7.01	6.77
Conductivity		mS/cm	0.072	0.114
Dissolved Oxygen		%	104.8	125

Shaded concentrations exceed PWQO
ND = Not Detected
NT = Not Tested

Town of Blind River Municipal Landfill Site
Ground and Surface Water Monitoring Results

TABLE G.23: Sampling Location - SW7
MECP Landfill Standards Guideline:
Schedule 5 Parameters, Column 3

KEC Project Ref. No. 2231

Parameter	PWQO	Units	Sampling Event	
			May-22	Sep-22
Miscellaneous Parameters				
Nitrite (as N)		mg/L	<0.050	<0.050
Bicarbonate (HCO3)		mg/L	167	107
Carbonate (CO3)		mg/L	<2.0	<1.0
Hydroxide (OH)		mg/L	<2.0	<1.0
Ion Balance Calculation				
Cation - Anion Balance		%	1.3	-2
TDS (calculated)		mg/L	609	776
Anion Sum		me/L	9.94	13.3
Cation Sum		me/L	10.2	12.8
Inorganics				
Alkalinity		mg/L CaCO3	167	107
Ammonia		mg/L	0.0202	0.05
Arsenic	0.005	mg/L	0.00064	0.00106
Barium		mg/L	0.0589	0.0753
Boron	0.2	mg/L	0.034	0.053
Cadmium	0.0001	mg/L	0.0000437	0.0000094
Chloride		mg/L	231	404
Chromium		mg/L	0.00116	0.00155
Conductivity		µS/cm	1100	1280
Copper	0.005	mg/L	0.0019	0.0017
Iron	0.3	mg/L	5.83	4.18
Lead	0.001	mg/L	0.000381	0.000452
Manganese		mg/L		0.295
Manganese (Dissolved)		mg/L	0.248	0.201
Mercury	0.0002	mg/L	<0.0000050	<0.0000050
Nitrate		mg/L	<0.10	<0.050
Nitrite		mg/L	<0.050	<0.10
TKN		mg/L	1.47	4.4
pH	6.5-8.5	mg/L	8.01	7.67
Total Phosphorous	0.01	mg/L	0.109	0.521
Suspended Solids		mg/L	97	271
TDS		mg/L	609	749
Sulfate		mg/L	5.1	6
Zinc	0.02	mg/L	0.0156	0.0075
Zinc (Dissolved)		mg/L	0.005	0.0014
Other Organics				
BOD_5		mg/L	7.8	12.5
COD		mg/L	66	152
Phenols	0.001	mg/L	0.0013	0.0015
DOC		mg/L	16.7	17.6
Field Parameters				
Temperature		°C	17.5	23
pH			7.74	8.45
Conductivity		mS/cm	1.188	0.704
Dissolved Oxygen		%	105.1	170.6

Shaded concentrations exceed PWQO
ND = Not Detected
NT = Not Tested

TABLE G.24: Observed Water Table Elevations

Aspect	MW1-02																																			
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Top of casing elevation	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.439	199.614	199.61	199.618	199.622	199.627	199.628
Well stick-up	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.905	0.901	0.909	0.913	0.918	0.919
Ground elevation	198.529	198.529	198.529	198.529	198.529	198.529	198.529	198.529	198.529	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709	198.709
Observed depth to water table from top of casing	2.26	1	1.135	4.045	3.05	1.715	1.065	1.12	1.18	1.03	2.877	1.084	1.161	1.392	1.231	1.064	2.467	1.401	3.225	1.103	1.144	1.101	1.15	1.16	2.369	1.167	3.012	1.099	1.095	1.095	1.233	1.198	1.312	1.072	1.148	1.575	1.17	2.621
Depth to termination of well screen	4.26	5.71	5.204	5.205	5.2	5.205	5.21	5.205	5.2	5.2	5.208	5.205	5.212	4.875	5.206	5.203	5.207	5.214	5.204	5.205	5.214	5.208	5.21	4.21	5.21	5.212	5.211	5.21	5.209	5.209	5.205	5.205	5.208	5.207	5.206	5.203	5.204	5.204
Approx. elevation of screen termination	195.179	193.729	194.235	194.234	194.239	194.234	194.229	194.234	194.239	194.239	194.231	194.234	194.227	194.564	194.233	194.236	194.232	194.225	194.235	194.234	194.225	194.231	194.229	195.229	194.229	194.227	194.228	194.229	194.23	194.23	194.234	194.234	194.406	194.403	194.412	194.419	194.423	194.424
Approx. Water Table Elevation	**197.179**	**198.439**	**198.304**	**195.394**	**196.389**	**197.724**	**198.374**	**198.319**	**198.259**	**198.409**	**196.562**	**198.355**	**198.278**	**198.047**	**198.208**	**198.375**	**196.972**	**198.038**	**196.214**	**198.336**	**198.295**	**198.338**	**198.289**	**198.279**	**197.070**	**198.272**	**196.427**	**198.340**	**198.344**	**198.344**	**198.206**	**198.241**	**198.302**	**198.538**	**198.470**	**198.047**	**198.457**	**197.007**

Aspect	MW2-02																																			
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Top of casing elevation	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	201.078	200.852	200.842	200.855	200.864	200.887	200.887
Well stick-up	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.684	0.674	0.687	0.696	0.719	0.719
Ground elevation	200.218	200.218	200.218	200.218	200.218	200.218	200.218	200.218	200.218	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168	200.168
Observed depth to water table from top of casing	2.44	2	2.45	4.04	2.63	2.5	2.41	2.429	2.582	2.284	2.609	2.324	2.511	2.635	2.318	2.463	2.519	2.592	2.661	2.339	2.3	3.62	2.37	2.48	2.503	2.228	2.463	2.201	2.259	2.194	2.254	2.413	2.439	2.053	2.266	2.292	2.269	2.385
Depth to termination of well screen	6.09	NA	6.665	6.57	6.605	6.61	6.63	6.622	6.607	6.611	6.621	6.612	6.612	6.613	6.614	6.607	6.617	6.609	6.62	6.596	6.627	6.62	6.61	6.63	6.598	6.409	6.413	6.412	6.411	6.406	6.407	6.404	6.405	6.415	6.405	6.41	6.405	6.409
Approx. elevation of screen termination	194.988		194.413	194.508	194.473	194.468	194.448	194.456	194.471	194.467	194.457	194.466	194.466	194.465	194.464	194.471	194.461	194.469	194.458	194.482	194.451	194.458	194.468	194.448	194.48	194.669	194.665	194.666	194.667	194.672	194.671	194.674	194.447	194.427	194.45	194.454	194.482	194.478
Approx. Water Table Elevation	**198.638**	**NA**	**198.628**	**197.038**	**198.448**	**198.578**	**198.668**	**198.649**	**198.496**	**198.794**	**198.469**	**198.754**	**198.567**	**198.443**	**198.76**	**198.615**	**198.559**	**198.486**	**198.417**	**198.739**	**198.778**	**197.458**	**198.708**	**198.598**	**198.575**	**198.850**	**198.615**	**198.877**	**198.819**	**198.884**	**198.824**	**198.665**	**198.413**	**198.789**	**198.589**	**198.572**	**198.618**	**198.502**

Aspect	MW3-02																																			
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Top of casing elevation	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	192.104	Frozen	191.518	191.507	191.528	191.506	191.434	191.521
Well stick-up	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	0.912	Tubing	0.935	0.924	0.945	0.923	0.851	0.938
Ground elevation	191.194	191.194	191.194	191.194	191.194	191.194	191.194	191.194	191.194	191.192	191.192	191.192	191.192	191.192	191.192	191.192	191.192	191.192	191.192	191.192	191.192	191.192	191.192	191.192	191.094	191.192	191.192	191.192	191.192	191.192	191.192		190.583	190.583	190.583	190.583	190.583	190.583
Observed depth to water table from top of casing	NT	NT	1.13	0.9	1.25	1.18	1.025	1.62	1.043	1.052	1.15	1.091	1.069	1.133	1.058	1.013	1.029	1.064	1.138	1.028	0.984	1.555	1.13	1.15	1.094	0.922	0.974	0.933	0.918	0.919	1.036		0.964	0.97	0.946	0.941	0.955	1.169
Depth to termination of well screen			2.1	1.82	1.85	1.83	1.78	1.83	1.816	1.823	1.695	1.701	1.706	1.735	1.762	1.815	1.769	1.736	1.798	1.815	1.792	1.814	1.81	1.9	1.902	1.764	1.764	1.751	1.724	1.729	1.723		1.732	1.729	1.72	1.728	1.738	1.739
Approx. elevation of screen termination			186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313	186.313		186.313	186.313	186.313	186.313	186.313	186.313
Approx. Water Table Elevation	**NT**	**NT**	**190.974**	**191.204**	**189.944**	**190.924**	**191.079**	**190.484**	**191.061**	**191.052**	**190.954**	**191.013**	**191.035**	**190.971**	**191.046**	**191.091**	**191.075**	**191.04**	**190.966**	**191.076**	**191.12**	**190.549**	**190.974**	**190.954**	**191.01**	**191.182**	**191.13**	**191.171**	**191.186**	**191.185**	**191.068**		**190.554**	**190.537**	**190.582**	**190.565**	**190.479**	**190.352**

Aspect	MW4-02																																			
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Top of casing elevation	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	192.266	Frozen	192.198	192.206	192.174	192.226	192.226	192.208
Well stick-up	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	Tubing	0.772	0.78	0.748	0.8	0.8	0.782
Ground elevation	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426	191.426		191.426	191.426	191.426	191.426	191.426	191.426
Observed depth to water table from top of casing	1.42	0.85	1.185	3.24	1.31	1.12	1.09	0.61	1.132	1.024	1.252	1.069	1.137	1.119	1.114	0.993	1.098	1.121	1.168	1.03	1.062	1.152	1.14	1.13	1.143	0.971	1.013	0.897	0.876	0.892	1.048		0.978	0.914	0.992	1.023	1.023	1.225
Depth to termination of well screen	4.57	5.87	5.1	4.335	5.115	5.1	5.1	5.109	5.112	5.121	5.109	5.112	5.116	5.12	5.109	5.11	5.092	5.092	5.112	5.108	5.099	5.097	5.1	5.11	5.112	4.966	4.962	4.97	4.959	4.973	4.965		4.968	4.969	4.964	4.966	4.966	4.967
Approx. elevation of screen termination	187.696	186.396	187.166	187.931	187.151	187.166	187.166	187.157	187.154	187.145	187.157	187.154	187.15	187.146	187.157	187.156	187.174	187.174	187.154	187.158	187.167	187.169	187.166	187.156	187.154	187.3	187.304	187.296	187.307	187.293	187.301		187.23	187.237	187.21	187.26	187.26	187.241
Approx. Water Table Elevation	**190.846**	**191.416**	**191.081**	**189.026**	**190.956**	**191.146**	**191.176**	**191.656**	**191.134**	**191.242**	**191.014**	**191.197**	**191.129**	**191.147**	**191.152**	**191.273**	**191.168**	**191.145**	**191.098**	**191.236**	**191.204**	**191.114**	**191.126**	**191.136**	**191.123**	**191.295**	**191.253**	**191.369**	**191.39**	**191.374**	**191.218**		**191.220**	**191.292**	**191.182**	**191.203**	**191.203**	**190.983**

Aspect	MW5-02																																			
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Top of casing elevation	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.156	198.16	198.163	198.15	198.158	198.159	198.172
Well stick-up	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.784	0.787	0.774	0.782	0.783	0.796
Ground elevation	197.336	197.336	197.336	197.336	197.336	197.336	197.336	197.336	197.336	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376	197.376
Observed depth to water table from top of casing	1.27	1.21	0.825	3.505	1.13	0.95	0.84	0.8	0.95	0.73	0.985	0.856	1.005	0.85	1.053	1.106	0.837	1.054	0.944	1.012	0.755	0.68	0.91	1.12	1.336	0.986	1.388	1.053	1.174	1.039	1.018	1.102	1.049	1.015	1.032	1.182	1.103	1.356
Depth to termination of well screen	3.96	4.86	4.625	4.62	4.615	4.625	4.63	4.62	4.62	4.63	4.63	4.625	4.625	4.625	4.63	4.625	4.626	4.631	4.626	4.626	4.026	4.621	4.63	3.8	4.489	4.632	4.626	4.63	4.628	4.627	4.624	4.624	4.625	4.625	4.623	4.62	4.624	4.63
Approx. elevation of screen termination	194.196	193.296	193.531	193.536	193.541	193.531	193.526	193.536	193.536	193.526	193.526	193.531	193.531	193.531	193.526	193.531	193.53	193.525	193.53	193.53	194.13	193.535	193.526	194.356	193.667	193.524	193.53	193.526	193.528	193.529	193.532	193.532	193.535	193.538	193.527	193.538	193.535	193.542
Approx. Water Table Elevation	**196.886**	**196.946**	**197.331**	**194.651**	**197.026**	**197.206**	**197.316**	**197.356**	**197.206**	**197.426**	**197.171**	**197.3**	**197.151**	**197.306**	**197.103**	**197.05**	**197.319**	**197.102**	**197.212**	**197.144**	**197.401**	**197.476**	**197.246**	**197.036**	**196.82**	**197.17**	**196.768**	**197.103**	**196.982**	**197.117**	**197.138**	**197.054**	**197.111**	**197.148**	**197.118**	**196.976**	**197.056**	**196.816**

Aspect	MW6-02																																			
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Top of casing elevation	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.965	191.996	191.997	192.005	191.998	191.927	192.005
Well stick-up	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.788	0.789	0.797	0.79	0.719	0.797
Ground elevation	191.055	191.055	191.055	191.055	191.055	191.055	191.055	191.055	191.055	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208	191.208
Observed depth to water table from top of casing	1.8	1.12	1.9	6.1	1.75	1.39	1.315	1.239	1.398	1.128	1.495	1.306	1.351	1.39	1.319	1.199	1.421	1.294	1.534	1.214	1.106	1.17	1.26	1.3	1.446	1.044	1.264	1.05	1.175	1.055	1.407	1.22	1.165	1.073	1.164	1.219	1.164	1.582
Depth to termination of well screen	7.01	7.56	7.576	7.56	7.565	7.505	7.57	7.575	7.578	7.58	7.58	7.571	7.569	7.29	7.568	7.575	7.581	7.571	7.569	7.562	7.574	7.571	7.58	6.54	7.576	7.437	7.43	7.441	7.435	7.429	7.428	7.429	7.436	7.427	7.426	7.428	7.185	7.428
Approx. elevation of screen termination	184.955	184.405	184.389	184.405	184.4	184.46	184.395	184.39	184.387	184.385	184.385	184.394	184.396	184.675	184.397	184.39	184.384	184.394	184.396	184.403	184.391	184.394	184.385	185.425	184.389	184.528	184.535	184.524	184.53	184.536	184.537	184.536	184.56	184.57	184.579	184.57	184.742	184.577
Approx. Water Table Elevation	**190.165**	**190.845**	**190.065**	**185.865**	**190.215**	**190.575**	**190.2**	**190.726**	**190.567**	**190.837**	**190.470**	**190.659**	**190.614**	**190.575**	**190.646**	**190.766**	**190.544**	**190.671**	**190.431**	**190.751**	**190.859**	**190.795**	**190.705**	**190.665**	**190.519**	**190.921**	**190.701**	**190.915**	**190.79**	**190.91**	**190.558**	**190.745**	**190.831**	**190.924**	**190.841**	**190.779**	**190.763**	**190.423**

Aspect	MW1-03																																					
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Top of casing elevation		191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	191.563	Frozen	191.609	191.606	191.61	191.635	191.573	191.62
Well stick-up		0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	Tubing	1.026	1.023	1.027	1.052	0.99	1.037
Ground elevation		190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583	190.583		190.583	190.583	190.583	190.583	190.583	190.583
Observed depth to water table from top of casing		1.95	1.015	2.395	1.253	1.15	1.02	1.049	1.018	1.035	1.08	1.057	1.4	1.6	1.011	1.014	1.039	1.111	1.169	1.028	1.029	1.039	1.2	1.02	1.072	1.032	1.054	1.025	1.018	1.034	1.037		1.027	0.992	1.038	1.008	1.055	1.255
Depth to termination of well screen		4.92	3.315	3.475	3.47	3.54	3.53	3.516	3.502	3.446	3.53	3.529	3.509	3.22	3.51	3.539	3.541	3.542	3.542	3.539	3.54	3.525	3.53	3.54	3.541	3.541	3.535	3.529	3.523	3.523	3.514		3.51	3.511	3.505	3.501	305	3.504
Approx. elevation of screen termination		186.643	188.248	188.088	188.093	188.023	188.033	188.047	188.061	188.117	188.033	188.034	188.054	188.343	188.053	188.024	188.022	188.021	188.021	188.024	188.023	188.038	188.033	188.023	188.022	188.022	188.028	188.034	188.04	188.04	188.049		188.099	188.095	188.105	188.134	-113.427	188.116
Approx. Water Table Elevation		**189.78**	**190.715**	**189.335**	**190.477**	**190.58**	**190.71**	**190.514**	**190.545**	**190.528**	**190.483**	**190.506**	**190.163**	**189.963**	**190.552**	**190.549**	**190.524**	**190.452**	**190.394**	**190.535**	**190.534**	**190.524**	**190.363**	**190.543**	**190.491**	**190.531**	**190.509**	**190.538**	**190.545**	**190.529**	**190.526**		**190.582**	**190.614**	**190.572**	**190.627**	**190.518**	**190.365**

Aspect	MW1-15																																					
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Dec-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Top of casing elevation																									200.574	200.574	200.574	200.574	200.574	200.574	200.574	200.574	200.584	200.575	200.552	200.558	200.579	200.582
Well stick-up																									0.849	0.849	0.849	0.849	0.849	0.849	0.849	0.849	0.859	0.85	0.827	0.833	0.854	0.857
Ground elevation																									199.725	199.725	199.725	199.725	199.725	199.725	199.725	199.725	199.725	199.725	199.725	199.725	199.725	199.725
Observed depth to water table from top of casing																									2.654	2.461	2.697	2.363	2.422	2.361	2.568	2.508	2.469	2.384	2.421	2.559	2.358	2.612
Depth to termination of well screen																									6.798	6.777	6.751	6.738	6.745	6.725	6.454	6.761	6.744	6.721	6.729	6.709	6.7	6.745
Approx. elevation of screen termination																									193.776	193.797	193.823	193.836	193.829	193.849	194.12	193.813	193.84	193.854	193.823	193.849	193.879	193.837
Approx. Water Table Elevation																									**197.92**	**198.113**	**197.877**	**198.211**	**198.152**	**198.213**	**198.006**	**198.066**	**198.115**	**198.191**	**198.131**	**197.999**	**198.221**	**197.970**

Aspect	MW2-15																																					
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Dec-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Top of casing elevation																									198.815	198.815	198.815	198.815	198.815	198.815	198.815	198.815	198.802	198.802	198.794	198.761	198.766	198.754
Well stick-up																									1.096	1.096	1.096	1.096	1.096	1.096	1.096	1.096	1.083	1.083	1.075	1.042	1.047	1.035
Ground elevation																									197.719	197.719	197.719	197.719	197.719	197.719	197.719	197.719	197.719	197.719	197.719	197.719	197.719	197.719
Observed depth to water table from top of casing																									1.707	2.776	2.661	2.456	1.698	1.968	1.878	2.093	2.342	1.789	1.992	1.944	2.122	2.985
Depth to termination of well screen																									3.798	3.013	3.013	3.004	3.012	3.019	3.007	3.006	3.011	3.009	3.011	3.105	3.011	3.01
Approx. elevation of screen termination																									195.017	195.802	195.802	195.811	195.803	195.796	195.808	195.809	195.791	195.793	195.783	195.656	195.755	195.744
Approx. Water Table Elevation																									**197.108**	**196.039**	**196.154**	**196.359**	**197.117**	**196.847**	**196.937**	**196.722**	**196.460**	**197.013**	**196.802**	**196.817**	**196.644**	**195.769**

Aspect	MW3-15																																					
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Dec-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	
Top of casing elevation																									199.262	199.262	199.262	199.262	199.262	199.262	199.262	199.262	199.299	199.299	199.288	199.302	199.312	199.292
Well stick-up																									0.715	0.715	0.715	0.715	0.715	0.715	0.715	0.715	0.752	0.752	0.741	0.755	0.765	0.745
Ground elevation																									198.547	198.547	198.547	198.547	198.547	198.547	198.547	198.547	198.547	198.547	198.547	198.547	198.547	198.547
Observed depth to water table from top of casing																									2.142	2.444	3.186	2.018	2.006	2.079	2.648	2.591	2.514	2.219	2.241	3.04	2.425	3.426
Depth to termination of well screen																									5.165	5.16	5.218	5.242	5.229	5.199	5.178	5.189	5.223	5.212	5.21	5.206	5.248	5.245
Approx. elevation of screen termination																									194.097	194.102	194.044	194.02	194.033	194.063	194.084	194.073	194.076	194.087	194.078	194.096	194.064	194.047
Approx. Water Table Elevation																									**197.12**	**196.818**	**196.076**	**197.244**	**197.256**	**197.183**	**196.614**	**196.671**	**196.785**	**197.08**	**197.047**	**196.262**	**196.887**	**195.866**

Aspect	MW4-15																																					
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Dec-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Top of casing elevation																									204.412	204.412	204.412	204.412	204.412	204.412	204.412	204.412	204.417	204.412	204.382	204.382	204.390	204.423
Well stick-up																									0.832	0.832	0.832	0.832	0.832	0.832	0.832	0.832	0.837	0.832	0.802	0.802	0.810	0.843
Ground elevation																									203.58	203.58	203.58	203.58	203.58	203.58	203.58	203.58	203.58	203.58	203.58	203.58	203.58	203.58
Observed depth to water table from top of casing																									2.697	2.646	3.361	2.519	2.464	2.421	2.703	2.629	2.638	2.395	2.441	3.001	2.442	3.359
Depth to termination of well screen																									5.486	5.547	5.425	5.454	5.413	5.425	5.417	5.421	5.421	5.426	5.416	5.415	5.437	5.463
Approx. elevation of screen termination																									198.926	198.865	198.987	198.958	198.999	198.987	198.995	198.991	198.996	198.986	198.966	198.967	198.953	198.96
Approx. Water Table Elevation																									**201.715**	**201.766**	**201.051**	**201.893**	**201.948**	**201.991**	**201.709**	**201.783**	**201.779**	**202.017**	**201.941**	**201.381**	**201.948**	**201.064**

Aspect	MW1-17																																					
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Dec-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Top of casing elevation																												199.849	199.849	199.849	199.849	199.856	199.865	199.866	199.897	199.877	199.887
Well stick-up																												0.815	0.815	0.815	0.815	0.822	0.831	0.832	0.863	0.843	0.853
Ground elevation																												199.034	199.034	199.034	199.034	199.034	199.034	199.034	199.034	199.034	199.034
Observed depth to water table from top of casing																												1.352	1.378	1.773	1.774	1.825	1.495	1.575	1.96	1.642	2.196
Depth to termination of well screen																												3.059	3.059	3.036	3.051	3.059	3.058	3.054	3.056	3.085	3.058
Approx. elevation of screen termination																												196.79	196.79	196.813	196.798	196.797	196.807	196.812	196.841	196.792	196.829
Approx. Water Table Elevation																												**198.497**	**198.471**	**198.076**	**198.075**	**198.031**	**198.37**	**198.291**	**197.937**	**198.235**	**197.691**

Aspect	MW2-17																																					
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Dec-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Top of casing elevation																												194.814	194.814	194.814	194.814	194.802	194.788	194.789	194.798	194.799	194.791
Well stick-up																												0.78	0.78	0.780	0.780	0.768	0.754	0.755	0.764	0.765	0.757
Ground elevation																												194.034	194.034	194.034	194.034	194.034	194.034	194.034	194.034	194.034	194.034
Observed depth to water table from top of casing																												1.612	1.755	1.914	1.907	1.983	1.744	1.879	2.051	1.988	2.299
Depth to termination of well screen																												5.264	5.257	5.221	5.209	5.211	5.193	5.175	5.173	5.165	5.177
Approx. elevation of screen termination																												189.55	189.557	189.593	189.605	189.591	189.595	189.614	189.625	189.634	189.614
Approx. Water Table Elevation																												**193.202**	**193.059**	**192.9**	**192.907**	**192.819**	**193.044**	**192.91**	**192.747**	**192.811**	**192.492**

Aspect	MW1-20																																				
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Dec-15	Jun-16	Oct-16	May-17	Nov-17	May-18	Nov-18	Feb-20	Jun-20	Nov-20	May-21	Oct-21	May-22	Sep-22
Top of casing elevation																																	194.864	194.88	194.872	194.889	194.884
Well stick-up																																	0.830	0.846	0.838	0.855	0.850
Ground elevation																																	194.034	194.034	194.034	194.034	194.034
Observed depth to water table from top of casing																																	1.251	1.333	1.534	1.468	1.713
Depth to termination of well screen																																	8.282	8.425	8.378	8.349	8.399
Approx. elevation of screen termination																																	186.582	186.455	186.494	186.54	186.485
Approx. Water Table Elevation																																	**193.613**	**193.547**	**193.338**	**193.421**	**193.171**

Aspect	MW2-03																																				
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15													
Top of casing elevation		198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475	198.475												
Well stick-up		0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875	0.875												
Ground elevation		197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6	197.6												
Observed depth to water table from top of casing		1.26	NA	1.24	Dry Well	2.85	1.545	1.71	1.478	Dry Well	Dry Well	Dry Well	Dry Well	Dry Well	Dry Well	Dry Well	Dry Well	Dry Well	Dry Well	Dry Well	Dry Well	Dry Well	Dry Well	Dry Well	Dry Well	Well Decommissioned											
Depth to termination of well screen		3.6		3.045		3.05	3.05	3.043	3.04			3.037	3.039	3.039	3.037	2.935																					
Approx. elevation of screen termination		194.875		195.43		195.425	195.425	195.432	195.435			195.438	195.436	195.436	195.438	195.54																					
Approx. Water Table Elevation		**197.215**	**NA**	**197.235**	**Dry Well**	**195.625**	**196.93**	**196.765**	**196.997**	**Dry Well**	**Dry Well**	**Dry Well**	**Dry Well**	**Dry Well**	**Dry Well**	**Dry Well**	**Dry Well**	**Dry Well**	**Dry Well**	**Dry Well**	**Dry Well**	**Dry Well**	**Dry Well**	**Dry Well**	**Dry Well**												

Aspect	MW3-03																																				
	2002	Mar-04	Nov-04	May-05	Oct-05	Jun-06	Dec-06	May-07	Oct-07	May-08	Oct-08	Jun-09	Oct-09	May-10	Oct-10	May-11	Sep-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15													
Top of casing elevation		199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3	199.3												
Well stick-up		0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927												
Ground elevation		198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373	198.373												
Observed depth to water table from top of casing		1	NT	2.37	3.595	2.925	2.5	2.465	2.672	2.194	3.393	2.386	3.051	2.9	2.632	2.325	3.163	NA	3.469	4.26	2.516		2.21	2.38	2.725	Well Decommissioned											
Depth to termination of well screen		NA		4.95	4.94	5.52	5.23	5.244	5.204	5.212	5.172	5.194	5.208	5.2	5.2	5.244	5.253	5.213	5.132	5.247	5.185		5.17	5.18	5.21												
Approx. elevation of screen termination				194.35	194.36	193.78	194.07	194.056	194.096	194.088	194.128	194.106	194.092	194.1	194.1	194.056	194.047	194.087	194.168	194.053	194.115	199.3	194.13	194.12	194.09												
Approx. Water Table Elevation		**NA**	**NT**	**196.93**	**195.705**	**196.375**	**196.8**	**196.835**	**196.628**	**197.106**	**195.907**	**196.914**	**196.249**	**196.4**	**196.668**	**196.975**	**196.137**	**NA**	**195.831**	**195.04**	**196.784**	**199.3**	**197.09**	**196.92**	**196.575**												

All measurements and distances in meters
NA - not available
NT - not tested

Appendix H
Water Quality Data Trends

Groundwater Quality Trends

Charts H.1-H.6 plot annual concentrations (2 samples per year) of selected parameters at certain groundwater sampling locations. No statistically significant trends appear evident in the data associated with the above mentioned monitoring wells. Reasonable Use Criteria shown on the plots are developed using median background concentrations based on the entire data set associated with MW1-02.

Chart H.1
Town of Blind River Municipal Landfill Site
Alkalinity Concentration Trending

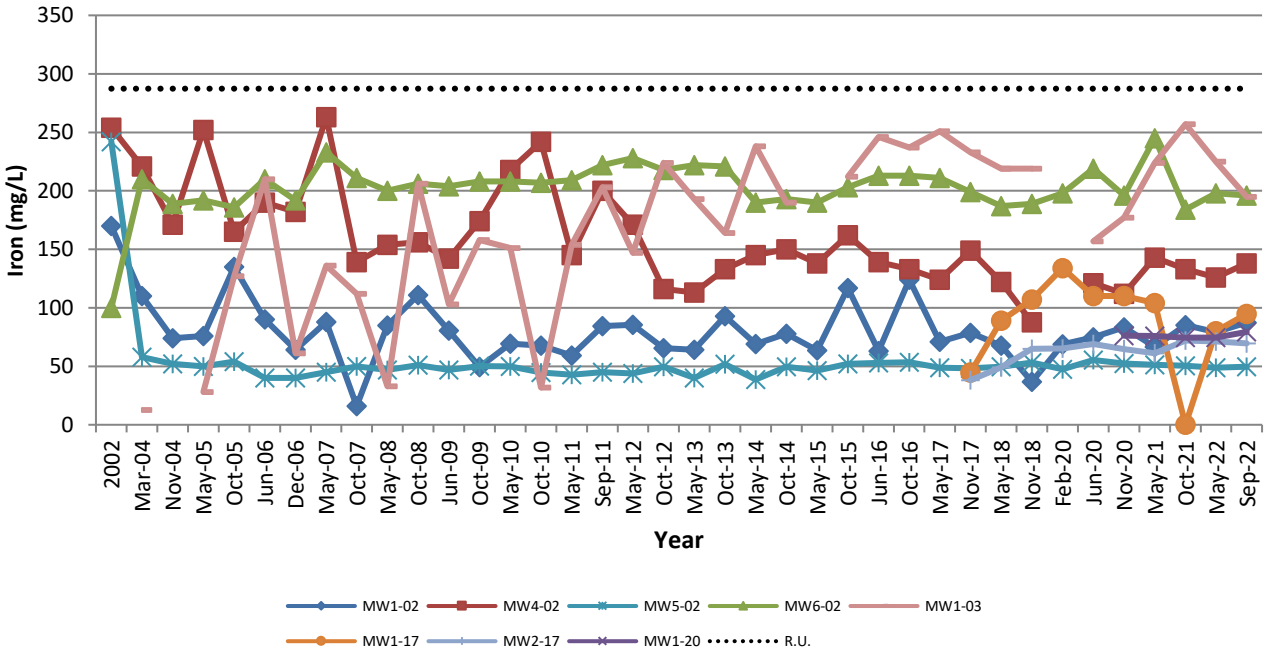


Chart H.2
Town of Blind River Municipal Landfill Site
Iron Concentration Trending

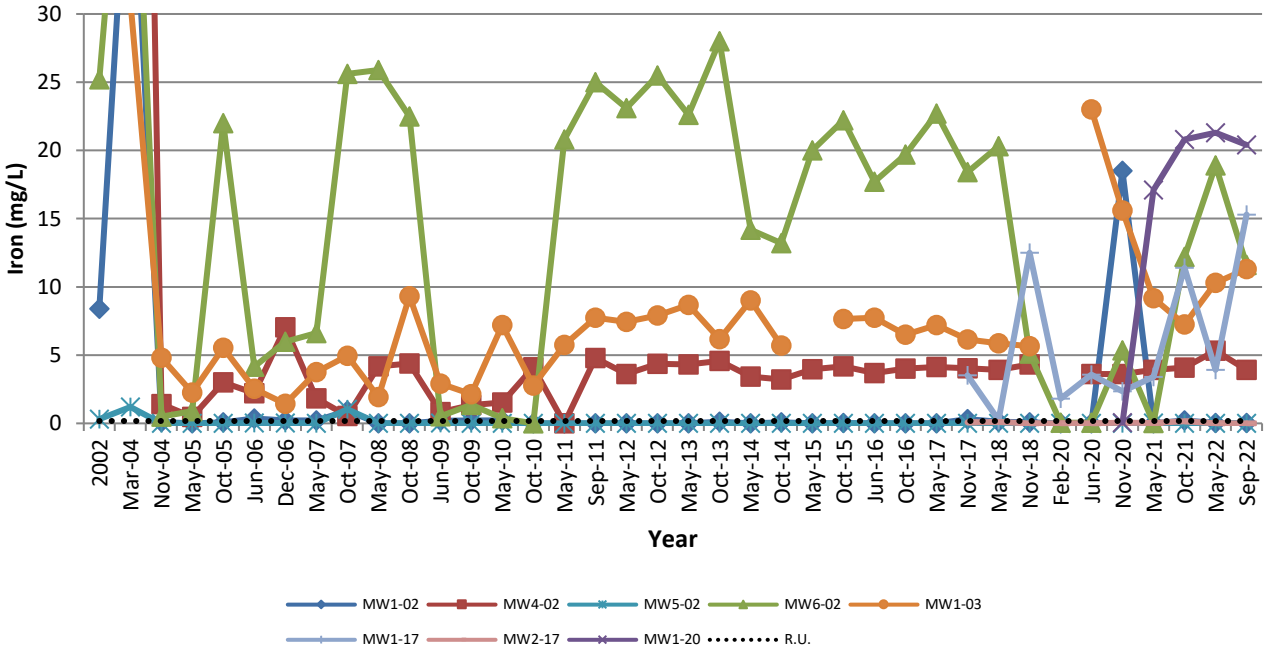


Chart H.3
Town of Blind River Municipal Landfill Site
Manganese Concentration Trending

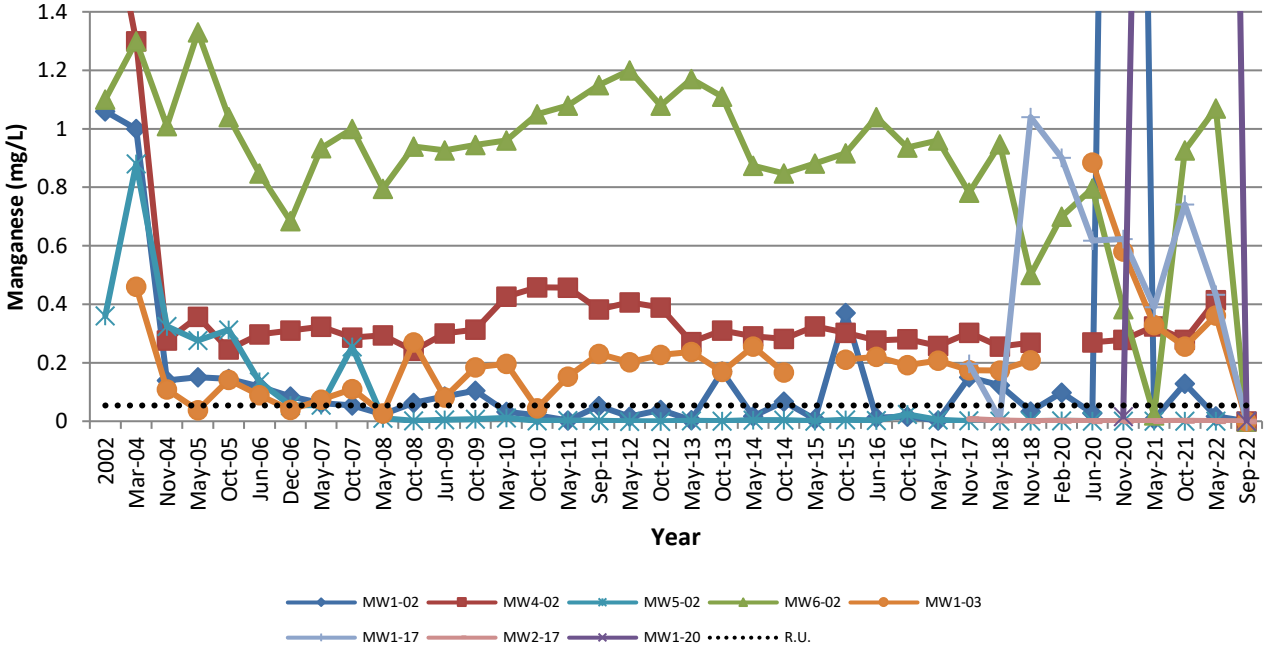


Chart H.4
Town of Blind River Municipal Landfill Site
DOC Concentration Trending

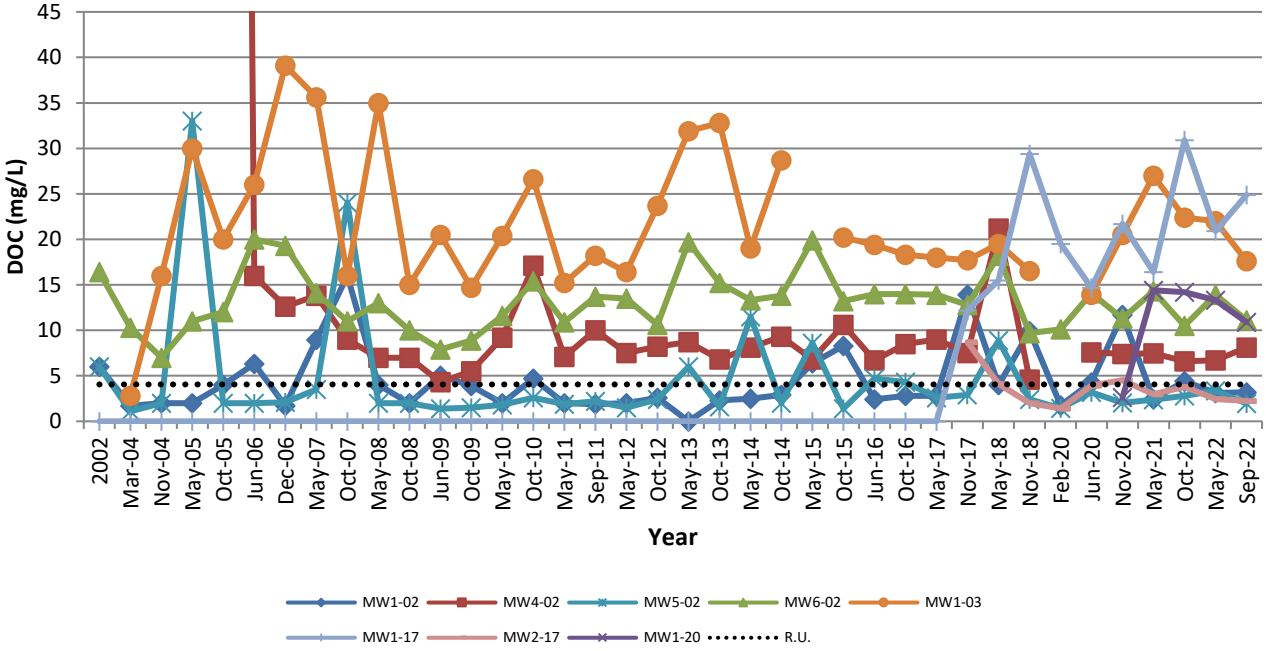


Chart H.5
Town of Blind River Municipal Landfill Site
TDS Concentration Trending

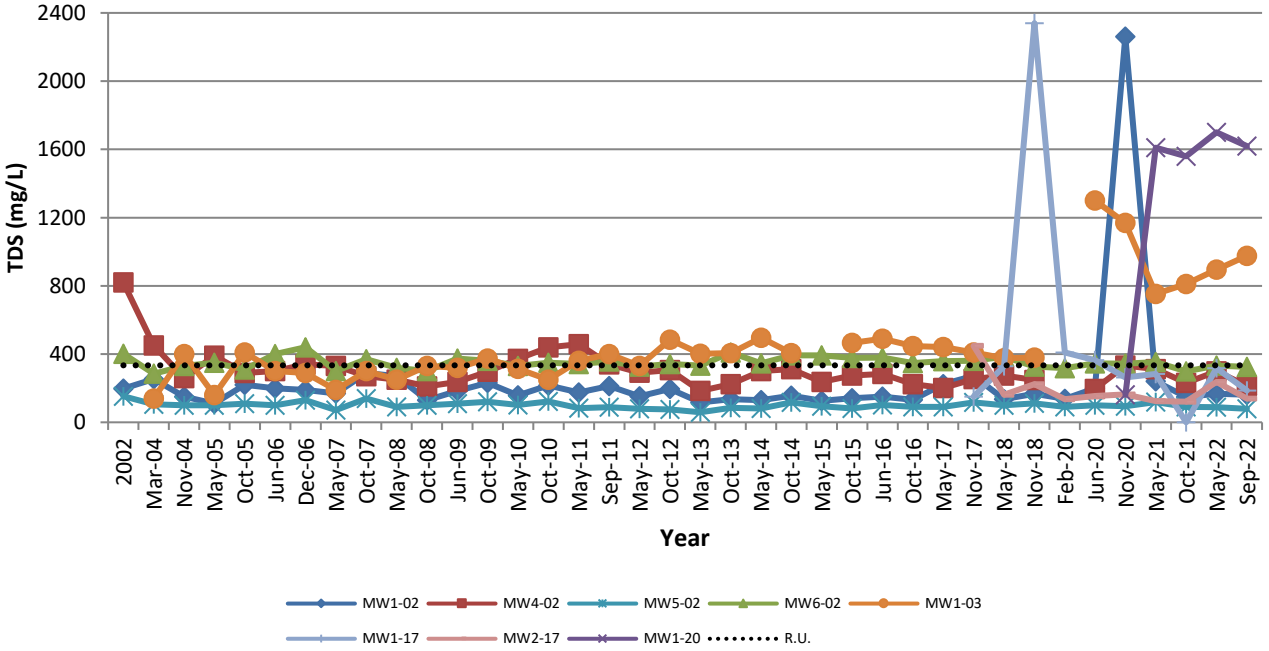
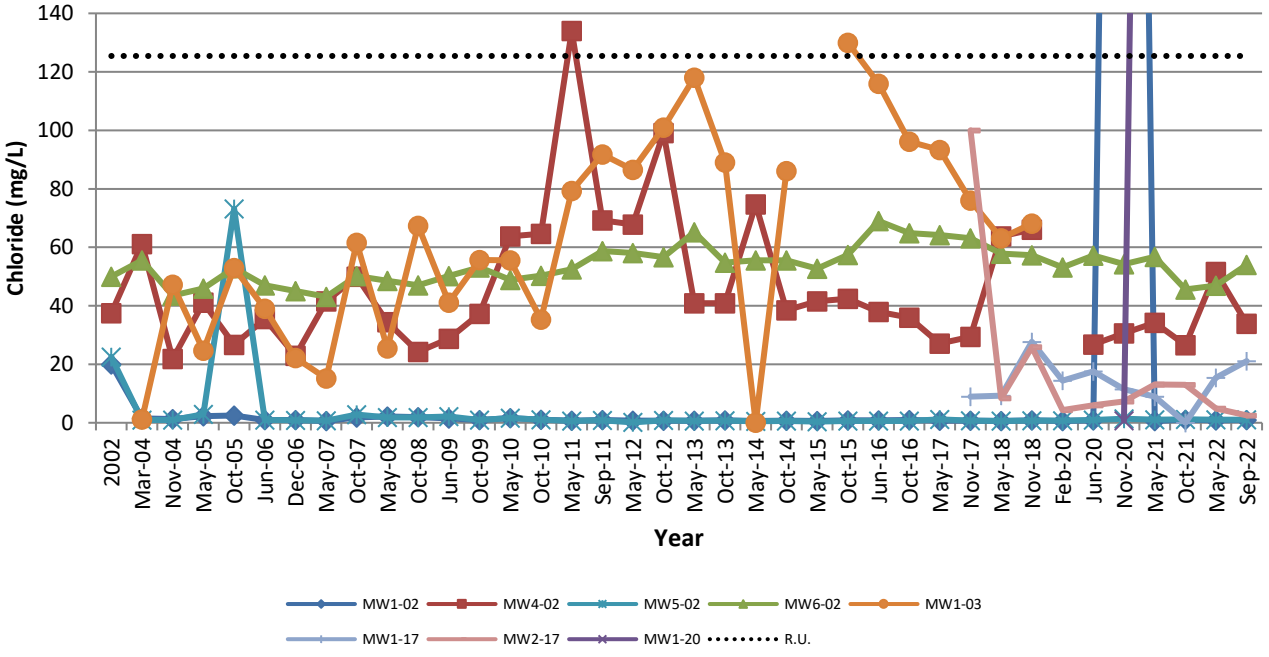


Chart H.6
Town of Blind River Municipal Landfill Site
Chloride Concentration Trending



Surface Water Quality Trending

Charts H.7 - H.10 plot annual concentrations (2 samples per year) of selected parameters at the surface water sampling location. No statistically significant trends appear evident in the data associated with the above-mentioned sampling location.

Chart H.7
Town of Blind River Municipal Landfill Site
Iron Concentration Trending

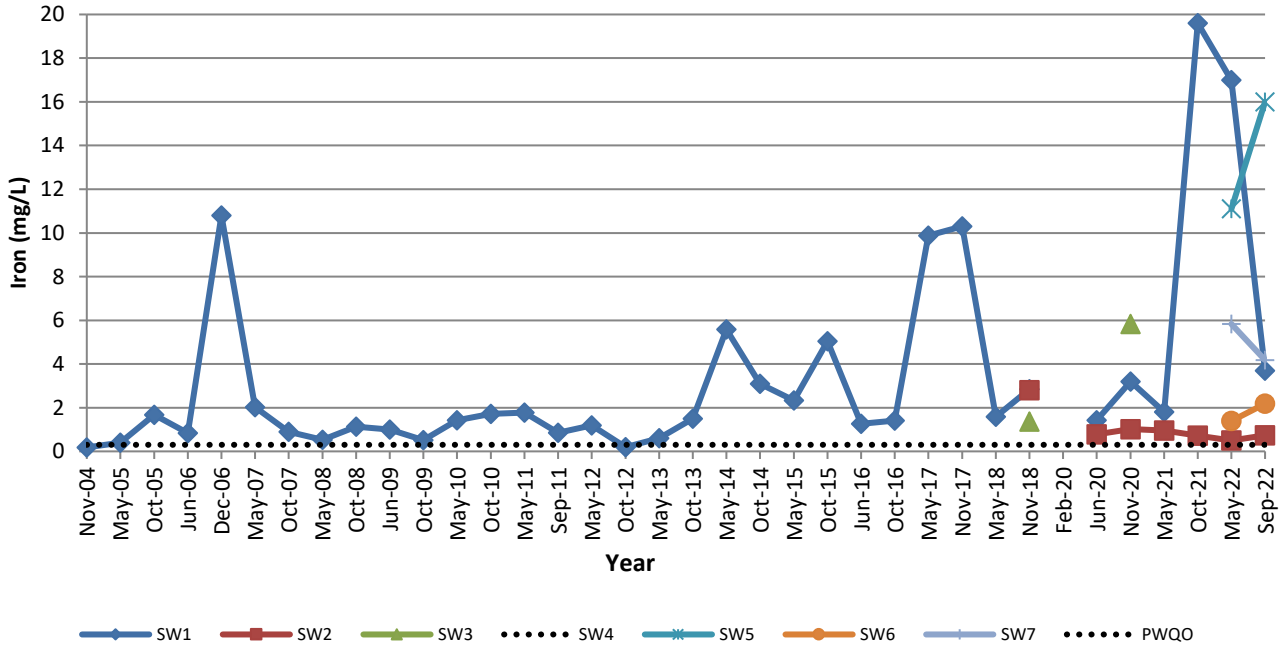


Chart H.8
Town of Blind River Municipal Landfill Site
Phenols Concentration Trending

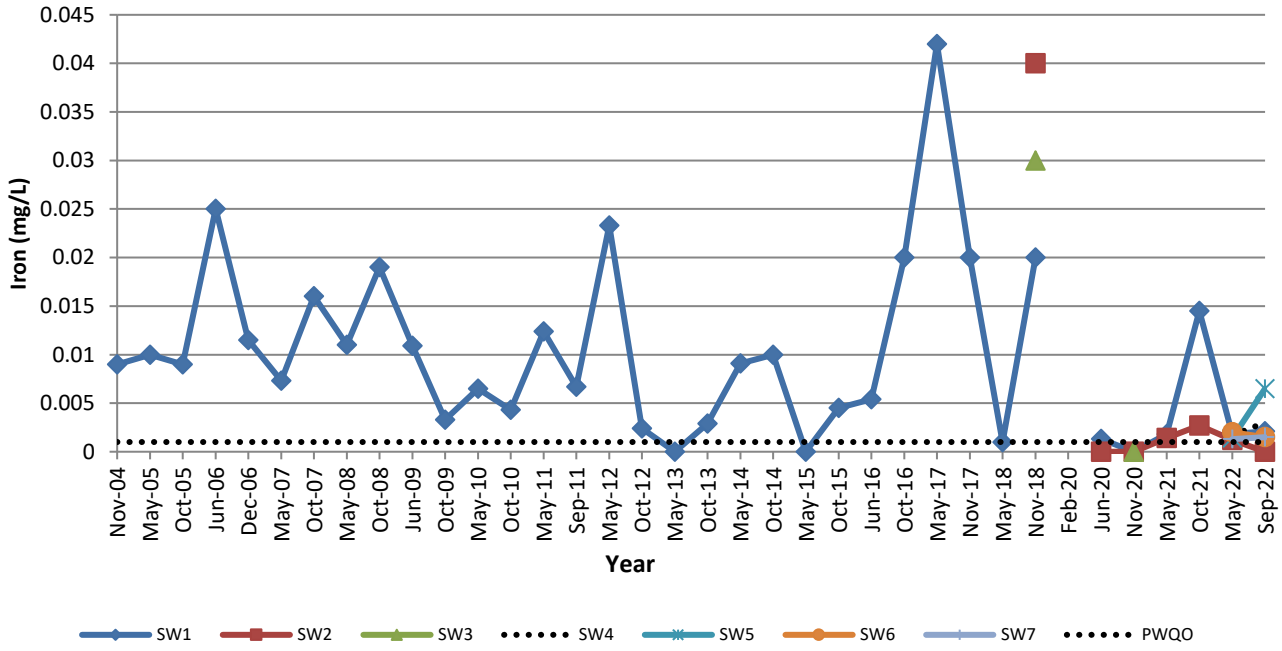


Chart H.9
Town of Blind River Municipal Landfill Site
Chloride Concentration Trending

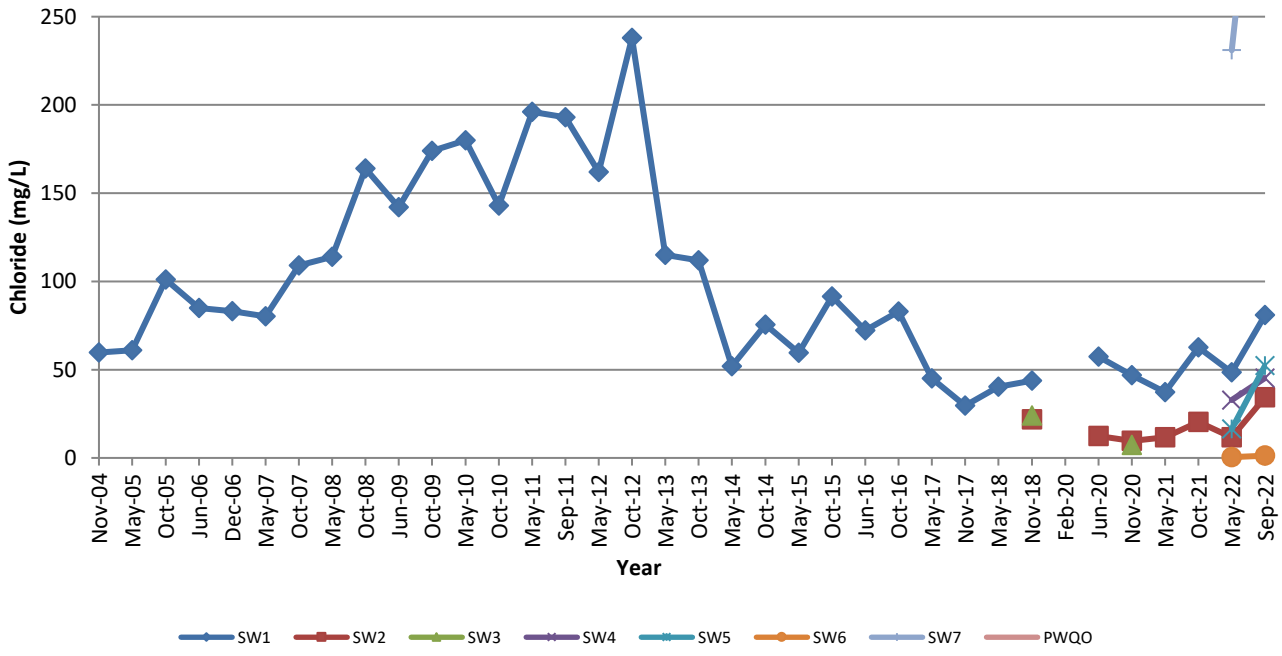
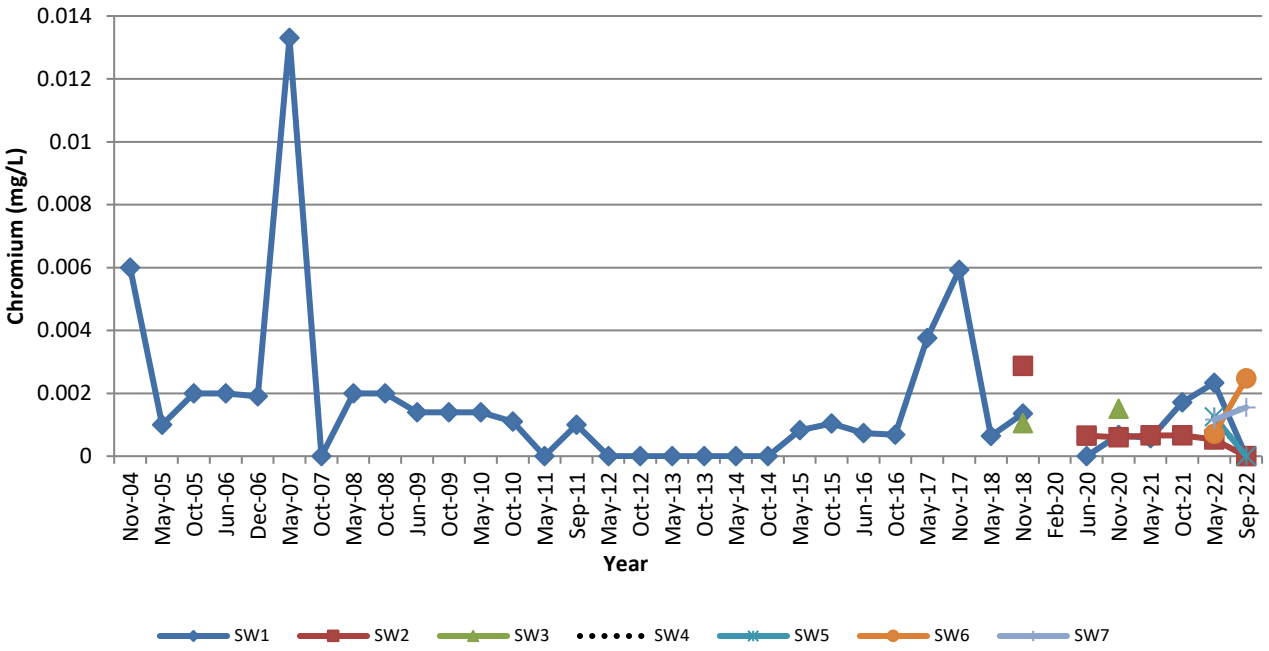


Chart H.10
Town of Blind River Municipal Landfill Site
Chromium Concentration Trending



Appendix I
Site Capacity Calculations

Town of Blind River Municipal Landfill - Site Life Calculation

2022 Annual Monitoring and Operations Report:

- Survey comparisons indicate a fill volume of 3,737m^3 (December 16, 2021 – November 2, 2022)
- There are 322 days between December 16, 2021 and November 2, 2022

Therefore, the average daily disposal rate during this period is: $\frac{3{,}737m^3}{322 \text{ days}} = 11.6m^3/day$

The 2022 annual disposal rate is: $\frac{11.61m^3}{Day} \times 365 \text{ days} = 4{,}237m^3/year$

Remaining capacity as of November 2, 2022 (comparison of final contours): $4{,}891m^3$

When using the annual disposal rate of 4,237m^3/year, the remaining site life of the landfill (as of November 2022) is:

$$= \frac{4{,}891m^3}{4{,}237m^3/year}$$

= **1.15 years**

The remaining site life of the landfill is set to expire approximately 1.15 years after the survey being completed on November 2, 2022 when applying the annual disposal rate.

When applying the average annual disposal rate of 6,549m^3/year, the remaining site life at the landfill is estimated to be approximately:

$$= \frac{4{,}891m^3}{6{,}415m^3/year}$$

= **0.76 years**

The remaining site of the landfill is set to expire approximately 0.76 years after the survey being completed on November 2, 2022 when applying the average annual disposal rate.

Town of Blind River Municipal Landfill – Diversion Rate Calculation

2022 Annual Monitoring and Operations Report:

Total Waste = 1,843 tonnes (provided by the Town)

Total Recyclables = 257.24 tonnes (provided by the Town)

$$\text{Diversion Rate} = \frac{\text{Total Recyclables}}{\text{Total Recyclables + Total Waste}}$$

$$= \frac{257.24}{257.24 + 1{,}843}$$

$$= \mathbf{12.2\%}$$

Appendix J
Monitoring and Screening Checklist

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 (WDS) Name	Town of Blind River Municipal Landfill Site
Location (e.g. street address, lot, concession)	Highway 17, South 1/2 of Lot 7, Concession 1 of Striker Township, District of Algoma
GPS Location (taken within the property boundary at front gate/ front entry)	N 5116641.907 m E 354605.951 m Zone: 17T Lat. 46.187825 Long. -82.884092
Municipality	Blind River
Client and/or Site Owner	Town of Blind River
Monitoring Period (Year)	2022
This Monitoring Report is being submitted under the following:	
Environmental Compliance Approval (ECA) Number (formerly "Certificate of Approval" (C of A)) :	A713870 dated Nov. 26, 1980
Director's Order No.:	N/A
Provincial Officer's Order No.:	N/A

Other:	N/A		
Report Submission Frequency	◉ **Annual** ○ **Other**	Regulation 232/98 "Landfilling Sites" states "(a) within three months after each anniversary of the date on which waste was first accepted at the site, an annual report is prepared respecting the operation of the landfilling site...".	
The site is: **(Operation Status)**	◉ **Open** ○ **Inactive** ○ **Closed**		
Is there an active waste transfer station at the site?	○ **Yes** ◉ **No**		
Does this WDS have a Closure Plan?	◉ **Not yet submitted** ○ **Submitted and under review** ○ **Submitted and approved**		
Total Approved Capacity	N/A	*Units*	Cubic Metres
Maximum Approved Fill Rate		*Units*	
Total Waste Received within Monitoring Period (Year)	3,737	*Units*	Cubic Metres
Total Waste Received within Monitoring Period (Year) *Describe the methodology used to determine this quantity*	Estimated		
Estimated Remaining Capacity	4,891	*Units*	Cubic Metres
Estimated Remaining Capacity *Describe the methodology used to determine this quantity*	Direct Survey (GPS/Total Station)		
Estimated Remaining Capacity *Date Last Determined*	2-Nov-2022		
Non-Hazardous Approved Waste Types	☒ Domestic ☒ Industrial, Commercial & Institutional (IC&I) ☐ Source Separated Organics (Green Bin) ☒ Tires	☐ Contaminated Soil ☐ Wood Waste ☒ Blue Box Material ☐ Processed Organics ☐ Leaf and Yard Waste	☐ Food Processing/Preparation Operations Waste ☐ Hauled Sewage Other:
Subject Waste Approved Waste Classes: Hazardous & Liquid Industrial *(separate waste classes by comma)*	N/A		

Year Site Opened *(enter the Calendar Year only)*	1970	**Current ECA Issue Date**	26-Nov-1980
Is your Site required to submit Financial Assurance?		○ **Yes** ◉ **No**	
Describe how your WDS is designed.		◉ Natural Attenuation only ○ Fully engineered Facility ○ Partially engineered Facility	
Does your Site have an approved Contaminant Attenuation Zone?		○ **Yes** ◉ **No**	
If closed, specify ECA, control or authorizing document closure date:		N/A	
Has the nature of the operations at the site changed during this monitoring period?	○ **Yes** ◉ **No**		
If yes, provide details:			

Have any measurements been taken since the last reporting period that indicate landfill gas volumes have exceeded the MOE limits for subsurface or adjacent buildings? (i.e. exceeded the LEL for methane)	○ Yes ◉ No

Groundwater WDS Verification:

Based on all available information about the site and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The monitoring program continues to effectively characterize site conditions and any groundwater discharges from the site. All monitoring wells are confirmed to be in good condition and are secure:	◉ **Yes** ○ **No**	The Town is currently undergoing consultation with the MECP regarding the Site's trigger Mechanisms Plan that may result in changes to the the currently monitoring program.
2) All groundwater, leachate and landfill gas sampling and monitoring for the monitoring period being reported on was successfully completed as required by ECA 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**
Type Here	Type Here	Select Date

Type Here	Type Here	Select Date
Type Here	Type Here	Select Date

3) a) Some or all groundwater, leachate and landfill gas sampling and monitoring requirements have been established or defined outside of a ministry ECA, 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

4) All field work for groundwater investigations was done in accordance with Standard Operating Procedures (SOP) 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**	
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**	In accordance with direction from the MECP, the Town has initiated the process to formally establish a contaminant attenuation zone (CAZ).
6) The site meets compliance and assessment criteria.	○ **Yes** ◉ **No**	
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**	

1) Is one or more of the following risk reduction practices in place at the site: ***(a)*** **There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/ treatment; or** ***(b)*** **There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or** ***(c)*** **The site meets the following two conditions (typically achieved after 15 years or longer of site operation):** ***i.*** **The site has developed stable leachate mound(s) and stable leachate plume geometry/ concentrations; and** ***ii.*** **Seasonal and annual water levels and water quality fluctuations are well understood.**	◉ **Yes** ○ **No**	**Note which practice(s):**	☐ **(a)** ☒ **(b)** ☐ **(c)**
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	◉ **Yes** ○ **No** ○ **Not Applicable**	Trigger parameters and concentrations were determined for the 2022 monitoring period. See Section 5.6.1 of the annual report.	

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 Environmental Compliance 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:

Annual Report submitted to MECP District in September 2023.

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:**	The Town is currently undergoing consultation with the MECP regarding the Site's trigger Mechanisms Plan that may result in changes to the the currently monitoring program.
◉ **No Changes to site design and operation are recommended**	
○ **The following change(s) to the site design and operation is/are recommended:**	
Name:	Chris Kresin
Seal:	Add Image 

Signature:		**Date:**	Sept 15/23
CEP Contact Information:	Chris Kresin		
Company:	Kresin Engineering Corporation		
Address:	536 Fourth Line East, Sault Ste. Marie, ON P6A 6J8		
Telephone No.:	705-949-4900	Fax No. :	705-949-9965
E-mail Address:	Chris@kresinengineering.ca		
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)	Ponding water (southwest of landfill), Lake Huron

Distance(s)	Ponding water (SW1, SW2, SW3, SW5) = approx. 180m, 330m, 440m, 100m respectively, southwest of current fill area Ponding water (SW4) = approx. 90m southeast of current fill area Ponded water/Westland (SW7) = approx. 1km southwest of fill area access road Lake Huron = approx. 1.25 km directly south of the landfill site

Based on all available information and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The current surface water monitoring program continues to effectively characterize the surface water conditions, and includes data that relates upstream/background and downstream receiving water conditions:	◉ **Yes** ○ **No**	
2) All surface water sampling for the monitoring period being reported was successfully completed in accordance with the ECA or relevant authorizing/control document(s) (if applicable):	◉ **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

3) a) Some or all surface water sampling and monitoring program requirements for the monitoring period have been established outside of a ministry ECA 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

4) All field work for surface water investigations was done in accordance with SOP, 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	N/A

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 on the following page 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. ECA limit, PWQO, background	e.g. X% above PWQO
Phosphorus	Provincial Water Quality Objectives (PWQO)	SW1(2130%/1510%, spring/fall); SW2 (182%/103%, spring/fall); SW4(2050%/1770%, spring/fall); SW5(960%/2550%, spring/fall); SW6(722%/1920%, spring/fall); SW7(990%/5110%, spring/fall)
Chloride	Alt. Assess. Criteria(AAC) CWQG	SW7(28.3%/124.4%, spring/fall) SW7(92.5%/236.7%, spring/fall)
Zinc	PWQO/CWQG	SW1(46%-PWQG,spring);SW1(65%-CWQG,spring)
Un-ionized Ammonia	AAC CWQG	SW1(120.1%/279%, spring/fall); SW4(313%,fall);SW5(124.3%,fall) SW1(1058%/1895%, spring/fall);SW4(317%/2073, spring/fall); SW5(71.8%/1080%, spring/fall)
Boron	PWQG	SW1(215.5%/300%, spring/fall); SW2(90%, fall);SW4(30%/95%, spring/fall);SW5(80%,fall)
Phenols	PWQO	SW1(80%110%,spring/fall);SW2(20%,spring);SW4(70%/200%, spring/fall);SW5(40%/550%,spring/fall,62.5%-CWQG.fall);
Cadmium	PWQO CWQG	SW6(100%/50%,spring/fall);SW7(30%/50%,spring/fall) SW1(2%, spring); SW1(70%,spring)
Lead	PWQO/CWQG AAC	SW1(82%);SW4(128%,fall);SW5(5%,spring);SW6108%,fall) SW4(14%,fall);SW6(4%,fall)
Copper	CWQG	SW1(80%,spring);SW4(25%,spring);SW5(50%,spring);SW6(15%, fall)
Iron	PWQO/CWQG	SW1(5567%/1133%,spring/fall);SW2(66%/147%,spring/fall);SW4(7333%/7833%,spring/fall);SW5(3600%/5233%,spring/fall);SW6(363%/627%,spring/fall);SW7(1843%/1293%,spring/fall)
	AAC	SW1(1600%/270%,spring/fall);SW4(2130%/2280%,spring/fall); SW5(1010%/1500%,spring/fall);SW6(39%/118%,spring/fall);SW7(483%/318%,spring/fall)
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**	Previous surface water quality assessments have stated that leachate appears to be effecting water quality in the ponding water location just southwest of the landfill site.

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**	Since the surface water sampling program began at the Blind River Municipal landfill site in November of 2004, boron, iron and phenols have consistently exceeded PWQO criteria.
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	MW1-20 failed to meet the following criteria: - PWQO for arsenic during the spring/fall sampling events; - PWQO/CWQG/AAC for iron, cadmium, copper, lead and zinc during the spring and fall sampling events; -AAC for chromium during the spring and fall sampling events; -AAC for phosphorus during the spring sampling event; and, - PWQO for phenols during the spring sampling event.
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	◉ **Yes** ○ **No** ○ **Not Applicable**	Trigger parameters and concentrations were determined for the 2022 monitoring period. See Sections 5.6.1 and 5.6.2 of the annual report.

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 Environmental Compliance 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:

Annual Report submitted to MECP District in September 2023.

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:**	

CEP Signature	
Relevant Discipline	B. Sc. (Eng.) - Environmental Engineering, M. Sc. (Eng.) - Water Resources Engineering
Date:	Sept 15/23
CEP Contact Information:	Chris Kresin
Company:	Kresin Engineering Corporation
Address:	536 Fourth Line East, Sault Ste. Marie, ON P6A 6J8
Telephone No.:	705-949-4900
Fax No. :	705-949-9965
E-mail Address:	Chris@kresinengineering.ca

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