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TOWNSHIP OF LEEDS AND THE THOUSAND ISLANDS

Leeds Waste Disposal Site
2020 Annual Monitoring Report

MALROZ
Environmental Scientists & Engineers

ECA No. A442002
File No. 1040-121.00
Submitted: March 2021

Appendix D-Monitoring and Screening Checklist
General Information and Instructions

General Information: The checklist is to be completed, and submitted with the Monitoring Report.
Instructions: A complete checklist consists of:
(a) a completed and signed checklist, including any additional pages of information which can be attached as needed to provide further details where indicated.
(b) completed contact information for the Competent Environmental Practitioner (CEP)
(c) self-declaration that CEP(s) meet(s) the qualifications as set out below and in Section 1.2 of the Technical Guidance Document.

Definition of Groundwater CEP:
For groundwater, the CEP must have expertise in hydrogeology and meet one of the following:
(a) the person holds a licence, limited licence or temporary licence under the *Professional Engineers Act*; or
(b) the person holds a certificate of registration under the *Professional Geoscientists Act, 2000* and is a practicing member, temporary, member or limited member of the Association of Professional Geoscientists of Ontario. O. Reg. 66/08, s. 2..
Definition of Surface water CEP:
A CEP for surface water assessments is a scientist, professional engineer or professional geoscientist as described in (a) and (b) above with demonstrated experience and post-secondary education, either a diploma or degree, in hydrology, aquatic ecology, limnology, aquatic biology, physical geography with specialization in surface water, and/or water resource management.

The type of scientific work that a CEP performs must be consistent with that person's education and experience. If an individual has appropriate training and credentials in both groundwater and surface water and is responsible for both areas of expertise, the CEP may then complete and validate both sections of the checklist.

Monitoring Report and Site Information	
Waste Disposal Site Name	Leeds Waste Disposal Site
Location (e.g. street address, lot, concession)	Lot 11, Concession 3, in the Township of Leeds and the Thousand Islands
GPS Location (taken within the property boundary at front gate/ front entry)	442335.57 N, 761114.93 W
Municipality	Township of Leeds and the Thousand Islands
Client and/or Site Owner	The Corporation of the Township of Leeds and the Thousand Islands
Monitoring Period (Year)	2020
This Monitoring Report is being submitted under the following:	
Environmental Compliance Approval Number:	A442002
Director's Order No.:	NA
Provincial Officer's Order No.:	NA
Other:	NA

Report Submission Frequency	◉ **Annual** ○ **Other**		
The site is: **(Operation Status)**	○ **Open** ○ **Inactive** ◉ **Closed**		
Does your Site have a Total Approved Capacity?	○ **Yes** ◉ **No**		
If yes, please specify Total Approved Capacity		*Units*	Cubic Metres
Does your Site have a Maximum Approved Fill Rate?	○ **Yes** ◉ **No**		
If yes, please specify Maximum Approved Fill Rate	NA	*Units*	
Total Waste Received within Monitoring Period (Year)	NA	*Units*	
Total Waste Received within Monitoring Period (Year) *Methodology*	NA		
Estimated Remaining Capacity	NA	*Units*	
Estimated Remaining Capacity *Methodology*			
Estimated Remaining Capacity *Date Last Determined*	Select Date		
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)*			
Year Site Opened *(enter the Calendar Year only)*		**Current ECA Issue Date**	March 21, 2016
Is your Site required to submit Financial Assurance?		○ **Yes** ◉ **No**	
Describe how your Landfill 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 C of A, control or authorizing document closure date:	Amended ECA A442002 dated March 21, 2016.

Has the nature of the operations at the site changed during this monitoring period?	○ **Yes** ◉ **No**
If yes, provide details:	Type Here
Have any measurements been taken since the last reporting period that indicate landfill gas volumes have exceeded the MOE limits for subsurface or adjacent buildings? (i.e. exceeded the LEL for methane)	○ Yes ◉ No

Groundwater WDS Verification:

Based on all available information about the site and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The monitoring program continues to effectively characterize site conditions and any groundwater discharges from the site. All monitoring wells are confirmed to be in good condition and are secure:	(●) **Yes** ( ) **No**	If no, list exceptions (Type Here):
2) All groundwater, leachate and WDS gas sampling and monitoring for the monitoring period being reported on was successfully completed as required by Certificate(s) of Approval or other relevant authorizing/control document (s):	( ) **Yes** (●) **No** ( ) **Not Applicable**	If no, list exceptions below or attach information.

Groundwater Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**
MW102, MW103, MW104	Not able to obtain complete sample set due to dry conditions, see report	April 2020
MW104	Not able to obtain complete sample set due to dry conditions, see report	November 2020
Type Here	Type Here	Select Date

3) a) Is landfill gas being monitored or controlled at the site?	◉ **Yes** ○ **No**	
If yes to 3(a), please answer the next two questions below.		
b) Have any measurements been taken since the last reporting period that indicate landfill gas is present in the subsurface at levels exceeding criteria established for the site?	○ **Yes** ◉ **No**	
c) Has 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, or MECP concurrence.	◉ **Yes** ○ **No** ○ **Not Applicable**	If no, list exceptions below or attach additional information.

Groundwater Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date
Type Here	Type Here	Select Date

4) All field work for groundwater investigations was done in accordance with standard operating procedures as established/outlined per the Technical Guidance Document (including internal/external QA/QC requirements) (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	◉ **Yes** ○ **No**	See report for details.

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	Additional buffer lands are in the process of being evaluated in discussion with MECP. See report for details.	
6) The site meets compliance and assessment criteria.	○ Yes ◉ No	See previous comment and report for details.	
7) The site continues to perform as anticipated. There have been no unusual trends/ changes in measured leachate and groundwater levels or concentrations.	◉ Yes ○ No	If no, list exceptions and explain reason for increase/change (Type Here):	
1) Is one or more of the following risk reduction practices in place at the site: ***(a)*** **There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/ treatment; or** ***(b)*** **There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or** ***(c)*** **The site meets the following two conditions (typically achieved after 15 years or longer of site operation):** ***i.*** **The site has developed stable leachate mound(s) and stable leachate plume geometry/concentrations; and** ***ii.*** **Seasonal and annual water levels and water quality fluctuations are well understood.**	◉ Yes ○ No	**Note which practice(s):**	☐ **(a)** ☐ **(b)** ☒ **(c)** As discussed in report.
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	◉ Yes ○ No ○ Not Applicable	See report for discussion.	

Groundwater CEP Declaration:

I am a licensed professional Engineer or a registered professional geoscientist in Ontario with expertise in hydrogeology, as defined in Appendix D under Instructions. Where additional expertise was needed to evaluate the site monitoring data, I have relied on individuals who I believe to be experts in the relevant discipline, who have co-signed the compliance monitoring report or monitoring program status report, and who have provided evidence to me of their credentials.
I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed, as deemed appropriate for this Site in my professional judgement, 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 analyzed 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.

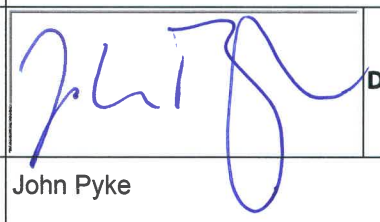
The completion of this Checklist is a requirement of the MECP. As always, we rely upon the MECP to undertake a complete review the report(s) provided regarding the waste disposal site/landfill, and provide their comments and acceptance of our interpretation, conclusions and recommendations. The Checklist should in no way supersede the MECP's responsibility to undertake their complete review of our report(s) to ensure Site compliance with environmental regulations, standards and/or approvals.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:

Select Date

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

○ **No changes to the monitoring program are recommended**	Remove MW104 from the sampling program. See report for discussion.
◉ **The following change(s) to the monitoring program is/are recommended:**	
○ **No Changes to site design and operation are recommended**	Additional buffer lands are being evaluated.
◉ **The following change(s) to the site design and operation is/ are recommended:**	

Name:	John Pyke		
Seal:	Add Image		
Signature:		**Date:**	March 29, 2021
CEP Contact Information:	John Pyke		
Company:	Malroz Engineering Inc.		
Address:	308 Wellington St., 2nd Floor, Kingston ON		
Telephone No.:	613-548-3446 ext. 34	Fax No. :	Type Here
E-mail Address:	pyke@malroz.com		
Co-signers for additional expertise provided:			
Signature:		**Date:**	Select Date
Signature:		**Date:**	Select Date

Surface Water WDS Verification:

Provide the name of surface water body/bodies potentially receiving the WDS effluent and the approximate distance to the waterbody (including the nearest surface water body/bodies to the site):

Name (s)	Unnamed creek, marshland, see report.
Distance(s)	Along eastern property boundary, southeast of the Site, see report.

Based on all available information and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The current surface water monitoring program continues to effectively characterize the surface water conditions, and includes data that relates upstream/background and downstream receiving water conditions:	(●) Yes ( ) No	
2) All surface water sampling for the monitoring period being reported was successfully completed in accordance with the Certificate(s) of Approval or relevant authorizing/control document(s) (if applicable):	( ) Yes (●) No ( ) **Not applicable (No C of A, authorizing / control document applies)**	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**
SW6	Location of sampling station was moved slightly upstream.	April and November 2020
Type Here	Type Here	Select Date

3) a) Some or all surface water sampling and monitoring program requirements for the monitoring period have been established outside of a ministry C of A or authorizing/control document, or MECP concurrence.	○ **Yes** ◉ **No** ○ **Not Applicable**	
b) If yes, all surface water sampling and monitoring identified under 3 (a) was successfully completed in accordance with the established program from the site, including sampling protocols, frequencies, locations and parameters) as developed per the Technical Guidance Document:	○ **Yes** ○ **No** ◉ **Not Applicable**	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**
Type Here	Type Here	Select Date

4) All field work for surface water investigations was done in accordance with standard operating procedures, including internal/external QA/QC requirements, as established/outlined as per the Technical Guidance Document, MOE 2010, or as amended. (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	◉ **Yes** ○ **No**	See report for discussion.

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 exceedences of criteria, based on MECP legislation, regulations, Water Management Policies, Guidelines and Provincial Water Quality Objectives and other assessment criteria (e.g., CWQGs, APVs), as noted in Table A or Table B in the Technical Guidance Document (Section 4.6):	○ **Yes** ◉ **No**

If no, list parameters that exceed criteria outlined above and the amount/percentage of the exceedance as per the table below or provide details in an attachment:

Parameter	Compliance or Assessment Criteria or Background	Amount by which Compliance or Assessment Criteria or Background Exceeded
e.g. Nickel	e.g. C of A limit, PWQO, background	e.g. X% above PWQO
See report for discussion and Table 5.		
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**		see report

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**	If no, list parameters and stations that is outside the expected range. Identify whether parameter concentrations show an increasing trend or are within a high historical range (Type Here)
8) For the monitoring program parameters, does the water quality in the groundwater zones adjacent to surface water receivers exceed assessment or compliance criteria (e.g., PWQOs, CWQGs, or toxicity values for aquatic biota (APVs)):	(●) Yes ( ) No ( ) Not Known ( ) Not Applicable	If yes, provide details and whether remedial measures are necessary (Type Here): See report for discussion. Surface water criteria is used to evaluate potential impacts arising from groundwater leachate discharge to surface water.
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	( ) **Yes** ( ) **No** (●) **Not Applicable**	If yes, list value(s) that are/have been exceeded and follow-up action taken (Type Here): See report for discussion. Trigger in discussion with MECP.

Surface Water CEP Declaration:

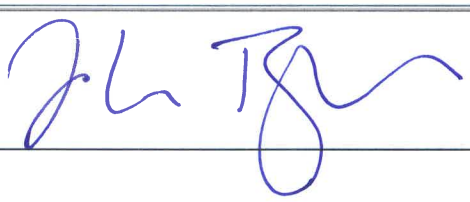
I, the undersigned hereby declare that I am a Competent Environmental Practitioner as defined in Appendix D under Instructions, holding the necessary level of experience and education to design surface water monitoring and sampling programs, conduct appropriate surface water investigations and interpret the related data as it pertains to the site for this monitoring period.
I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed, as deemed appropriate for this Site in my professional judgement, the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MECP, 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.
The completion of this Checklist is a requirement of the MECP. As always, we rely upon the MOE to undertake a complete review the report(s) provided regarding the waste disposal site/landfill, and provide their comments and acceptance of our interpretation, conclusions and recommendations. This Checklist should in no way supersede the MECP responsibility to undertake their complete review of our report(s) to ensure compliance with environmental regulations, standards and approvals.
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:

Select Date

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

○ **No Changes to the monitoring program are recommended**	Move surface water station SW6 upstream. See report for discussion.
◉ **The following change(s) to the monitoring program is/are recommended:**	
◉ **No changes to the site design and operation are recommended**	Type Here
○ **The following change(s) to the site design and operation is/are recommended:**	

CEP Signature	
Relevant Discipline	Geoscientist with relevant experience and training.
Date:	March 29, 2021
CEP Contact Information:	John Pyke
Company:	Malroz Engineering Inc.
Address:	308 Wellington St., 2nd Floor, Kingston ON
Telephone No.:	613-548-3446 ext. 34
Fax No. :	Type Here
E-mail Address:	pyke@malroz.com

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Notice To Reader

This document has been prepared by Malroz Engineering Inc. (Malroz) on behalf of the Township of Leeds and the Thousand Islands (TLTI), in fulfilment of Condition 2(5) of Amended Environmental Compliance Approval No. A442002.

Malroz has relied upon TLTI staff to provide historical data upon which current data interpretation and the conceptual understanding of the site are partially based. Malroz accepts no responsibility for the integrity of the data provided by TLTI or for missing data. Any third-party use or reliance of this report, or decisions made based on this report, are the responsibility of the third party. Malroz accepts no responsibility for damages suffered by any third party as a result of decisions made or actions taken based on the contents of this report.

This document has been prepared for TLTI for submission to the Ministry of Environment, Conservation and Parks (MECP) as required by the ECA. Unauthorized re-use of this document for any other purpose, or by third parties without the express written consent of Malroz shall be at such party's sole risk.

This page is an integral part of this document and must remain with it at all times.

Respectfully Submitted,

MALROZ ENGINEERING INC.

PROFESSIONAL GEOSCIENTIST
JOHN ROBERT PYKE
PRACTISING MEMBER
1855
ONTARIO

for per: Camille Malcolm, M.Sc.
Environmental Scientist

and: John Pyke, P.Geo.,
Project Manager

Table of Contents

1.0 Introduction

The Leeds waste disposal site (the Site) operates under Amended Environmental Compliance Approval (ECA) No. A442002 issued by the Ministry of Environment and Climate Change (MOECC), now the Ministry of Environment, Conservation and Parks (MECP), on March 21, 2016 (see Appendix C). The Site is located at the eastern end of Pelow Road, north of Gananoque, in the Township of Leeds and the Thousand Islands (TLTI) (Figure 1, Appendix A). In accordance with Section 2 (5) of the ECA, an Annual Monitoring Report (AMR) is to be submitted to the District Manager by March 31 of the year following the period being reported upon.

Malroz was retained by the TLTI to conduct the semi-annual monitoring of the groundwater and surface water at the Site. This document presents the methodology, results and interpretation related to the monitoring and sampling program conducted at the Site in 2020. This report was prepared on behalf of the TLTI, using data collected by Malroz and available information provided by TLTI staff.

1.1 Ownership and Key Personnel

The Site is owned and maintained by the Corporation of the TLTI. Key Contacts for the Site are as follows:

Municipal Contact
David Holliday
Director of Operations and Infrastructure
1233 Prince Street, P.O. Box 280
Lansdowne, Ontario, K0E 1L0
613-659-2415 ext. 211
directoroperations@townshipleeds.on.ca

Environmental Professional Contact
Mr. John Pyke, P.Geo.
Project Manager
308 Wellington Street
Kingston, Ontario, K7K 7A8
613-548-3446 ext. 34
pyke@malroz.com

2.0 Background

The geology, hydrogeology, physiography, and hydrology of the Site are described in the sections that follow. The descriptions provided are a summary of the investigations completed of the Site by Malroz, various previous consultants, and TLTI staff.

2.1 Description of the Waste Disposal Site

The Leeds Waste Disposal Site (WDS) is located approximately 13 km west of Lansdowne on Lot 11, Concession 3, in the TLTI (former Township of Front of Lansdowne) (Figure 1, Appendix A). Geodetic coordinates for the centre of the Site as follows (2015 AMR):

Zone:	NAD 83, 18T
Easting:	405419 m (+/- 10 m)
Northing:	4916242 m (+/- 10 m)

The Site operates under Environmental Compliance Approval (ECA) No. A442002 which permitted a 0.8-hectare landfilling area within a total Site area of 1.7 hectares. The Site was closed in December 1991, and details of the closure plan are outlined in the 1991 Report by Water and Earth Science Associates (WESA). At the time of closure, the Leeds WDS was a recognized ‘overfill situation’, and the ECA was amended to recognize the actual waste fill area of 1.5 hectares.

According to the 2015 AMR, TLTI established an exclusion zone of 500 metres around the Site to ensure that future developments do not source potentially impacted groundwater for drinking water. We understand that there are pre-existing wells within this exclusionary zone.

2.2 Geological Setting

Based on geological maps of the region, the geological setting at the Site consists of metasedimentary quartzite and/or quartzo-feldspathic rocks and a Precambrian basement granite (Jupe and Jackson, 1963). Precambrian granite may be exposed to the West of the Site. A dike and linear structural feature (either a fault or fold axis) are located just West of the Site (Jupe and Jackson, 1963). Borehole logs and previous descriptions of the geology at the Site suggest that the overburden is shallow and consists of 1.2 to 2.6 m of silty clay (Appendix J).

2.3 Hydrogeological Setting

Based on Malroz site observations and descriptions by previous consultants, the hydrogeological setting at the Site is characterized by a bedrock aquifer and areas of perched water in the overburden. It is possible that groundwater within the bedrock

aquifer is discharging at or near the Site, based on artesian conditions observed historically during monitoring of a former well just North of the Site's eastern boundary (well 89-5).

A small creek is located along the eastern property boundary of the Site. This creek flows southward into a marsh located approximately 100 m south of the Site, just beyond SW3. The marsh drains into a small tributary to Sucker Brook. The tributary flows southwestwards and is dammed just before SW6 (Figure 2, Appendix A). A beaver dam was formerly located along the tributary, just upstream from SW6 (Malroz 2019). This beaver dam has since been removed and an earthen dam remains in its place (photo 5, Appendix I). The origin of soil within the dam is unknown.

2.4 MECP Correspondence

On August 11, 2020, the MECP surface water scientist, Dana Cruiskshank, issued a memorandum to Nathalie Matthews, the MECP senior environmental officer. The memorandum was regarding the surface water components of the 2019 Annual Report for the Site. This document is provided in Appendix E. The following summarizes the contents of the memo:

- The reviewer calculated the average concentrations of historical data up to and including 2018 and compared them to the 2019 results. Percent differences of greater than 25% were highlighted. This analysis concluded that chemistry results from SW1 and SW7 were elevated in 2019.
- The leeds landfill is having an impact on water quality in the tributary south of the landfill however downgradient impacts are minimized due to the ephemeral nature of the stream.
- The reviewer agreed that attenuation between SW1 and SW3 is likely occurring.
- The reviewer suggested that the higher concentrations observed at SW5 is likely due to wetland processes and/or anthropogenic influences related to the neighbouring property use, and not the result of groundwater discharge.
- Exceedances at SW6 is likely due to ponding behind the beaver dam, and are not believed to be causing harm to aquatic life.

The memo also provided the following recommendations:

- Maintain spring/fall frequency in order to provide more robust data, given the seasonal variability of water quality and flow in the adjacent stream.
- The list of parameters included in the current sampling program may be reduced.
- Sampling locations SW7 and SW6 could be removed from the sampling program and instead included in a contingency plan, if a trigger mechanism is developed at

SW5. This proposal should be submitted to the MECP prior to the 2021 field program.
- The proposed staff gauge at SW1 and SW3 should be installed at the site from spring to the end of October.
- The surface water flow relationship between SW1 and SW3 should be examined in 2021: are they dependent? Or influenced by groundwater? If the latter, it is possible that SW2 may also be removed from the monitoring program.

Malroz provided a response to the surface water reviews comments in an email on October 20, 2020. No MECP groundwater review of the 2019 AMR has been received at this time.

In October 2020, Malroz submitted a proposed action plan for Leeds Landfill to resolve past B-7 compliance issues at the site (Appendix E). Among other items, the plan proposed the following:
- Purchase 30 metres of land around the WDS as a buffer, and purchase or obtain groundwater rights to lands located to the south of the landfill that will serve as a (CAZ);
- Following purchase and registration of lands, install a culvert and place additional capping material along the eastern extent of the landfill to mitigate potential leachate impacts to the stream;
- Construct a rock check dam along the surface water course to reduce flow rate in the stream and address the issue of iron precipitate;
- Discontinue groundwater monitoring at the site; and
- Continue surface water monitoring as described the by the ECA and in correspondence with the MECP, for 2 years following implementation of proposed action plan. After this time, re-assess the need for continued monitoring and sampling at the site.

On January 8, 2021, Malroz received a response to the proposed action plan via email from the MECP (included in Appendix E). In their response, the MECP approved the proposed buffer and CAZ. They also recommended against a reduction of groundwater monitoring at this time, citing insufficient historical datasets.

2.5 Complaints

The municipality reports no complaints were received in 2020 regarding the closed WDS.

3.0 Description of Monitoring Program

The groundwater and surface water monitoring events were conducted on April 23 and November 16, 2020. The locations of active sampling stations and wells are shown in

Figure 2 (Appendix A). The groundwater and surface water program was conducted in accordance with the monitoring program established by Malroz and submitted to the MECP on (November 2, 2018) pursuant to Section 3 (2) of the site's ECA (Appendix C).

3.1 Groundwater Monitoring Program

The groundwater program undertaken in 2020, including the suite of analyses performed, is presented in Appendix D.

Prior to sampling, each well was monitored for depth to water, depth to bottom, and combustible gas vapours. During purging of groundwater, visual and olfactory observations were noted and recorded. Results of the groundwater monitoring are presented in Table 1 (Appendix B).

Groundwater sampling was conducted using dedicated waterra tubing equipped with a foot-valve. Prior to sampling, 3 to 5 well volumes of groundwater were purged from each well or, wells were pumped dry 3 times. At the completion of purging, water quality was monitored using a Horiba multi-parameter instrument for the following parameters: temperature, pH, dissolved oxygen, oxidizing/reducing potential, conductivity, and turbidity. Samples intended for metals analyses were field-filtered using a disposable 0.45-micron inline filter. Samples were collected into new laboratory prepared sample bottles and submitted to Caduceon Environmental Laboratories (Caduceon) for analyses.

3.2 Surface Water Monitoring Program

The surface water program undertaken in 2020, including the suite of analyses performed, is presented in Appendix D. The surface water monitoring program is comprised of six sampling stations: SW1, SW2, SW3, SW5, SW6, and SW7 (Figure 2, Appendix A). Surface water station locations (UTMs) and observations are summarized in Table 5 (Appendix B).

Historically, an additional surface water station (SW4), located upstream of SW2, was used to characterize the background surface water conditions at the site. This station was removed from the sampling program due to dry conditions, although Malroz has recommended its reinstatement in the past. Surface water station SW2 was not recommended for background characterization use due to concerns related to potential impact from groundwater discharge (Day, 2015). The location of the background surface water station has been discussed in greater detail in previous reports (refer to 2018 AMR and subsequent MECP communication). Station SW7 has recently been identified as a suitable background surface water station (refer to 2019 AMR) and used to characterize the background water quality.

3.3 Data Quality Evaluation

Caduceon was commissioned to undertake the water analyses. Caduceon is a Canadian Association for Laboratory Accreditation (CALA) certified laboratory that uses industry recognized methods to conduct laboratory analyses.

Malroz completed field activities in accordance with standard operating protocols to ensure precise sample collection and reduce the risk of cross-contamination.

3.4 Site Inspection

Site inspections are conducted twice per year during monitoring events. Copies of the site inspections completed by Malroz staff in 2020 are included in Appendix F. Site photographs of sampling locations are presented in Appendix I.

The following observations were noted by Malroz staff in 2020:

- Orange staining and sheen was observed north of SW1 during the spring sampling event.
- Part of the northern extent of the landfill was not enclosed by a fence.
- Litter (old furniture) was dumped outside the entrance gate.

The observations of illegal dumping were reported to the TLTI via email on November 19, 2020.

3.5 Well Inspection

A well inspection was undertaken by Malroz during the 2020 sampling events. The well inspection included a visual inspection of accessible portions of the well piezometer, monument casing, cap, lock, and well seal. Wells were assigned one of the following conditions:

Poor – well integrity is compromised and the well requires repair
Fair – exhibits some minor deficiencies, however well integrity is not compromised.
Good – the well is in good condition with no obvious signs of damage.

Results of the well inspection are presented in Table 2, Appendix B. No well repairs were noted as necessary. Based on 2020 observations, the wells monitored at the site are in compliance with O. Reg. 903/90.

3.6 Deviations from the Monitoring Plan

The following parameters were not analyzed in the groundwater and surface water programs due to insufficient water or dry conditions:

- MW103: biological oxygen demand (BOD), phenols, o-phosphate, total suspended solids (TSS), mercury (fall).
- MW104: no samples submitted (spring, fall).
- MW102: alkalinity, ammonia, BOD, chemical oxygen demand (COD), conductivity, hardness, pH, o-phosphate, TSS, total dissolved solids (TDS), total phosphorous, total kjeldahl nitrogen (TKN), phenolics, chloride, n-nitrate, n-nitrite, sulphate, mercury (fall). Un-ionized ammonia could not be calculated.
- SW6 location was moved up stream of the dam due to dry conditions downstream (spring and fall).

Based on observations made during field activities over the past three years, dry conditions are prevalent and may present a recurring challenge to the sampling program at the Site.

Samples from monitoring well 08-1 and MW101 are analyzed for VOCs every 5 years from 08-1 and MW101. VOCs were last analyzed at the aforementioned wells in 2018 and are scheduled to be analyzed again in 2023.

4.0 Groundwater Monitoring Program Results

Groundwater elevations show that groundwater flows southeast across the Site (Figure 3, Appendix A). Considering the surrounding bedrock outcrops and intermittent dry conditions in MW101, MW102, MW103, and MW104, and in several surface water stations, it is possible that groundwater in the vicinity of the landfill is perched. Groundwater is anticipated to discharge to the surface water, consistent with the previously reported conceptual site model.

Monitoring of well headspace for combustible vapours was conducted during the April and November events using an Eagle 2 RKI with optional methane elimination mode. Methane concentrations were calculated as the difference between full gas and methane elimination mode, and were below detection levels of the lower explosive limit (LEL).

4.1 Compliance Criteria

The groundwater quality at the Site is characterized by five wells: 08-1, MW101, MW102, MW103, and MW104 (Figure 2, Appendix A). Background is characterized by MW102. The following parameters were selected in 2019 as leachate indicators for the Leeds WDS: alkalinity, chloride, nitrate, sulphate, and boron. The method used to select these LIPs is detailed in the 2019 AMR. The MECP (2020 correspondence) requested that the following parameters be added to LIPs at the site: ammonia, iron, manganese, and copper.

4.2 Groundwater Quality

Results for the 2020 groundwater analyses are presented in Table 3 (Appendix B). Results have been compared to relevant standards and observed exceedances are highlighted to allow for visual interpretation. Laboratory certificates of analysis are provided in Appendix G.

Results from the 2020 sampling events show the following parameters exceed the ODWS criteria at one or more sampled well location(s): alkalinity, DOC, hardness, TDS, aluminum, iron, and manganese (Table 3, Appendix B).

Results of LIPs suggest leachate influence at monitoring wells MW101 and 08-1, due to elevated levels of alkalinity, chloride, boron, and sulphate during the spring event when compared to background. Background conditions, with the exception of boron, were not available during the fall event due to dry conditions at MW102, however, results from MW101 and 08-1 continue to be elevated compared to spring results in MW102 indicating potential discharge of leachate to the tributary. This is consistent with results from the past year(s) (refer to historic chemistry tables provided in Appendix H).

No samples were available from downgradient monitoring well MW104 due to dry conditions during both the spring and fall. Dry conditions at this well were also noted in 2018 and 2019, which prevented staff from obtaining a full sample set or from sampling altogether. Given that monitoring well MW104 is set on bedrock, very little groundwater, if any, is inferred to be present in this area. We recommend considering removing this well from the sampling program and to proceed with abandonment.

LIPs at downgradient monitoring well MW103 were generally consistent with the background concentrations for the LIPs, with the following exceptions:

- Boron concentrations were well below those reported in the leachate impacted wells (MW101 and 08-1) by one to two degrees of magnitude, and below concentration levels measured at this location in 2018 and 2019. Moreover, it is possible that the source of boron is natural, originating in clay sediments[1] or the regional geology, rather than indicative of leachate.
- Sulphate at MW103 was slightly elevated at the downgradient well MW103, although concentrations remain well below those detected in the leachate wells, and an order of magnitude below the ODWS. Sulphate concentrations at MW103 do not represent significant leachate impacts and appear stable based on a review of results form the past 2 years.

[1] Boron is known to be enriched in clays (Kot, 2009)

- Chloride concentrations were marginally above background concentrations in the spring but remained an order of magnitude below chloride concentrations in the leachate well and returned to comparable levels in the fall.

Therefore, monitoring well MW103 is considered to have little to no leachate impact.

5.0 Surface Water Monitoring Program Results

Surface water run-off flows south-eastwards off the waste mound and into ditches located along the eastern property boundary. Both ditches converge at the southeast corner of the property and flow southwards into the marshy area south of the Site. The marsh drains into a small creek (believed to be a tributary to Sucker Brook) which is located in the neighbouring farmer's field and which flows to the southwest. The water quality of this creek is represented by SW7 and the creek is dammed at SW6 (Figure 2, Appendix A).

A logger was installed near surface water sample location SW1 on July 30, 2019 and was programmed to collect water level measurements at 20-minute intervals. The intention of installing the logger was to evaluate water flow in the creek. The installed logger recorded water level data between November 11, 2019 and November 7, 2020. Based on the logger information, dry periods were observed in June through August 2020 (Figure 5, Appendix A). Water levels were reported at near dry conditions (<0.1m) approximately 70% of the period during the which the logger was deployed.

5.1 Compliance Criteria

Surface water results are compared to the Provincial Water Quality Objectives, the Canadian Water Quality Guidelines (Table B), and the Table A: Assessment Criteria for Waste Disposal Sites (MOE 2010).

The following leachate indicator parameters (LIPs) have been selected for the Site: alkalinity, chloride, nitrate, boron, and sulphate. The MECP (2020 correspondence) requested that the following parameters be added to LIPs at the site: ammonia, iron, manganese, and copper. Given that iron is frequently present in the background, we believe this parameter should be avoided as a LIP (a rationale was provided for the exclusion of iron in the 2018 AMR: Table 5). Ammonia levels may be impacted by nearby agricultural activities (mainly, the neighbouring grazing pasture) and nitrogen fixation processes in the marsh (CCME, 2010). We agree to adding manganese and copper to the list of LIPs for the site. The intent of the list of LIPs is to determine impact to the stream, a process which can be obfuscated by a large number of parameters. It should be noted that narrowing the focus of LIPs does not negate the need for compliance evaluation of all parameters.

5.2 Surface Water Quality

The surface water results are presented in Table 4 (Appendix B). Laboratory certificates of analysis are provided in Appendix G. Results from SW7 in 2020 indicate background loading of iron, dissolved aluminium (Table 4, Appendix B).

The following parameters exceed the PWQO at one or more location during one or more sampling events in 2020: phenols, total phosphorous, aluminum, iron, zinc, and dissolved oxygen (DO). Historical trends for the main LIPs at the site are presented in Figure 4 (a-e), Appendix A. Historical data tables are provided in Appendix H. The following summarizes the LIP trend results:

- Elevated alkalinity is present at SW1 and SW3 (see Figure 4a and 4b: Note that three potential anomalous data points at SW1 are omitted from the Figure 4b graph so as to allow for clearer examination of alkalinity trend). With the exception of background SW7, the alkalinity results from the remaining surface water stations do not appear to have degraded the natural quality of the stream by more than 25% (as indicated by SW1). While there is considerable variation, the range of variability has remained relatively consistent over the past 5 years.
- Chloride concentrations were generally consistent between the SW stations in 2020 and remain marginally above the detection limits, and below the Table A: Assessment Criteria and Table B CWQGs (Figure 4c, Appendix A).
- Boron concentrations were slightly elevated at downgradient surface water stations (SW5 and SW6). However, the concentration of boron at downgradient tested stations is within one degree of magnitude of the background level (SW7) and remains well below the PWQO (Figure 4d, Appendix A).
- Sulphate concentrations were slightly elevated at SW5 and SW6 in the fall when compared to background (SW7). There is a historic trend of concentration increase between spring and fall events each year (Figure 4e, Appendix A). Concentrations are well below the Table A: Assessment Criteria (MOE 2010).
- Nitrate levels at tested surface water stations were similar to background levels in the spring and below detection at tested stations during the fall event.
- Ammonia levels are slightly elevated at SW1 and SW3 in the spring event. These concentrations decreased to below detection in the fall.
- Iron concentrations are variable at the Site. Iron concentrations exceeded the PWQO at SW7 (background) in the spring and approached the PWQO in the fall. Iron appears elevated at surface water stations SW1 and SW6 in the spring, and SW1, SW2, SW3, SW5, and SW6 in the fall when compared to background (SW7). Iron concentrations generally appear elevated in the fall as loading of the stream at SW1 is apparent. Results from all stations sampled in 2020 are within the historic range for background station SW7.

- Copper is slightly elevated at tested stations when compared to background station SW7. However, results remain within the historic range for results at SW7 and well below the PWQO.
- Manganese was elevated at SW5 in the fall compared to background and the other stations. This result is well below historical results of manganese at SW1 and is therefore suggestive of continued temporal attenuation or potential inputs from the wetland upgradient from SW5.

While chemistry at SW1, SW3, and SW5 suggests some leachate impact, attenuation appears to be occurring further downstream (SW6). Results from 2020 suggest that there is minor leachate impact, however, these impacts appear intermittent in nature and may also include influences from the geologic setting of the area. Overall, the concentrations of LIPs remain below the historical highs (refer to Appendix H).

6.0 Guideline B-7 Assessment

The reasonable use policy (RUP) provides a mechanism to calculate the reasonable use limits (RUL) for the Site using historical data from background well MW102 (and former background well 89-1), as per Ministry Guideline B-7. A number of groundwater RUL exceedances were reported for monitoring wells MW101, 08-1, and MW103 as presented in Table 3 (Appendix A). The site is inferred to be out of compliance with the B-7 guideline, however, groundwater is inferred to discharge to surface water and compliance is largely measured via surface water monitoring.

6.1 B-7 Action Plan

As discussed in Section 2.4, the Township has proposed a B-7 action plan to mitigate non-compliance with the RUP, which includes purchase of lands leading up to and including the tributary as a contaminant attenuation zone (CAZ). It is our opinion that the steps outlined in the submitted action plan will help resolve B-7 compliance issues at the site. Further coordination with the MECP regarding the Leeds action plan is planned for 2021.

7.0 Conclusions and Recommendations

The Leeds WDS closed in 1991 and has an ongoing surface water and groundwater monitoring program. Groundwater at the site is anticipated to discharge to surface water at the site, with surface water being the primary compliance monitoring media. A B-7 action plan was submitted in 2020 to address groundwater and surface water compliance issues. We recommend further discussion of the action plan in conjunction with this reporting cycle, as suggested by the MECP.

Groundwater chemistry results showed evidence of leachate at the southern and eastern extents of the waste mound. Since the groundwater is interpreted to discharge to surface

south and east of the WDS, there is minimal risk to groundwater water quality beyond the discharge locations.

Surface water chemistry results suggest that there is potential leachate impact to the surface water east and south of the waste mound. However, results also suggest attenuation within the current monitoring network is occurring. Compliance concentrations were met at SW6, suggesting that the landfill has little to no adverse affect to downstream surface waterways. The alkalinity exceedance in the spring of 2020 at SW6 is not believed to have caused adverse effects as it is an increase compared to the background whereas the PWQO is concerned mainly with decreases of more than 25% of the background level. Alkalinity at SW6 met compliance criteria in fall 2020.

The following recommendations are provided for the Leeds WDS monitoring program:

1. Review the B7 Action Plan with the MECP and determine next steps for implementation.
2. Purchase land to form a CAZ which extends from the landfill's southern and eastern extent up to surface water station SW3.
3. Considering the site has been closed since 1991, evaluate feasibility and options for full closure of the site with the purchase of the CAZ.
4. Move surface water station SW6 upstream of soil berm (formerly the beaver dam).
5. Remove MW104 from the sampling program due to continued dry conditions that prevent sampling. We recommend the abandonment of MW104 in accordance with O.Reg. 903.
6. Submit a request to the MECP director regarding a revision to the monitoring plan per the MECP correspondence (section 2.4).

8.0 References

Andrew Day. 2015. Draft Annual Monitoring Report (ECA No. 442002), Township of Leeds and the Thousand Islands, March 2016.

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Jupe, D.F., and B. Jackson. 1963. Map 2054 Gananoque Area. *Ontario Department of Mines*, 1:126,720.

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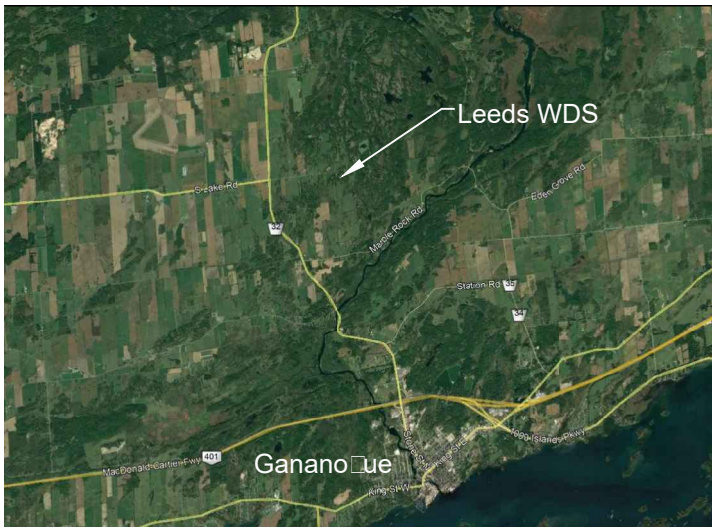
Ontario Drinking Water Standards (ODWS) from Ontario Regulation 169/03 of the Safe Drinking Water Act (2002). Last amendment: O. Reg. 373/15.

Ministry of Environment and Energy (1994). Water Management Policies & Guidelines: Provincial Water Quality Objectives (PWQO).

Ministry of the Environment (November 2010). Technical Guidance Document: Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water. .

Appendix A
Figures



Note: figure based on Malroz field observations and Google Earth imagery

Site Location Plan

2020 Annual Monitoring Report
Leeds WDS - A442002
Pelow Road, Township of Leeds and the Thousand Islands, Ontario

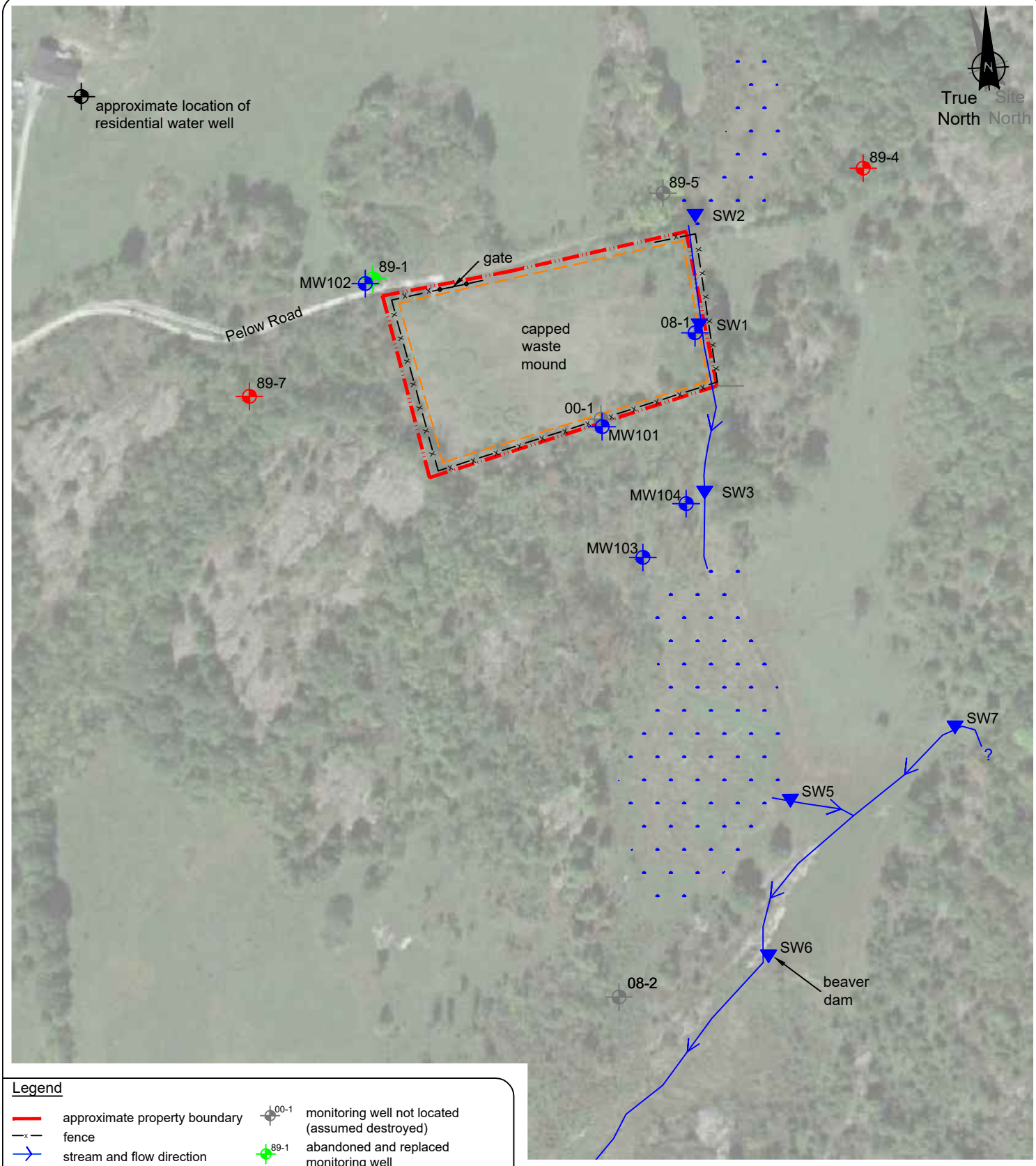
File: 1040-121.00

Figure 1

Approx. Scale (m)
0 125

Rev	Date	Description	By	Chkd
0	21/03/30	issued in final	MW	□MP

MALROZ



Legend

- approximate property boundary
- fence
- stream and flow direction
- area of capped former waste mound
- 08-2 existing residential well
- MW101 monitoring well installed by Malroz (2018)
- 00-1 monitoring well not located (assumed destroyed)
- 89-1 abandoned and replaced monitoring well
- 89-7 abandoned monitoring well
- low lying area
- SW1 surface water station

Note: figure based on Malroz field observations and Google Earth imagery

Site Layout

2020 Annual Monitoring Report
Leeds WDS - A442002
Pelow Road, Township of Leeds and the Thousand Islands, Ontario

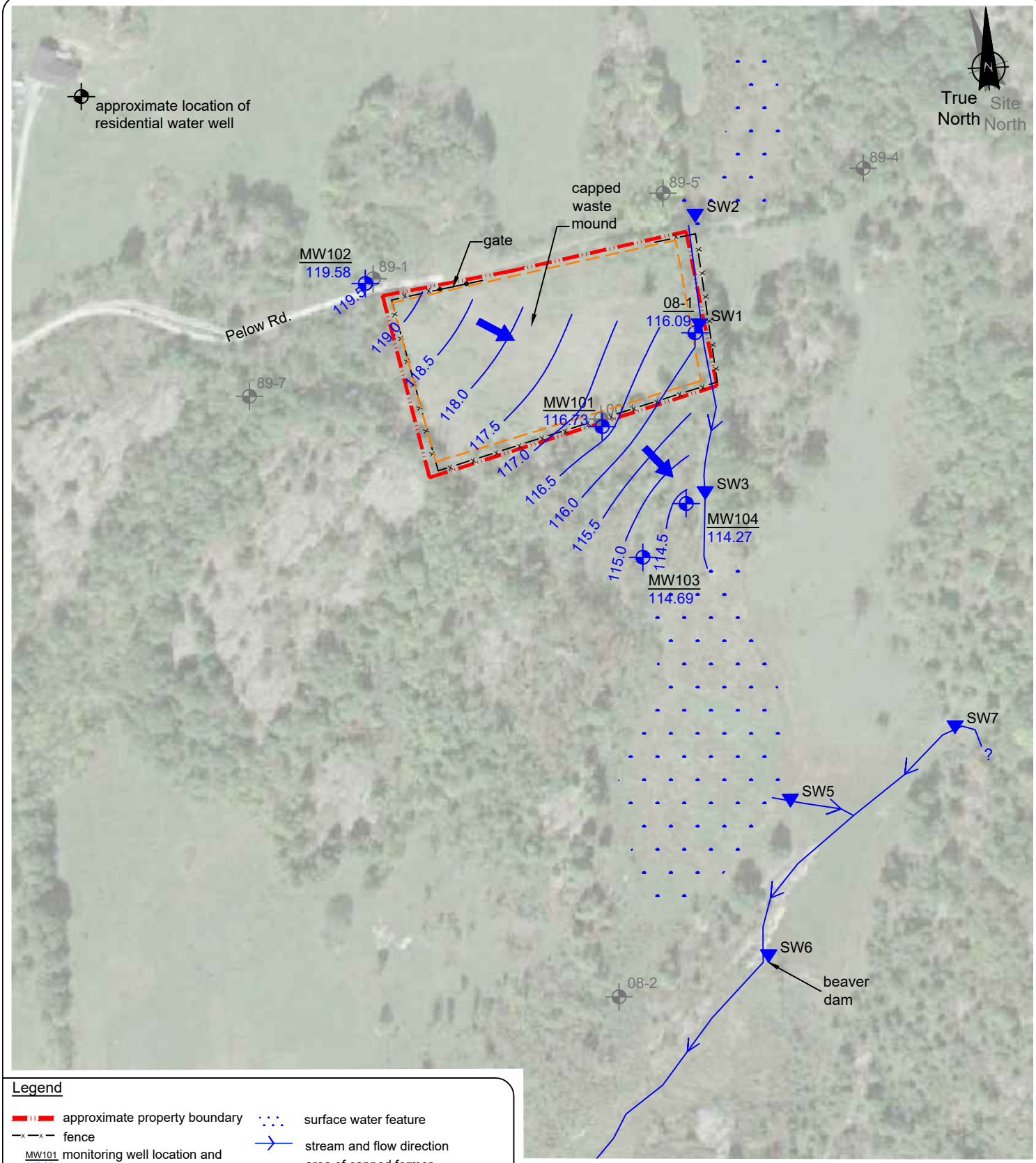
File: 1040-121.00

approx. scale (m)
0 75

Figure 2

MALROZ

Rev	Date	Description	By	Chkd
D0	21/03/30	issued in final	MW	ZL



Legend

- approximate property boundary
- fence
- MW101 117.25 monitoring well location and groundwater (November 16, 2020)
- 08-2 monitoring well not used in interpolation
- 90.0 groundwater elevation (November 16, 2020)
- surface water feature
- stream and flow direction
- area of capped former waste mound
- SW1 surface water station
- inferred groundwater flow direction

Note: figure based on Malroz field observations and Google Earth imagery

Inferred Overburden Groundwater Contours (November 2020)

2020 Annual Monitoring Report
Leeds WDS - A442002
Pelow Road, Township of Leeds and the Thousand Islands, Ontario

File: 1040-121.00

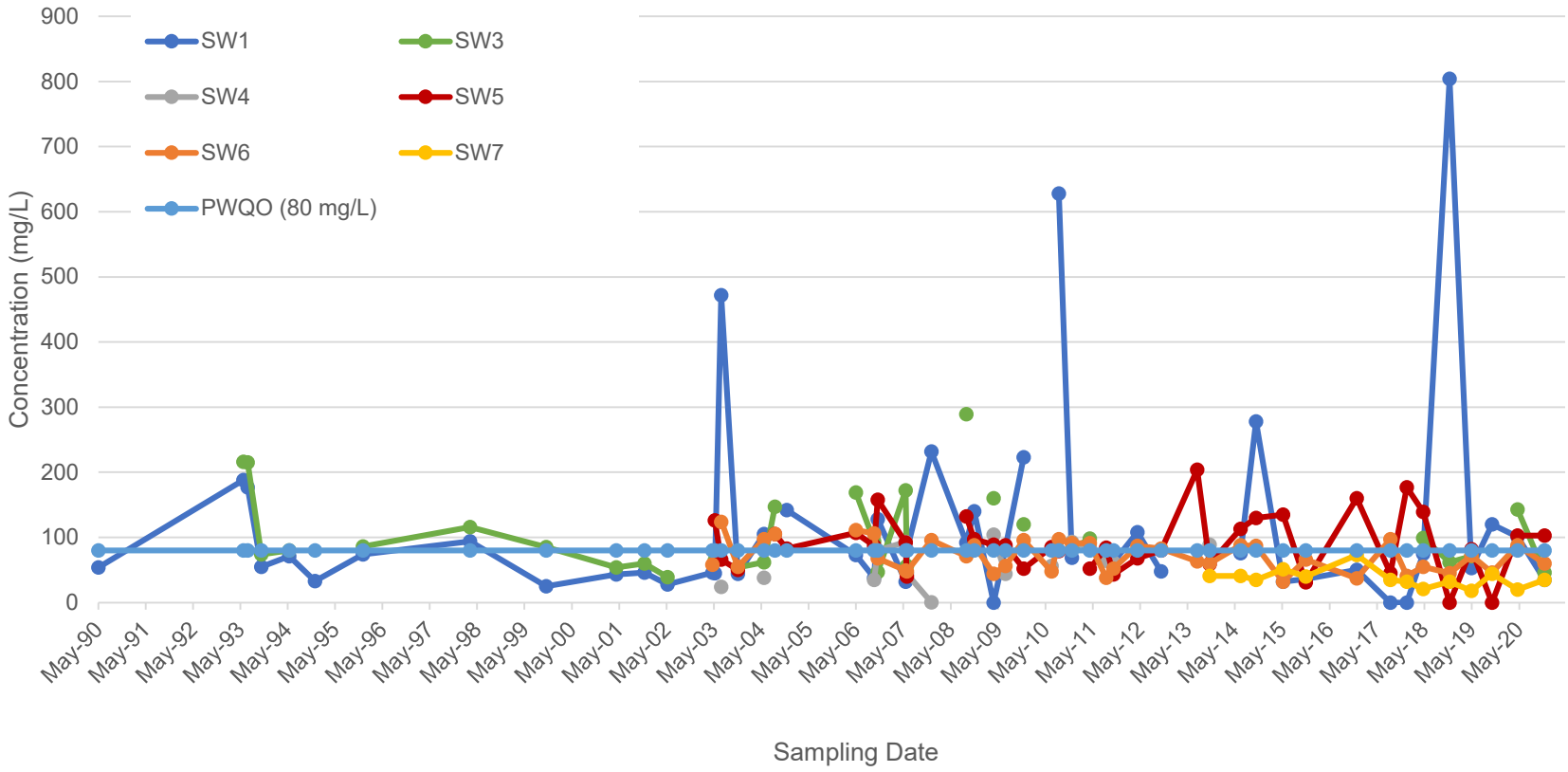
approx. scale (m)
0 75

Figure 3

MALROZ

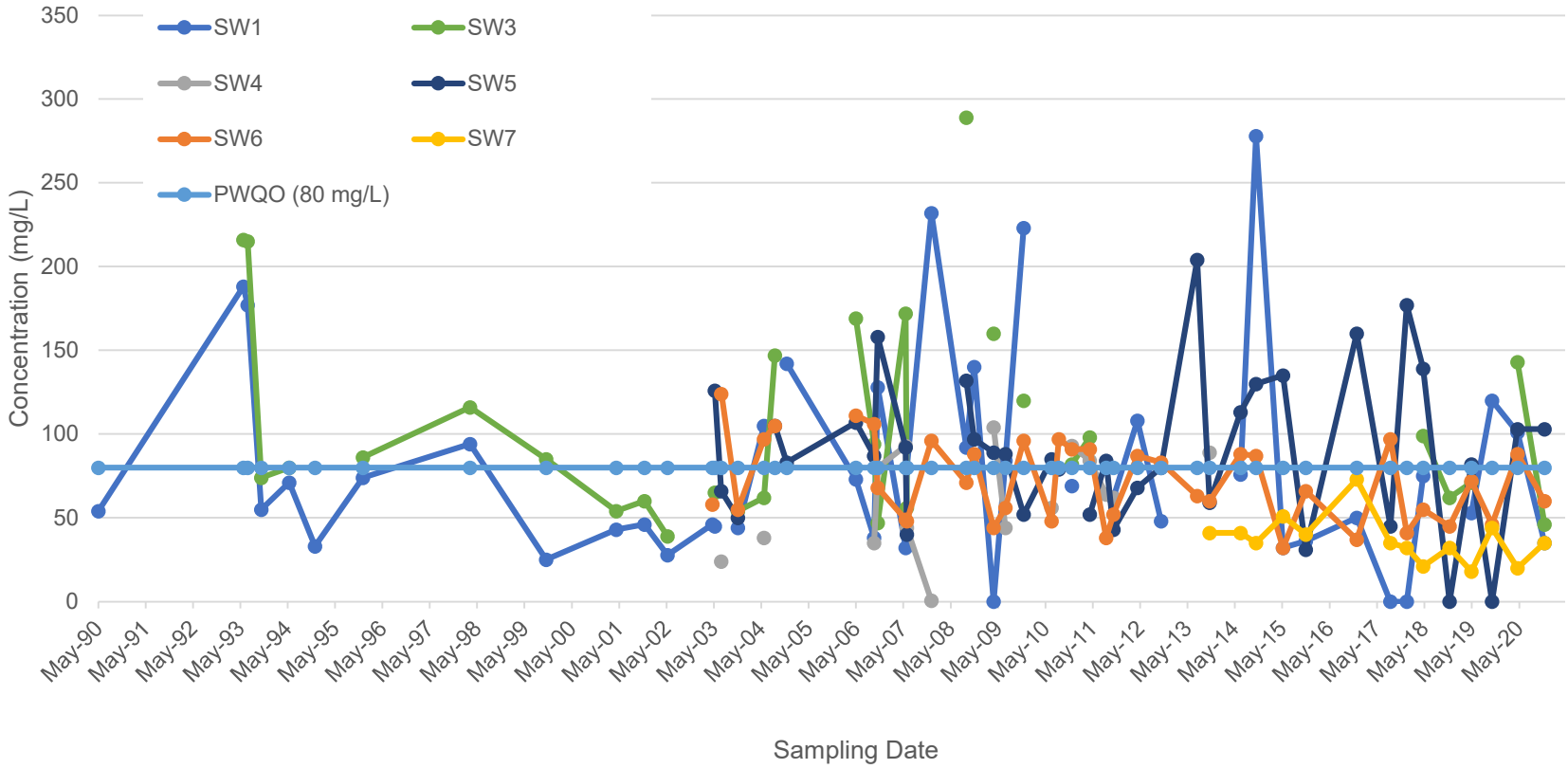
Rev	Date	Description	By	Chkd
D0	21/02/04	issued for PM review	MW	MP

Figure 4a
Surface Water Alkalinity: Historical Trend



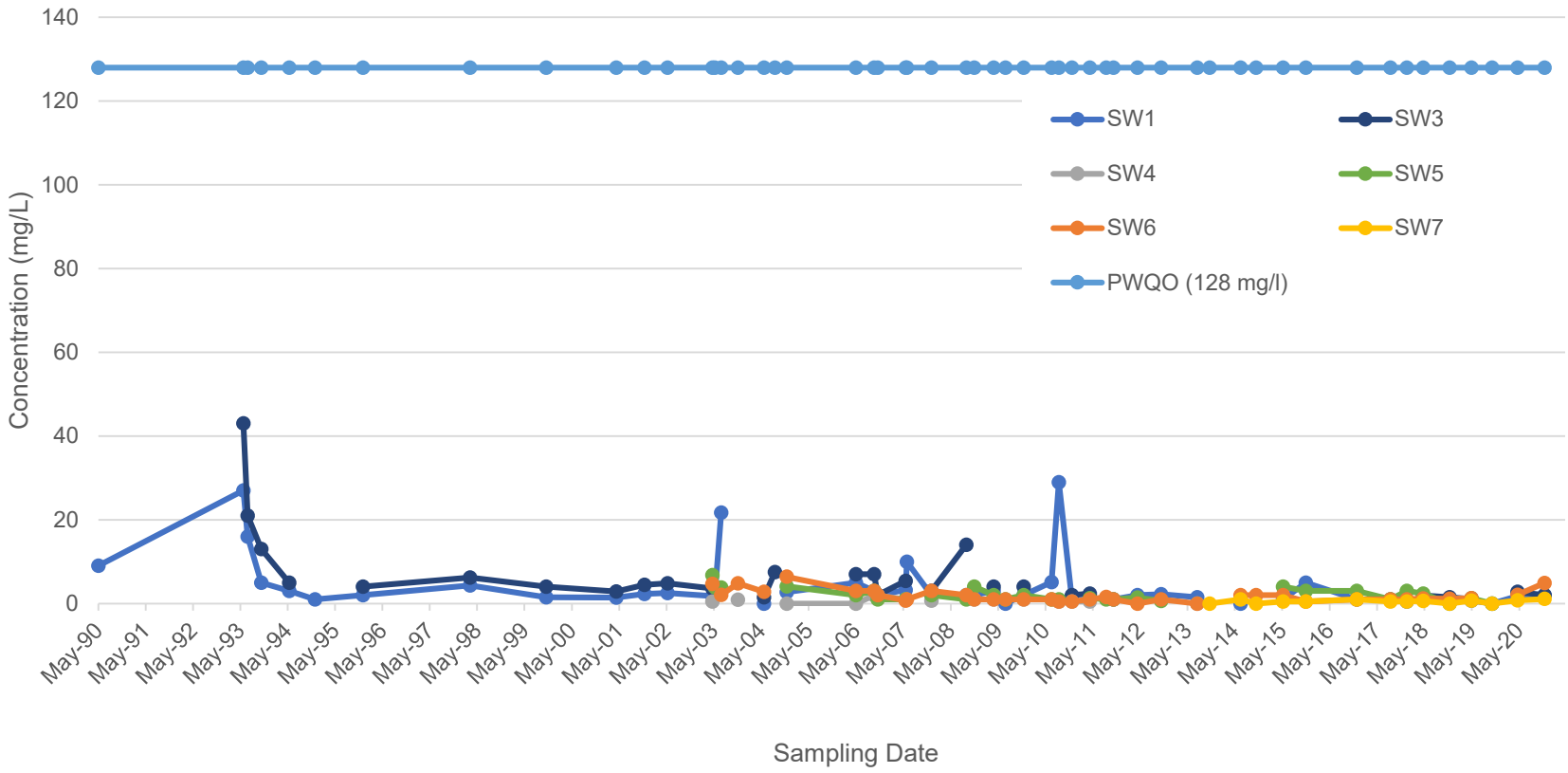
Data Input: MW
Data Check: JMP

Figure 4b
Surface Water Alkalinity: Historical Trend Amended



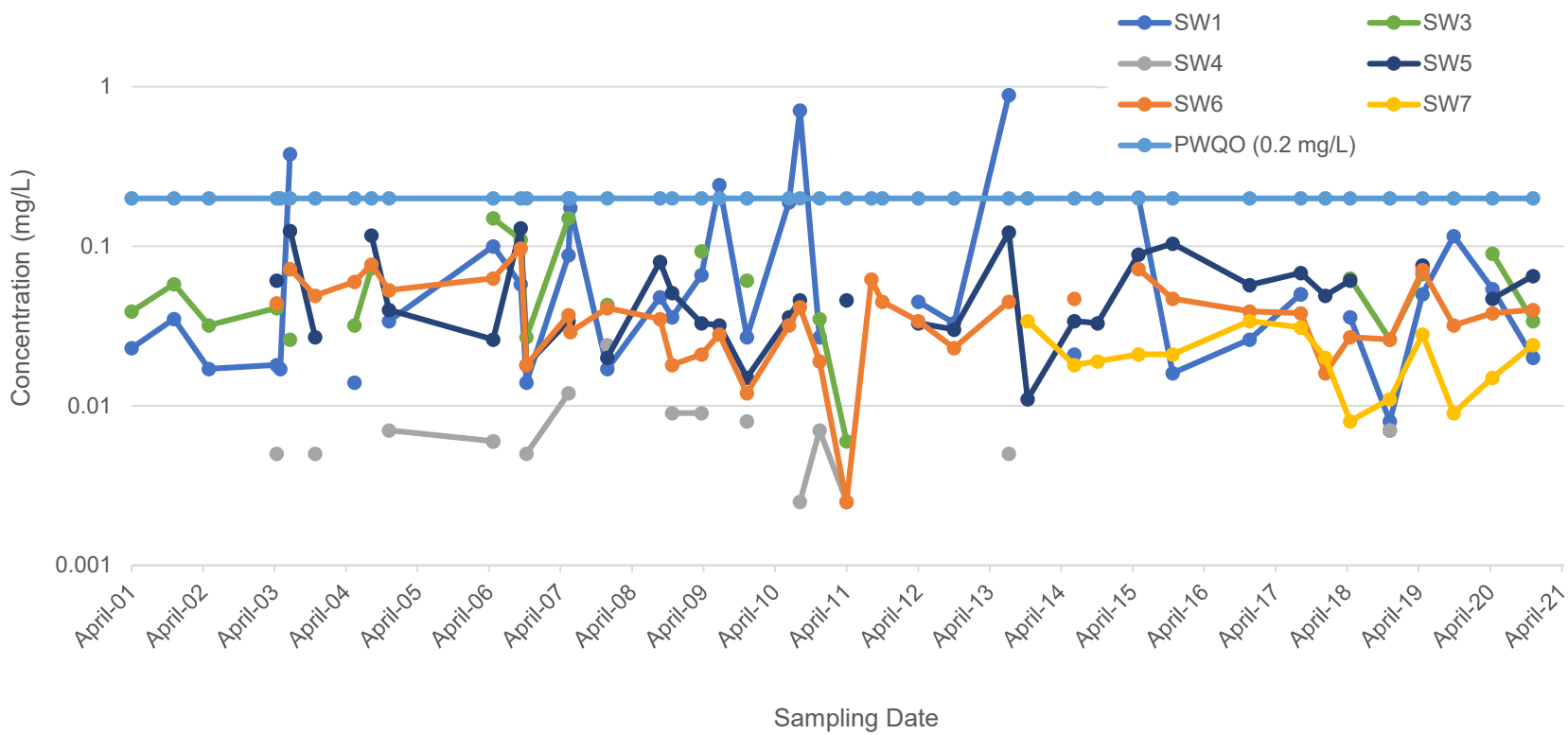
Data Input: MW
Data Check: JMP

Figure 4c
Surface Water Chloride: Historical Trend



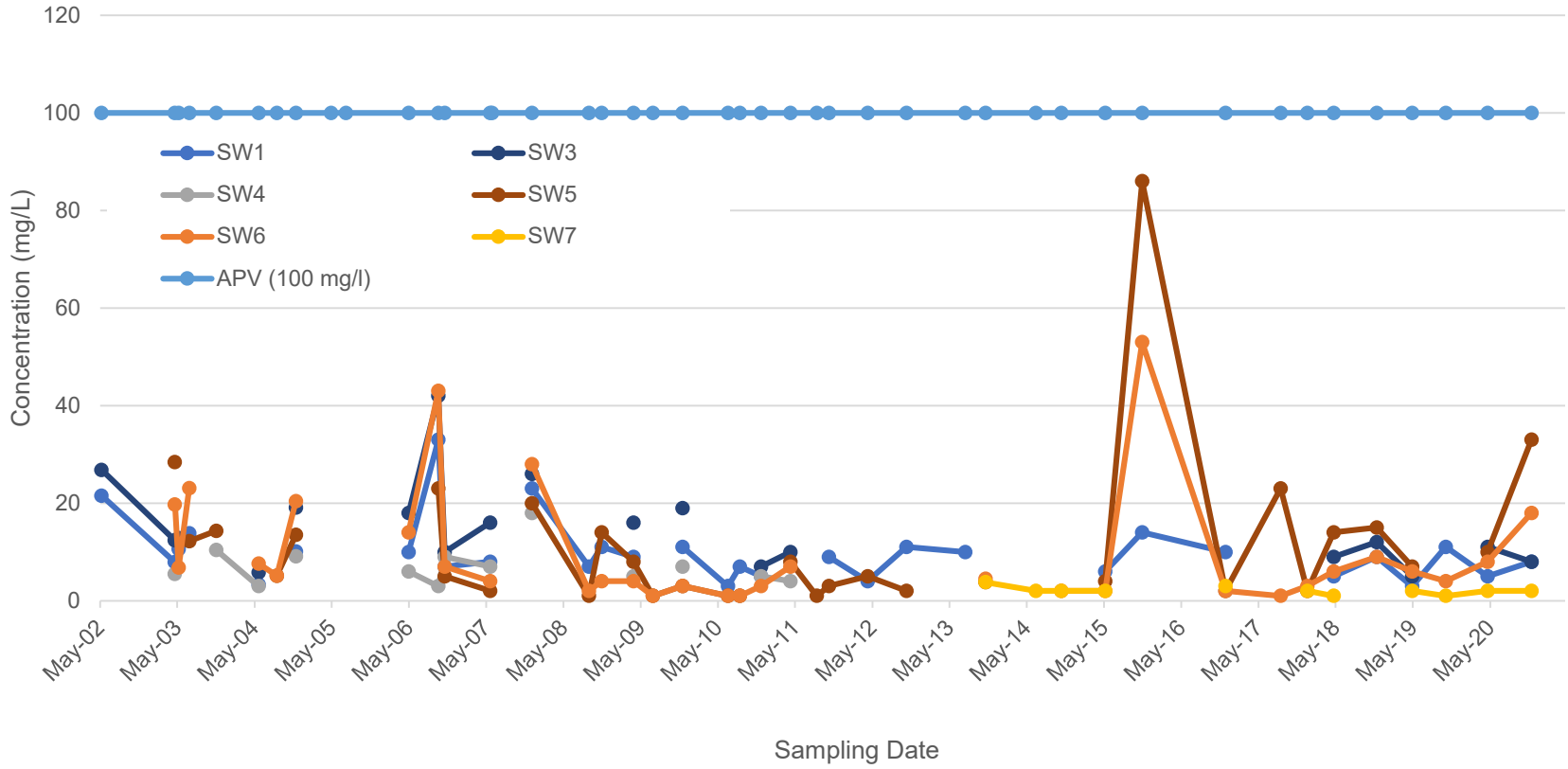
Data Input: MW
Data Check: JMP

Figure 4d
Surface Water Boron: Historical Trend



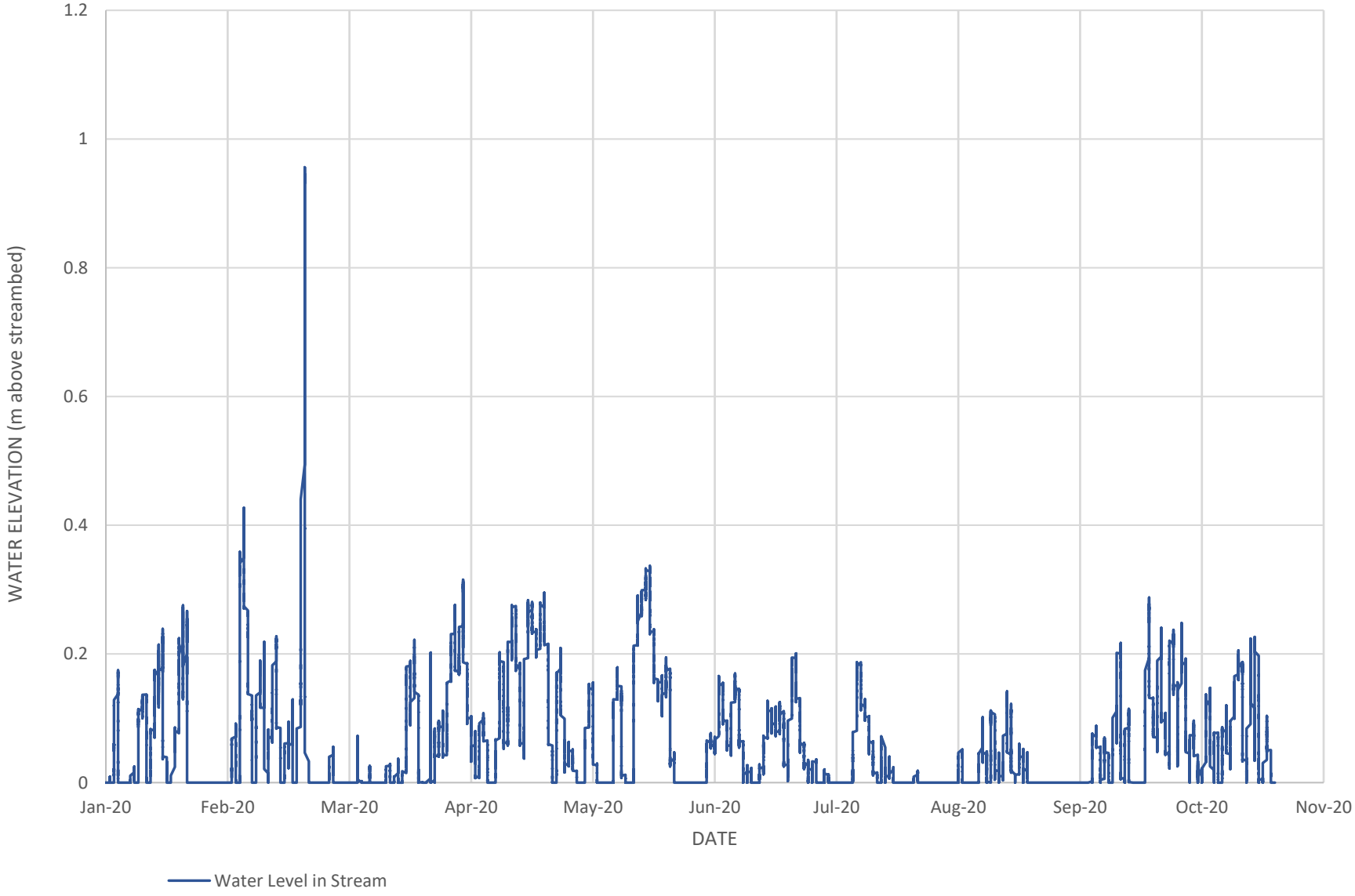
Data Input: MW
Data Check: JMP

Figure 4e
Surface Water Sulphate: Historical Trend



Data Input: MW
Data Check: JMP

Figure 5
Water Level at SW1



Appendix B
Tables

Table 1
Groundwater Monitoring Results

Location	DTW (mbTOP)	DTB (mbTOP)	TOP Elevation (masl)	Grade Elevation (masl)	Groundwater Elevation (masl)	Methane Concentration (%LEL)	Observations		
							Colour	Sediment	Odour
April 23, 2020									
08-1	2.58	4.52	119.03	118.11	116.45	nr	grey	adundant	sulphur
MW101	1.23	3.38	118.48	117.45	117.25	nr	grey	some	none
MW102	1.18	2.82	121.18	120.24	120.00	nr	grey	adundant	none
MW103	1.55	2.46	116.00	114.30	114.45	nr	brown	adundant	none
MW104	1.57	2.17	115.70	114.56	114.13	nr	insufficient water for sample		
November 16, 2020									
08-1	2.94	4.41	119.03	118.11	116.09	nr	brown	some	sulphur
MW101	1.75	3.52	118.48	117.45	116.73	nr	brown	some	sulphur
MW102	1.60	2.81	121.18	120.24	119.58	nr	grey	some	none
MW103	1.31	2.27	116.00	114.30	114.69	nr	brown	adundant	none
MW104	1.43	1.97	115.70	114.56	114.27	nr	insufficient water for sample		

Notes

Data Input: MW
Data Check: JMP

LEL	denotes lower explosive limit
nr	indicates no response
DTW	depth to water
DTB	depth to well bottom
masl	meters above mean sea level
mbTOP	denotes meters below top of piezometer

Elevations are geodetic, based on survey data obtained by Malroz Engineering from October 8, 2019, using the Trimble R10 GNSS

Table 2
Well Inspection

Well ID	Coordinates[1]		Well Type	Well Construction	Well Integrity			Well Observations
	Easting	Northing	Protective casing	Material	Locked	Capped	Condition[2]	Remarks
08-1	405560	4916212	PVC outer Casing	2" Schedule 40 PVC	Y	slip cap	good	-
MW101	405508	4916160	Monument Casing	2" Schedule 40 PVC	Y	J-Plug	good	installed February 2018
MW102	405375	4916240	Monument Casing	2" Schedule 40 PVC	Y	J-Plug	good	installed February 2018
MW103	405530	4916087	Monument Casing	1.25" Schedule 40 PVC	Y	J-Plug	good	installed February 2018
MW104	405555	4916117	Monument Casing	1.25" Schedule 40 PVC	Y	J-Plug	good	installed February 2018

Notes

Data Input: MW
Data checked: JMP

Well inspection completed on April 23 and November 16, 2020

[1] Coordinates based on survey data obtained by Malroz Engineering from October 8, 2019, using the Trimble R10 GNSS

[2] Well conditions ranked as good (no maintenance required), fair (minor maintenance required), poor (requires maintenance or abandonment)

Table 3
2020 Groundwater Chemistry

Monitoring Location	Sample ID	Parameter (units)	General Inorganics													Anions				Metals																				Field Parameters			
			Alkalinity	N - Ammonia	BOD	COD	DOC	Conductivity umho/cm	Hardness	pH	Phenols	Phosphorus (total)	O-Phosphate	TDS	TSS	N - Total Kjeldahl	Chloride	N - Nitrate	N - Nitrite	Sulphate	Mercury	Aluminum	Arsenic	Barium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Potassium	Silver	Sodium	Vanadium	Zinc	Unionized Ammonia. Calc (field) [9]	Temperature °C (field)	pH (Field)	DO	Conductivity
		ODWS (mg/L)	30-500[OG]				5[AO]		80-100[OG]	6.5-8.5[AO]				500[AO]			250[AO]	10[CS]	1.0[CS]	500[AO]	0.001[CS]	0.1[OG]	0.010[CS]	1.0[CS]	5.0[CS]	0.005[CS]		0.05[CS]		1[AO]	0.3[AO]	0.01[CS]		0.05[AO]			200[AO]		5[OG]		15	6.5-8.5AO		
		PWQO (mg/L)	(note 1)							6.5-8.5	0.001	0.02									0.0002	0.075 (note 2)	0.005		0.2	(note 3)		(note 4)	0.0009	(note 5)	0.3	(note 6)				0.0001		0.006	0.02	0.02			6.5-8.5	(note 10)	
		2020 RL (mg/L)	5	0.01	3	5	0.2	1	1		0.002	0.01	0.002	3	3	0.1	0.5	0.05	0.05	1	0.00002	0.01	0.0001	0.001	0.005	0.000015	0.02	0.001	0.0001	0.0001	0.005	0.00002	0.02	0.001	0.1	0.0001	0.2	0.005	0.005	0.001				
		2020 RUL	350				4.6		169					364			127	2.58	0.33	261	0.00033	0.063	0.0031	0.27	1.3	0.0013		0.013		0.5	0.18	0.0026		0.030			100		2.5					
		Units	mg/L	mg/L	mg/L	mg/L	mg/L	umho/cm	mg/L	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	°C	pH units	mg/L	mS/cm
		Date																																									
MW102 (replaced 89-1) background	20-W010	20-Apr-23	215	0.01	<	54	4.3	460	267	8.01	<	2.96	0.009	238	3900	1	2.1	0.09	<	17	< 0.00002	0.03	0.0002	0.018	0.017	<	56.5	0.001	0.0004	0.0032	<	0.00038	16.5	<	0.6	<	12.1	0.0016	<	<	9.49	8.46	7.04	0.600
	20-W020[8]	20-Nov-16	-	-	-	-	2.1	-	252	-	-	-	-	-	-	-	-	-	-	-	-	0.08	0.0002	0.03	0.017	<	66.8	<	<	0.0041	0.028	0.00006	20.7	0.001	0.5	<	16.2	0.001	<	-	9.03	7.22	11.91	0.52
MW101 (replaced 00-1)	20-W007	20-Apr-23	763	0.02	<	38	16.3	1620	933	7.79	<	0.33	0.071	885	480	0.7	13.4	0.07	<	137	< 0.00002	0.11	0.0004	0.064	0.605	<	234	<	0.0005	0.0078	<	0.00020	84.7	0.076	1.7	<	56.9	0.0013	<	<	8.19	7.47	11.96	1.73
	20-W017	20-Nov-16	710	0.05	<3	37	6.6	1530	641	7.27	<	0.13	0.056	835	13700	0.7	11.7	<	<	129	< 0.00002	0.09	0.0006	0.059	0.481	0.000026	163	<	0.0001	0.0015	<	0.00014	56.9	0.213	1.9	<	51.3	0.0010	<	<	9.82	[11]	18.21	1.29
08-1	20-W008	20-Apr-23	816	9.05	17	90	18.6	1640	851	7.50	<	0.61	0.018	898	600	11.7	18	0.37	0.06	57	< 0.00002	0.10	0.0006	0.268	0.839	0.000024	219	<	0.0021	0.0014	18.9	0.00007	73.8	2.18	39.3	<	32.4	0.0005	0.076	0.013	9.70	6.91	1.15	1.74
	20-W019	20-Nov-16	615	2.54	4	140	10.3	1500	856	7.24	<	3.23	1.54	818	1370	5.2	12	0.94	0.1	193	< 0.00002	0.11	0.0010	0.256	1.36	0.000468	218	<	0.0025	0.0035	6.62	0.00009	75.6	2.58	36.6	<	33.6	0.0008	0.375	0.008	10.23	[11]	8.26	1.56
MW103 (installed in 2018)	20-W006[8]	20-Apr-23	212	0.25	-	1080	5.3	510	263	8.03	-	30.2	7.45	264	-	21.2	4.4	0.06	<	44	< 0.00002	0.21	0.0002	0.040	0.064	<	58.8	<	0.0004	0.0017	0.172	0.00016	28.3	0.095	0.6	<	12.9	0.0020	<	0.002	6.75	7.82	14.35	0.557
	20-W016[8]	20-Nov-16	118	0.06	-	225	5.4	311	175	8.09	-	14.3	-	160	-	4.8	2.9	<	<	32	-	0.04	0.0002	0.026	0.062	<	39.9	<	<	0.0063	0.011	0.00017	18.2	0.007	0.4	<	11.7	0.0014	<	0.001	8.38	[11]	11.15	0.382
MW104 (Installed in 2018)	Dry	20-Apr-23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Dry	20-Nov-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
1 Alkalinity should not decrease by more than 25% of the natural concentration.
2 Aluminum standard for PWQO is pH dependent (4.5 to 5.5 = 0.015mg/L, 5.5 to 6.5 = <10% above background, 6.5 to 9.0 = 0.075 mg/L)
3 Cadmium criteria: 0-100 mg/L Hardness = 0.0001 mg/L, >100 mg/L Hardness = 0.0005 mg/L.
4 Chromium reported as total, published standards are for Chromium VI (0.001 mg/L) and Chromium III (0.0089 mg/L).
5 Copper criteria: if 0-20 mg/L Hardness = 0.001 mg/L; if >20 mg/L Hardness = 0.005 mg/L.
6 Lead criteria: if <30 mg/L Hardness = 0.001 mg/L; if 30 to 80 mg/L Hardness = 0.003 mg/L; if >80 mg/L Hardness = 0.005 mg/L.
7 Beryllium criteria: <75 mg/L Hardness = 0.011 mg/L, >75 mg/L Hardness = 1.1 mg/L
8 Insufficient sample quantity for full parameter analysis
9 Unionized ammonia calculated using field parameters for pH and temperature.
10 DO criteria: 0°C -5°C = ≥7mg/L 5°C-10°C = ≥ 6mg/L 10°C-20°C = ≥5mg/L 20°C-25°C = ≥ 4mg/L
11 pH values not collected due to equipment error
"-" denotes not analyzed
"RL" denotes reporting limit
"<" denotes results below reporting limit
"<#" denotes elevated reprting limit
"MW####" and "## - #" denote groundwater monitoring well
groundwater samples analyzed for metals were field filtered using 0.45 micron filters
AO indicates aesthetic objective OG indicates operational objective CS Chemical standards
denotes concentration exceeds the 2003 Ontario Drinking Water Quality Standards (as updated in 2020)
denotes concentration exceeds the 1994 PWQO (as updated in 1999)
indicates RUL exceedance

Input: MW
Checked: JMP

Table 4
2020 Surfacewater Chemistry

Parameter			General Inorganics													Anions					Metals																								Field Parameters				
			Alkalinity	N - Ammonia	N - Ammonia(Ul)(lab)	BOD	COD	DOC	Conductivity µmho/cm	Hardness	pH	Phenols	o-Phosphate (P)	Phosphorus (total)	TDS	TSS	N - Total Kjeldahl	Chloride	N - Nitrate	N - Nitrite	Sulphate	Aluminum (dissolved)	Mercury	Arsenic	Barium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Potassium	Sodium	Vanadium	Zinc	Silicon	Uranium	Unionized Ammonia, Calc (field) (note j)	Temperature °C (field)	PH (Field)	DO	Conductivity
Provincial Water Quality Objectives (mg/L)			(note a)		0.020						6.5-8.5	0.001		0.02								0.075 (note c)	0.0002	0.005		0.200	0.0001 (note d)		(note e)	0.0009	0.005 (note f)	0.3	(note g)			0.025			0.006	0.02		0.005	0.020		6.5-8.5	(note i)	
Table A: Assessment Criteria for Waste Disposal Sites (mg/L)					0.100						6.0-9.0	0.04 (note b)						180			100			0.150	2.300	3.550	0.00021		0.064		0.0069	1.000	0.002						0.089			0.100		6.0-9.0		
Table B: Alternative Review Criterias (mg/L)												0.004 (note b)						128	2.9	0.06							1.50	0.000017											0.030							
Monitoring Location	**Sample ID**	**2020 RL (mg/L)**	5	0.01	0.01	3	5	0.2	1	1		0.001	0.002	0.01	3	3	0.1	0.5	0.05	0.05	1	0.01	0.00002	0.0001	0.001	0.005	0.000015	0.02	0.001	0.0001	0.0001	0.005	0.00002	0.02	0.001	0.01	0.1	0.2	0.005	0.005	0.01	0.00005	0.001				
		Sample Date																																												
SW1	20-W009	20-Apr-23	101	0.35	<	<	21	5.4	216	106	7.58	<	0.014	0.01	110	4	0.6	1.8	0.11	<	5	0.02	<	0.0001	0.033	0.054	<	27.8	<	0.0002	0.0004	0.7	0.00004	8.63	0.113	<	1.9	4.1	0.0002	0.005	2.71	0.00011	0.004	6.56	7.89	4.71	0.758
	20-W018	20-Nov-16	35	< 0.01	<	<	43	11	99	46	7.19	0.002	0.025	0.06	-	50	16	0.7	<	<	<	0.11	<	0.0002	0.024	0.02	0.000029	12.3	<	0.0003	0.0016	0.968	0.00027	3.66	0.04	<	1.4	2.5	0.0009	0.009	3.82	0.00009	<	5.90	(note k)	8.72	0.086
SW2	20-W001	20-Apr-23	33	<	<	<	14	3.8	69	34	7.19	<	0.007	<	35	6	0.2	0.6	0.08	<	1	0.02	<	< 0.0001	0.013	<	<	9.18	<	< 0.0001	0.0004	0.121	0.00003	3.00	0.003	<	0.3	2.3	0.0003	0.006	1.98	<	<	5.72	8.13	7.67	0.093
	20-W011	20-Nov-16	28	0.01	<	<	48	11.9	77	35	6.93	<	0.044	0.09	-	39	28	1.6	<	<	-	0.14	<	0.0003	0.025	0.013	0.000067	9.25	<	0.0004	0.0029	0.905	0.00029	2.95	0.035	<	1.6	1.8	0.0012	0.009	3.31	<	<	5.98	(note k)	8.27	0.070
SW3	20-W005	20-Apr-23	143	0.23	<	<	18	5.8	311	162	7.88	<	0.007	0.03	160	6	0.6	2.8	0.28	<	11	0.03	<	0.0001	0.044	0.09	<	40.7	<	0.0003	0.0010	0.462	0.00023	13.1	0.155	<	2.9	6.1	0.0006	0.023	3.12	0.00026	0.00203	2.85	7.93	14.52	0.358
	20-W015	20-Nov-16	46	< 0.01	<	<	41	11.1	125	61	7.49	0.002	0.031	0.07	63	104	0.7	2	<	<	8	0.09	<	0.0002	0.029	0.034	0.000036	16.3	0.001	0.0004	0.0017	0.912	0.00038	4.82	0.102	<	1.8	3.2	0.0014	0.011	4.35	0.00010	<	5.94	(note k)	12.38	0.127
SW5	20-W003	20-Apr-23	103	0.01	<	<	21	7.3	232	120	7.65	<	0.025	0.05	118	4	0.4	2.1	0.06	<	10	0.10	<	0.0002	0.029	0.047	<	31.3	<	0.0001	0.0010	0.341	0.00016	10.8	0.016	<	1.6	5.3	0.0005	0.006	2.31	0.00028	<	2.20	7.18	7.64	0.259
	20-W013	20-Nov-16	103	0.02	<	<	65	19.8	296	146	7.24	<	0.105	0.19	152	<	1.4	4.9	<	<	33	0.04	<	0.0004	0.045	0.065	0.000082	37.7	<	0.0008	0.0018	1.07	0.00026	12.7	0.237	<	4.2	6.5	0.0013	0.016	4.48	0.0013	<	5.47	(note k)	6.89	0.3
SW6	20-W004	20-Apr-23	88	0.01	<	<	20	6.8	201	103	7.69	<	0.014	0.09	102	43	0.6	1.8	0.07	<	8	0.08	<	0.0002	0.026	0.038	0.000029	25.6	<	0.0004	0.0014	0.705	0.00054	8.83	0.045	<	1.4	4.3	0.0012	0.019	1.84	0.00022	<	3.38	7.26	2.27	0.229
	20-W014	20-Nov-16	60	< 0.01	<	<	42	11.8	177	83	7.34	<	0.032	0.1	90	9	0.8	3.1	<	<	18	0.03	<	0.0003	0.022	0.04	0.000018	21.6	<	0.0006	0.0012	0.799	0.00025	6.98	-	<	2.5	3.6	0.0007	0.018	3.57	<	<	6.60	(note k)	9.59	0.177
SW7 (background)	20-W002	20-Apr-23	20	0.02	<	<	20	4.6	48	24	7.29	<	0.007	0.03	24	5	0.3	0.8	0.1	<	2	0.01	<	0.0001	0.007	0.015	<	7.56	<	0.0001	0.0004	0.444	0.0001	1.55	0.043	<	0.3	1.5	0.0003	<	1.86	<	<	4.32	7.21	9.26	0.054
	20-W012	20-Nov-16	35	< 0.01	<	<	30	6.2	82	39	7.42	<	0.01	0.01	41	<	0.3	1.1	<	<	2	0.11	<	0.0001	0.011	0.024	<	11.8	<	0.0001	0.0004	0.281	0.00008	2.4	0.019	<	0.5	1.2	0.0003	0.01	2.94	<	<	6.22	(note k)	11.96	0.08

Input: MW
Checked: JMP

Notes:
(a) Alkalinity should not be decreased by more than 25% of the natural concentration
(b) Table A and Table B standards apply only to Phenol
(c) Aluminum standard for PWQO is pH dependent: 4.5 - 5.5 = 0.015 mg/L, >5.5 - 6.5 = no more than 10% above background, >6.5 - 9.0 = 0.075 mg/L, if background is above the PWQOs, no condition is permitted that increases the aluminun greater than %10.
(d) Cadmium criteria: 0-100 mg/L Hardness = 0.0001 mg/L, >100 mg/L Hardness = 0.0005 mg/L
(e) Chromium reported as total, published standards are for chromium VI (0.001 mg/L) and chromium III (0.0089 mg/L)
(f) Copper criteria: 0-20 mg/L Hardness = 0.001 mg/L, >20 mg/L Hardness = 0.005 mg/L
(g) Lead criteria: <30 mg/L Hardness = 0.001 mg/L, 30 to 80 mg/L Hardness = 0.003 mg/L, >80 mg/L Hardness = 0.005 mg/L
(h) Beryllium criteria: <75 mg/L Hardness = 0.011 mg/L, >75 mg/L Hardness = 1.1 mg/L
(i) DO criteria: 0oC -5oC = ≥7mg/L 5oC-10oC = ≥ 6mg/L 10oC-20oC = ≥5mg/L 20oC-25oC = ≥ 4mg/L
(j) Unionized ammonia calculated using field parameters for pH and temperature.
Metals are reported as "total" with the exception of Mercury (reported as dissolved)
- not analyzed/not available

denotes concentration exceeds the 1994 PWQO (as updated in 1999)
denotes concentration exceeds Table A: Assessment Criteria for Waste Disposal Sites (Source Aquatic Protection Values), from the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (2010)
denotes concentration exceeds Table B: Alternative Review Criteria (Source Canadian Water Quality Guideline), from the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (2010)

Table 5
Surface Water Station Observations

Station	UTMs (NAD 83, Zone 18T)				Flow Conditions	
	Apr-20		Nov-20		Apr-20	Nov-20
	Northing (m)	Easting (m)	Northing (m)	Easting (m)		
SW1	4916217	405570	4916215	405566	lentic	lentic
SW2	4916271	405569	4916275	405569	not flowing	not flowing
SW3	4916138	405564	4916135	405563	lotic	lentic
SW5	4915957	405608	4915957	405610	lentic	lentic
SW6*	4915878	405595	4915878	405595	lentic	not flowing
SW7	4915989	405708	4915989	405705	lotic	lotic

Notes

* SW6 was moved upstream due to dry conditions

Data Input: MW
Data Check: JMP

Appendix C
ECA No. A442002

Ontario

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

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A442002
Issue Date: March 21, 2016

The Corporation of the Township of Leeds and the Thousand Islands
1233 Prince St Lansdowne
Post Office Box, No. 280
Leeds and the Thousand Islands, Ontario
K0E 1L0

Site Location: Leeds Waste Disposal Site (Closed)
Twp. of Front of Leeds and Lansdowne
Lot 11, Concession 3
Leeds and the Thousand Islands Township, United Counties of Leeds and Grenville

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 operation, monitoring and maintenance of a 0.8 hectare landfilling within a total waste disposal site area of 1.7 hectares.

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

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

"Director" means any Ministry employee appointed in writing by the Minister pursuant to section 5 of the EPA as a Director for the purposes of Part II.1 of the EPA;

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

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

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

"*Owner"* means any person that is responsible for the establishment or operation of the *Site* being approved by this *Approval,* and includes The Corporation of the Township of Leeds and the Thousand Islands its successors and assigns;

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

"*Regulation 903"* means Regulation 903, R.R.O. 1990, made under the *OWRA,* as amended; and

"*Site* " means the entire waste disposal site, including the buffer lands, and contaminant attenuation zone at Leeds Waste Disposal Site (Closed), Lot 11, Concession 3, Leeds and the Thousand Islands Township, United Counties of Leeds and Grenville.

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

TERMS AND CONDITIONS

1. GENERAL

Compliance

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

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

In Accordance

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

Interpretation

(4) Where there is a conflict between a provision of any document listed in Schedule "A" in this *Approval,* and the conditions of this *Approval,* the conditions in this *Approval* shall take precedence.

(5) Where there is a conflict between the application and a provision in any document listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the *Ministry* approved the amendment.

(6) Where there is a conflict between any two documents listed in Schedule "A", the document bearing the most recent date shall take precedence.

(7) The conditions of this *Approval* are severable. If any condition of this *Approval,* or the application of any condition of this *Approval* to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this *Approval* shall not be affected thereby.

Other Legal Obligations

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

Adverse Effect

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

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

Change of Ownership

(11) The *Owner* shall notify the *Director,* in writing, and forward a copy of the notification to the *District Manager,* within 30 days of the occurrence of any changes in the following information:
   (a) the ownership of the *Site;*
   (b) the *Operator* of the *Site;*
   (c) the address of the *Owner or Operator;* and
   (d) the partners, where the *Owner or Operator* is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act* , R. S. O. 1990, c. B.17, shall be included in the notification.

(12) No portion of this *Site* shall be transferred or encumbered prior to or after closing of the *Site* unless the *Director* is notified in advance and sufficient financial assurance is deposited with the *Ministry* to ensure that these conditions will be carried out.

(13) In the event of any change in ownership of the *Site,* other than change to a successor municipality, the *Owner* shall notify the successor of and provide the successor with a copy of this *Approval,* and the *Owner* shall provide a copy of the notification to the *District Manager* and the *Director.*

Certificate of Requirement/Registration on Title

(14) Prior to dealing with the property in any way, the *Owner* shall provide a copy of this *Approval* and any amendments, to any person who will acquire an interest in the property as a result of the dealing.

(15) (a) Within ninety (90) calendar days from the date of issuance of this *Approval,* the *Owner* shall submit to the *Director* a completed Certificate of Requirement which shall include:
- (i) a plan of survey prepared, signed and sealed by an Ontario Land Surveyor, which shows the area of the *Site* where waste has been or is to be deposited at the *Site;*
- (ii) proof of ownership of the *Site;*
- (iii) a letter signed by a member of the Law Society of Upper Canada or other qualified legal practitioner acceptable to the *Director,* verifying the legal description provided in the Certificate of Requirement;
- (iv) the legal abstract of the property; and
- (v) any supporting documents including a registerable description of the *Site.*

(b) Within fifteen (15) calendar days of receiving a Certificate of Requirement authorized by the *Director,* the *Owner* shall:
- (i) register the Certificate of Requirement in the appropriate Land Registry Office on the title to the property; and
- (ii) submit to the *Director* written verification that the Certificate of Requirement has been registered on title.

2. INSPECTIONS, RECORD KEEPING AND REPORTING

Inspections and Log Book

(1) An inspection of the entire *Site* for the following shall be carried out a minimum of twice per year during monitoring events:
- (a) integrity of the final cover and landscaping;
- (b) presence of any leachate seeps;
- (c) that the *Site* is not causing any nuisances or any adverse effects on the environment;
- (d) the *Site* is secure; and
- (e) that the *Site* is being operated in compliance with this *Approval.*

(2) Any deficiencies discovered as a result of the inspection shall be remedied immediately.

(3) Presence of any leachate seeps shall be reported verbally to the *District Manager* within one (1) business day.

(4) A record of the inspections shall be kept in a log book that includes:
- (a) the name and signature of person that conducted the inspection;

(b) the date and time of the inspection;
(c) the list of any deficiencies discovered;
(d) the recommendations for remedial action; and
(e) the date, time and description of actions taken.

Annual Report

(5) A written report on the operation, maintenance and monitoring of the *Site,* shall be completed annually (the "Annual Report"). The Annual Report shall be submitted to the *District Manager,* by March 31st of the year following the period being reported upon.

(6) The Annual Report shall include but not be limited to the following information:

(a) the results and an interpretive analysis of the results of all leachate, groundwater and surface water monitoring, including an assessment of the need to amend the monitoring programs;
(b) an assessment on the *Site's* compliance with Guideline B7;
(c) a summary of any complaints received and the responses made;
(d) a summary of the findings during inspections and a summary of any remedial work conducted at the *Site.*
(e) a report on the status of all monitoring wells and a statement as to compliance with *Ontario Regulation 903;* and
(f) any other information with respect to the *Site* which the *District Manager* may require from time to time.

3. LANDFILL MONITORING

Compliance

(1) The *Site* shall be operated/maintained in such a way as to ensure compliance with the following:

(a) Reasonable Use Guideline B-7 for the protection of the groundwater at the *Site;* and

(b) Provincial Water Quality Objectives included in the July 1994 publication entitled *Water Management Policies, Guidelines, Provincial Water Quality Objectives,* as amended from time to time or limits set by the *Regional Director,* for the protection of the surface water at and off the *Site.*

Surface Water and Groundwater

(2) Within two (2) months from the date of this *Approval,* the *Owner* shall submit to the *Director* for approval, with copies to the *District Manager,* a report detailing the current groundwater and surface water monitoring program for the *Site* and a revised groundwater and surface water monitoring plan which fully delineate the horizontal and vertical extent of leachate migration

resulting from the landfilling activities at the *Site.* The report shall include but not be limited to the following:

(a) a drawing showing the sampling locations;
(b) current parameters that are analyzed and any revisions to the parameters;
(c) the sampling frequency;
(d) the groundwater measurement, flow measurement and sampling protocols;
(e) the latest annual report summary and interpretation of historical environmental monitoring data collected at the *Site;* and
(f) sketch of historical waste placement with respect to monitoring locations and current businesses/operations at the *Site.*

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

Trigger Mechanisms and Contingency Plans

(4) (a) Within two (2) months from the date of this *Approval,* the *Owner* shall submit to the *Director,* for approval, and copies to the *District Manager,* details of a trigger mechanisms plan for surface water and groundwater quality monitoring for the purpose of initiating investigative activities into the cause of increased contaminant concentrations.

(b) Within two (2) months from the date of this *Approval,* the *Owner* shall submit to the *Director* for approval, and copies to the *District Manager,* details of a contingency plan to be implemented in the event that the surface water or groundwater quality exceeds any trigger mechanism.

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

(6) If monitoring results, investigative activities and/or trigger mechanisms indicate the need to implement contingency measures, the *Owner* shall ensure that the following steps are taken:

(a) The *Owner* shall notify the *District Manager,* in writing of the need to implement contingency measures, no later than 30 days after confirmation of the exceedances;
(b) Detailed plans, specifications and descriptions for the design, operation and maintenance of the contingency measures shall be prepared and submitted by the *Owner* to the *District Manager* for approval; and
(c) The contingency measures shall be implemented by the *Owner* upon approval by the *District Manager* .

(7) The *Owner* shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to the surface water or groundwater, are approved in advance by the *Director* via an amendment to this *Approval.*

Groundwater Wells and Monitors

(8) The *Owner* shall ensure that all groundwater monitoring wells which form part of the monitoring program are properly capped, locked and protected from damage.

(9) Any groundwater monitoring well included in the on-going monitoring program that are damaged shall be assessed, repaired, replaced or decommissioned by the *Owner,* as required.

(a) The *Owner* shall repair or replace any monitoring well which is destroyed or in any way made to be inoperable for sampling such that no more than one regular sampling event is missed.

(b) All monitoring wells which are no longer required as part of the groundwater monitoring program, and have been approved by the *District Manager* for abandonment, shall be decommissioned by the *Owner,* as required, in accordance with *Regulation 903,* that will prevent contamination through the abandoned well. A report on the decommissioning of the well shall be included in the Annual Report for the period during which the well was decommissioned.

Changes to the Monitoring Plan

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

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

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

4. CLOSURE PLAN

(1) Except as otherwise provided by these conditions, the *Site* shall be closed in accordance with report titled "Groundwater and Surface Water Sampling Update and Revised Closure Plan, Leeds Waste Disposal Site, Township of Front of Leeds and Lansdowne" dated January 1994 and prepared by Water and Earth Science Associates Ltd.

(2) This landfill has been closed since December 1991 and no waste shall be accepted for disposal at the *Site.*

(3) Waste deposited within the 0.7 hectare beyond the approved limits of 0.8 hectare is hereby recognized. Boundary of the total waste disposal foot print of 1.5 hectares shall be marked with visible markers.

SCHEDULE "A"

1. Application for a Certificate of Approval for a Waste Disposal Site and Supporting Information to an approval of a Waste Disposal Site date June 1, 1971.

2. Application for a Certificate of Approval for a Waste Disposal Site and Supporting Information to an approval of a Waste Disposal Site (Transfer) date June 19, 1990.

3. Letter from Mr. J.D. Bishop (Kingston District Office), to Mr. J. Raycroft (Township of Front of Leeds and Lansdowne), dated November 28, 1991.

4. Letter from Mr. D.J. Andrijiw (Approvals Branch), to Mr. J. Raycroft (Township of Front of Leeds and Lansdowne), dated December 18, 1991.

5. Report titled "Groundwater and Surface Water Sampling Update and Revised Closure Plan, Leeds Waste Disposal Site, Township of Front of Leeds and Lansdowne" dated January 1994 and prepared by Water and Earth Science Associates Ltd.

6. Facsimile transmission from Mrs. A. Mitton (Southeastern Region), to Mr. O. Ibrahim (Approvals Branch), dated December 20, 1993.

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

GENERAL

- The reason for Conditions 1(1), (2), (4), (5), (6), (7), (8), (9) and (10) is to clarify the legal rights and responsibilities of the *Owner* under this *Approval* .

- The reasons for Condition 1(3) is to ensure that the *Site* is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the *Owner,* and not in a manner which the *Director* has not been asked to consider.

- The reasons for Condition 1(11) are to ensure that the *Site* is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the *Director* is informed of any changes.

- The reasons for Condition 1(12) are to restrict potential transfer or encumbrance of the *Site* without the approval of the *Director* and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this *Approval* .

- The reason for Condition 1(13) is to ensure that the successor is aware of its legal responsibilities.

- The reason for Condition 1(14) and (15) are that the Part II.1 *Director* is an individual with authority pursuant to Section 197 of the Environmental Protection Act to require registration on title and provide any person with an interest in property before dealing with the property in any way to give a copy of the *Approval t* o any person who will acquire an interest in the property as a result of the dealing.

INSPECTIONS, RECORD KEEPING AND REPORTING

- The reasons for Conditions 2(1), 2(2) and 2(3) are to ensure that the *Site* is operated, inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.

- The reason for Condition 2 (4) is to ensure that accurate records are maintained to ensure compliance with the conditions in this Approval (record keeping, annual reporting etc.), the EPA and its regulations.

- The reasons for Conditions 2(5) and 2(6) are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified. An annual report is an important tool used in reviewing site activities and for determining the effectiveness of site design.

LANDFILL MONITORING

- Condition 3(1) is included to provide the groundwater and surface water limits to prevent water pollution at the *Site.*

- Conditions 3(2) and 3(3) is included to require the *Owner* to demonstrate that the *Site* is performing as designed and the impacts on the natural environment are acceptable. This condition is also to require the *Owner* to revise and update the monitoring plan. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.

- Conditions 3(4), 3(5), 3(6) and 3(7) are included to ensure the integrity of the groundwater

monitoring network so that accurate monitoring results are achieved and the natural environment is protected.

- Reasons for conditions 3(8), 3(9) and 3(10) are included to streamline the approval of the changes to the monitoring plan.

CLOSURE PLAN

- The reasons for Condition 4(1) and 4(2) are to ensure that final closure of the *Site* is completed in an aesthetically pleasing manner, in accordance with *Ministry* standards, and to ensure the long-term protection of the health and safety of the public and the environment.

- The reasons for Condition 4(3) are to allow the *Owner* to leave the waste deposited outside the approved limits in place and to ensure the long-term protection of the health and safety of the public and the environment.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A442002 issued on January 4, 1994 and associated notices of amendments.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

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

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

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

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

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal

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

655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

Ministry of the Environment and Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

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

DATED AT TORONTO this 21st day of March, 2016

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

RM/
c: District Manager, MOECC Kingston - District
Vanessa Latimer

Appendix D
Monitoring Program

1040 Leeds Waste Disposal Site - Proposed Sampling Program

Semi Annual Monitoring Tasks

1	Monitor groundwater elevation
2	GPS Wells and SW stations
3	Photo Wells and SW Stations
4	Site inspection
5	GW and SW Sampling
6	Measure DTW and DTB at monitoring wells

Sampling Program

Groundwater Monitoring Wells:	08-1, MW101, MW102, MW103, MW104	
VOCs[1]:	08-1 and MW101	next sampling: 2023
total	**5**	
Lab criteria:	ODWS	

Surface Water Stations:	SW1, SW2, SW3, SW5, SW6, SW7	
total	**6**	
Lab criteria:	PWQO	

Monitoring Program	Groundwater		Surface Water	
	Spring and Fall		Spring and Fall	
Parameters	Alkalinity	Barium	Alkalinity	Mercury, dissolved
	N - Ammonia	Boron	N - Ammonia	Arsenic
	BOD	Cadmium	N - Ammonia(UI)	Barium
	COD	Calcium	BOD	Boron
	DOC	Chromium	COD	Cadmium
	Conductivity	Cobalt	DOC	Calcium
	Hardness	copper	Conductivity	Chromium
	pH	Iron	Hardness	Cobalt
	Phenols	Lead	pH	Copper
	Phosphorus (total)	Magnesium	Phenols	Iron
	TDS	Manganese	Phosphorus (total)	Lead
	TSS	Potassium	Phosphorus (dissolved)	Magnesium
	N - Total Kjeldahl	Silver	TDS	Manganese
	Chloride	Sodium	TSS	Nickel
	N - Nitrate	Vanadium	N - Total Kjeldahl	Potassium
	N - Nitrite	Zinc	Chloride	Silver
	Sulphate		N - Nitrate	Sodium
	Mercury		N - Nitrite	Strontium
	Aluminum		Sulphate	Vanadium
	Arsenic		Aluminum-dissolved	Zinc
			Selenium	Antimony
	VOCs at MW101 and 08-1: [1]		Sillicon	Beryllium
	Acetone	Dichloropropene, trans-1,3-	Thallium	Molybdenum
	Benzene	Dichloropropene, Total-1,3	Tungsten	Tin
	Bromodichloromethane	Ethylbenzene	Uranium	Titanium
	Bromoform	Hexane		
	Bromomethane	Methyl Butyl Ketone		
	Carbon Tetrachloride	Methyl Ethyl Ketone		
	Chloroethane	Methyl Isobutyl Ketone		
	Chloroform	Methyl-t-butyl Ether		
	Chloromethane	Chlorobenzene		
	Dibromochloromethane	Styrene		
	Ethylene Dibromide	Tetrachlroethane, 1,1,1,2-		
	Dichlorobenzene, 1,2-	Tetrachlroethane, 1,1,2,2-		
	Dichlorobenzene, 1,3-	Tetrachloroethylene		
	Dichlorobenzene, 1,4-	Toluene		
	Dichlorodifluoromethane	Trichloroethane, 1,1,1-		
	Dichloroethane, 1,1-	Trichloroethane, 1,1,2-		
	Dichloroethane, 1,2-	Trichloroethylene		
	Dichloroethene, 1,1-	Trichlorofluoromethane		
	Dichloroethene, cis-1,2-	Trimethybenzene, 1,3,5-		
	Dichloroethene, trans-1,2-	Vinyl Chloride		
	Dichloroethylene, Total-1,2	Xylene, m,p-		
	Methyl Chloride	Xylene, o-		
	Dichloropropane, 1,2-	Xylene, total		
	Dichloropropene, cis-1,3-			
Field	pH	N-NH3 unionized (Calc)	pH	N-NH3 unionized (Calc)
	Temperature	Turbidity	Temperature	
	Dissolved Oxygen	ORP	Dissolved Oxygen	Turbidity
	Conductivity	Groundwater elevations	Conductivity	ORP

[1] VOC analysis will occur every 5 years starting in 2019 (next sampling 2023)

In: CM
Chk: MW

Appendix E
MECP Correspondence

Ministry of the Environment, Conservation and Parks
Eastern Region
1259 Gardiners Road, Unit 3
Kingston ON K7P 3J6
Phone: 613.549.4000
or 800.267.0974

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Région de l'Est
1259, rue Gardiners, unité 3
Kingston (Ontario) K7P 3J6
Tél: 613 549-4000
ou 800 267-0974

Ontario

M E M O R A N D U M

August 11, 2020

TO: Nathalie Matthews
Sr. Environmental Officer
Kingston District Office
Eastern Region

FROM: Dana Cruikshank
Surface Water Scientist
Water Resources Group
Eastern Region

RE: 2019 Annual Report
Closed Leeds Waste Disposal Site: ECA #: A442002
Part Lot 11, Conc. III, Township of Leeds and the Thousand Islands
IDS Ref #: 5752-BN9GQY

I have reviewed the above report dated March 2020 prepared by Malroz for surface water concerns only.

For 2019 Malroz reports

- Site is characterized by a bedrock aquifer and areas of perched water in the overburden
- A creek is located along the eastern property boundary and flows southward into a marsh located 100 m south of the site. The marsh drains into a tributary of Sucker Brook. A beaver dam is located on the tributary upstream of SW6.
- Groundwater and surface water sampling was conducted on May 2 and October 8 in 2019.
- Leachate indicator parameters (LIPs) are alkalinity, chloride, nitrate, sulphate and boron.
- A water depth logger was established in 2019 at SW1. Between July 30 and September 29. Based on the logger information SW1 was dry during periods in August and September and was dry 45% of the time during the 3 months it was installed.
- Phenols, TP, iron and tungsten exceeded PWQO during spring sampling at one more locations. During the fall event alkalinity, pH, cadmium TP, aluminum,

cobalt, copper, iron, vanadium and zinc exceeded PWQO at one or more locations.

- Concludes that chemistry at SW1 and SW3 suggests some leachate impact but is attenuated downstream at SW5 and SW6. Impacts are intermittent in nature and may include local influences.

- Stream inverts conducted in October 2019 support the inference that groundwater is discharging into the creek southeast of the waste site.

- Several exceedances of RULs were observed in 2019 for alkalinity, DOC, hardness, TDS, aluminum, barium, iron, manganese and uranium. The acquisition of buffer lands will achieve B7 compliance.

- Recommends
  - The purchase of land to form a CAZ that extends from the landfills southern and eastern extent up tomSW3. Since impacts to SW3 do not exceed PWQOs, APVs CWQG no land beyond this point is required to form a Caz.
  - Reduce site inspections to annual from bi-annually.
  - Since site has been closed since 1991 evaluate feasibility of full closure with purchase of the CAZ.

Reviewer's Comments

The reviewer calculated the average concentrations of historical data up to and including 2018 as well as average concentrations for 2019. Values indicated as less than the MDL were converted to the MDL as per the Ministry's precautionary approach (i.e <0.01 becomes 0.01) The differences in concentrations calculated between the historical averages and the 2019 averages was conducted and the percentage differences are shown in Table 2. Values showing negative values of 25% or more are deemed significant and indicate concentrations of 2019 average concentrations greater than historical and are shaded yellow. LIPs are shaded blue.

Note SW3 and SW5 were dry in the fall sampling event. In comparing the spring and fall sampling event concentrations at SW1 the fall event tended to have significantly elevated concentrations than the spring as shown in Table 1.

Table 1: Percentage Differences between 2019 Spring and Fall Samples at SW1.

Alkalinity	-126	N - Nitrite	0	Nickel	-733
N - Ammonia	-1675	Sulphate	-267	Potassium	-313
N - Ammonia(Ul)(lab)	0	Aluminum (total)	-23400	Silver	
BOD	-333	Aluminum (dissolved)		Sodium	-29
COD	-472	Mercury	0	Strontium	100
DOC	-54	Arsenic	-2300	Vanadium	-140
Conductivity uS/cm	-129	Barium	-500	Zinc	-315
Hardness	-62	Boron	-132	Silicon	-438
pH	2	Cadmium	-960	Uranium	-383
Phenols	80	Calcium	-57	Antimony	
o-Phosphate (P)	-3247	Chromium	-500	Beryllium	
Phosphorus (total)	-558900	Cobalt	-5100	Thallium	0
TDS	-132	Copper	-783	Tin	
TSS	-32043	Iron	-18855	Titanium	
N - Total Kjeldahl	-34567	Lead	-4386	Tungsten	
Chloride	29	Magnesium	-70	Molybdenum	
N - Nitrate	0	Manganese	-3555		

Clearly the fall samples tend to have significantly higher concentrations of most parameters at SW1.

Table 2: Percentage Differences Between Historical Average Concentrations and 2019 Average Concentrations.

Parameters	SW2	SW1	SW3	SW7	SW5	SW6
Alkalinity	65	31	35	23	14	18
N - Ammonia	17	-133	48	37	14	-53
N - Ammonia(Ul)(lab)	92	40	68	-156	34	38
BOD	21	-134	-49	-25	17	47
COD	16	-20	26	57	39	44
DOC	2	-19	13	2	17	-17
Conductivity uS/cm	51	31	41	19	9	14
Hardness	36	29	17	-25	-18	-2
pH	2	-3	-3	1	-3	1
Phenols	35	-96	18	50	49	35
o-Phosphate (P)	-112	-1809	57	-135	-400	-160
Phosphorus (total)	77	-8741	91	50	71	65
TDS	89	36	47	34	23	34
TSS	52	-1181	69	71	85	58
N - Total Kjeldahl	13	-4100	64	30	54	30
Chloride	62	88	84	41	40	55
N - Nitrate	64	74	69	69	66	66
N - Nitrite	45	60	46	23	55	43
Sulphate	29	30	71	24	30	43
Aluminum (total)	84	33	98	84	94	93
Aluminum (dissolved)	-378	-43		56	100	-18
Mercury	60	98	54	73	99	73
Arsenic	91	-8	87	82	89	87
Barium	22	-13	54	-39	1	44
Boron	-35	27	1	-45	-15	-27
Cadmium	86	71	97	80	96	97
Calcium	24	18	10	-27	-25	-6
Chromium	56	59	59	12	92	83
Cobalt	67	-87	93	74	87	42
Copper	66	39	89	54	97	67
Iron	75	-296	87	37	63	51
Lead	91	76	96	71	99	97
Magnesium	51	41	29	-18	-8	5
Manganese	81	24	96	-17	91	52
Nickel	86	68	85	-13	90	90
Potassium	59	45	46	41	22	12
Silver	79		83	-15	82	80
Sodium	-7	51	48	-84	-19	6
Strontium	28	6	-5	-58	8	-69
Vanadium	-14	0	16	-84	-34	0
Zinc	-4	24	58	6	39	53
Silicon	12	-118	51	-28	55	-8
Uranium	84	49	81	33	-10	22
Antimony	77	80	0	75	40	75
Beryllium	-100	-300	0	-60	-300	-100
Thallium	40	50	0	33	50	40
Tin	-150	-900	0	-82	-900	-150
Titanium	21	-20	86	-45	9	32
Tungsten	-150	-200	-350	-150	-400	-150
Molybdenum	95	96	98	96	60	92

This analysis shows that 2019 concentrations tended to be higher at SW1 and SW7. None of the LIPs determined by Malroz showed elevated concentrations in 2019 compared to historical. For SW1. only o-phosphate and dissolved aluminum showed higher concentrations at upstream SW2. The remaining parameters that were elevated at SW1 compared to background could likely be attributed to the landfill. Some parameters could also be natural due to the dry wet cycle that the data logger indicated.

Groundwater well 08-1 which is adjacent to SW1 shows PWQO exceedances for TP, aluminum, boron, cobalt and zinc. TP, aluminum and cobalt had higher concentrations at SW1 in 2019 compared to historical indicating that groundwater inflow to the creek may be a source.

Table 3 shows the average 2019 concentrations using a comparative percentage difference analysis.

Table 3: Percentage Differences Of 2019 Average Concentrations.

Parameter	2 vs 1	2 vs 3	1 vs 3	3 vs 5	7 vs 5	7 vs 6	5 vs 6
Alkalinity	-355	-274	18	-15	-165	-90	28
N - Ammonia	-477	54	92	-67	23	-8	-40
N - Ammonia(UI)(lab)	0	0	0	0	0	0	0
BOD	-167	0	63	0	0	0	0
COD	-66	42	65	-38	-152	-96	22
DOC	-7	43	47	-66	-43	-64	-15
Conductivity uS/cm	-224	-166	18	-18	-175	-104	26
Hardness	-155	-150	2	-14	-145	-70	31
pH	-10	-14	-3	2	-3	1	3
Phenols	-200	0	67	0	0	0	0
o-Phosphate (P)	-2242	75	99	-285	-113	-177	-30
Phosphorus (total)	-32788	88	100	-400	-100	-220	-60
TDS	-227	-167	18	-19	-175	-103	26
TSS	-4080	48	99	79	-50	-138	-58
N - Total Kjeldahl	-6419	63	99	-67	-25	-88	-50
Chloride	-20	-120	-83	-18	-117	-42	35
N - Nitrate	0	0	0	0	0	0	0
N - Nitrite	0	0	0	0	0	0	0
Sulphate	-56	-11	29	-40	-367	-233	29
Aluminum (total)	-1473	80	99	0	33	-56	-133
Aluminum (dissolved)	86	100	100		100	-50	
Mercury	0	0	0	0	0	0	0
Arsenic	-1100	50	96	-100	-33	-67	-25
Barium	-303	-18	71	-10	-132	-65	29
Boron	-269	-198	19	-13	-130	-56	32
Cadmium	-161	75	91	0	0	0	0
Calcium	-147	-140	3	-12	-116	-55	28
Chromium	-133	-33	43	50	33	0	-50
Cobalt	-593	87	98	-100	-33	-233	-150
Copper	-146	8	63	55	17	-33	-60
Iron	-1643	83	99	-110	5	-149	-162
Lead	-296	73	93	45	45	-5	-92
Magnesium	-168	-168	0	-20	-228	-113	35
Manganese	-589	85	98	-67	68	-1113	-3690
Nickel	-211	11	71	13	42	46	7
Potassium	-310	-160	37	-8	-155	-145	4
Silver		0		0	0	0	0
Sodium	-45	-53	-6	-22	-195	-95	34
Strontium	-34	-66	-23	-7	-115	-101	7
Vanadium	-70	0	41	0	0	0	0
Zinc	-76	32	61	8	-60	-20	25
Silicon	-144	15	65	45	37	-19	-89
Uranium	-169	-100	26	15	-120	-30	41
Antimony	0	0	0	-200	-200	0	67
Beryllium	0	0	0	0	0	0	0
Thallium	0	0	0	0	0	0	0
Tin	0	0	0	0	0	0	0
Titanium	63	31	-83	55	38	38	0
Tungsten	-20	-260	-200	44	-100	0	50
Molybdenum	0	0	0	0	0	-50	-50

In 2019, SW1 has significantly higher concentrations than SW2 for most parameters including three out five LIPs. This is another line of evidence showing that landfill leachate is affecting water quality in the stream adjacent to the landfill. However as you move downstream at SW3 the number of parameters showing elevated concentrations compared to background is significantly reduced. Water quality downstream of SW1 at SW3 is better indicating that many parameters have been attenuated as Malroz has indicated seems likely.

SW5 monitors water quality leaving the landfill area after passing through a wetland area before entering the creek. Water quality at SW5 is poorer than SW3 for many parameters but only sulphate of the LIPs is higher. Many of these parameters also have elevated concentrations at MW103 which was dry in the fall and MW104 was dry in both the spring and fall. It therefore seems unlikely that groundwater is impacting SW5 (should be confirmed by groundwater reviewer) and it is likely that in addition to some leachate contributions from SW3 that some elevated parameters are also associated with natural processes in the wetland or other anthropogenic influences.

Background SW7 when compared to SW5 indicates that water quality at SW5 is much poorer than background at SW7. Four out 5 LIPs are significantly higher at SW5 compared to background SW7. SW6 located at the beaver dam shows significantly elevated concentrations when compared to background but a similar comparison to SW5 which is the input from the landfill area shows SW6 with higher concentrations for a number of parameters but none for LIPs. This would suggest that the landfill has the potential to impact water quality in the tributary but through dilution is not having a major impact.

In summary, leachate from Leeds Closed Landfill is having an impact on water quality in the tributary adjacent to the landfill. This impact is minimized in that at least in the summer of 2019 water was present only 45% of the time. In turn, the water quality further downstream at SW3 in 2019 is generally better than in the tributary at SW1 showing dilution or attenuation. Water passing through the wetland from the tributary to SW5 shows a large number of parameters with higher concentrations than upstream at SW3. This could be due to groundwater impacts (groundwater to determine) or natural wetland processes

PWQO exceedances at SW6 in 2019 were observed for iron, TP and aluminum. The 2019 and April 2020 data indicate that in some months either SW5 or SW7 could contribute but that in general SW6 concentrations were usually higher than either SW5 or SW7. The ponding behind the beaver dam is likely the cause. While there are negative water impacts at SW6 none of the concentrations are likely to cause harm to aquatic life.

Recommendations

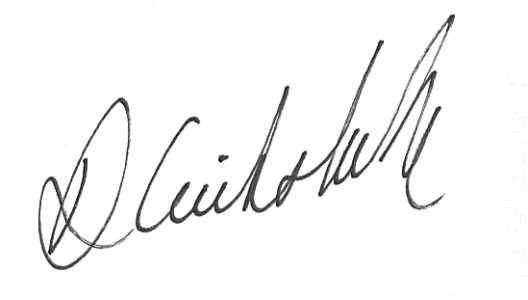
1. Water quality impacts are difficult to interpret because the water quality is seasonally quite variable and limited in frequency. Therefore, the reviewer in his opinion would like to maintain the spring/fall frequency in order to provide some more robust data.

2. However, the reviewer notes that a large number of parameters could be eliminated from the sampling program. In addition SW7 and SW6 could be eliminated from the sampling program if a trigger mechanism at SW5 is presented and approved by the Ministry. The contingency plan would trigger sampling SW7 and SW6. A proposal should be submitted to the Ministry prior to the 2021 field season.

3. The above proposals are conditional upon the groundwater reviewer's assessment.

4. The proposed staff gauge at SW1 and perhaps at SW3 should be installed early in the spring and retained to the end of October. It should also be determined if flows at SW3 are dependent on flows at SW1 or are more influenced by groundwater. If the latter is the case, then a case could be made to eliminate SW2 from the monitoring program.

If you have any questions regarding the above, I would be happy to discuss them with you.



Dana Cruikshank

c: Shawn Trimper
Roberto Sacilotto
File SW LG-LT-03-06 (Leeds LFS)
File SW-07-02-12-02-02 (tributary to Sucker Brook)

Ministry of the Environment, Conservation and Parks
Eastern Region
1259 Gardiners Road, Unit 3
Kingston ON K7P 3J6
Phone: 613.549.4000
or 800.267.0974

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Région de l'Est
1259, rue Gardiners, unité 3
Kingston (Ontario) K7P 3J6
Tél: 613 549-4000
ou 800 267-0974

Ontario

M E M O R A N D U M

January 8, 2021

TO: Nathalie Matthews
Sr. Environmental Officer
Kingston District Office
Eastern Region

FROM: Dana Cruikshank
Surface Water Scientist
Water Resources Group
Eastern Region

RE: 2021 Action Plan
Closed Leeds Waste Disposal Site: ECA #: A442002
Part Lot 11, Conc. III, Township of Leeds and the Thousand Islands
ECHO Ref #: 1- 14259317

I have reviewed the above report dated October 20, 2020 prepared by Malroz for surface water concerns only.

The Proposed Action Plan for 2021 consists of:

- Enter negotiations with the adjacent property owners to purchase 30 metres of land around the WDS as a buffer.
- Purchase or obtain groundwater rights to lands located to the south of the landfill that will serve as a Contaminant Attenuation Zone (CAZ)
- Obtain a legal survey of the proposed CAZ and buffer lands. The survey work will be undertaken early in 2021, pending an agreement for the purchase of the property.
- Register lands on title as CAZ lands and obtain a certificate of requirement.
- Install a culvert and place additional capping material along the eastern extent of the landfill to mitigate potential leachate impacts to the stream.
- Construct a rock check dam along the surface water course. The check dam is intended to reduce the flow rate of the stream, which should assist the iron precipitates forming in the surface water to fall out of suspension.
- The rock check dam will be approximately 0.5 m in height and will be located within the adjacent stream to the south of the landfill.
- The installation of a rock check dam may also address leachate and background related iron impacts within the stream.

- Discontinue groundwater monitoring at the site as groundwater is well characterized and discharges to surface water.
- Surface water station SW1 will be moved to south of the proposed culvert.
- Surface water monitoring as described the by the ECA and in correspondence with the MECP, is proposed for 2 years following implementation of the above-mentioned measures.
- Preliminary results will be provided to the MECP within 3 weeks following
- each surface water sampling event for review. Following the two-year period, results will be reviewed and the need for ongoing monitoring will be assessed.
- Regular bi-annual inspections of the landfill for cap integrity and the presence of
- seeps are proposed during the 2-year monitoring period and beyond.

Reviewer's Comments

As previously noted in my August 20, 2020 technical review leachate from Leeds Closed Landfill is having an impact on water quality in the tributary adjacent to the landfill. This impact is minimized in that at least in the summer of 2019 water was present only 45% of the time. In turn, the water quality further downstream at SW3 in 2019 is generally better than in the tributary at SW1 showing dilution or attenuation. Water passing through the wetland from the tributary to SW5 shows a large number of parameters with higher concentrations than upstream at SW3. This could be due to groundwater impacts (groundwater to determine) or natural wetland processes

The 2019 and April 2020 data indicate that in some months either SW5 or SW7 could contribute but that in general SW6 concentrations were usually higher than either SW5 or SW7. The ponding behind the beaver dam is likely the cause.

The reviewer is not opposed to any of the proposed mitigation actions for surface water in the tributary. The new SW1 location should be renamed so data isn't confused with the former location, The previous AMR indicated that staff gauges would be installed at SW1 and SW3. I would prefer that we had water level recorders instead as staff gauges require frequent manually readings which might not be viable given this is a closed landfill and staff are not likely on-hand to read the gauges.

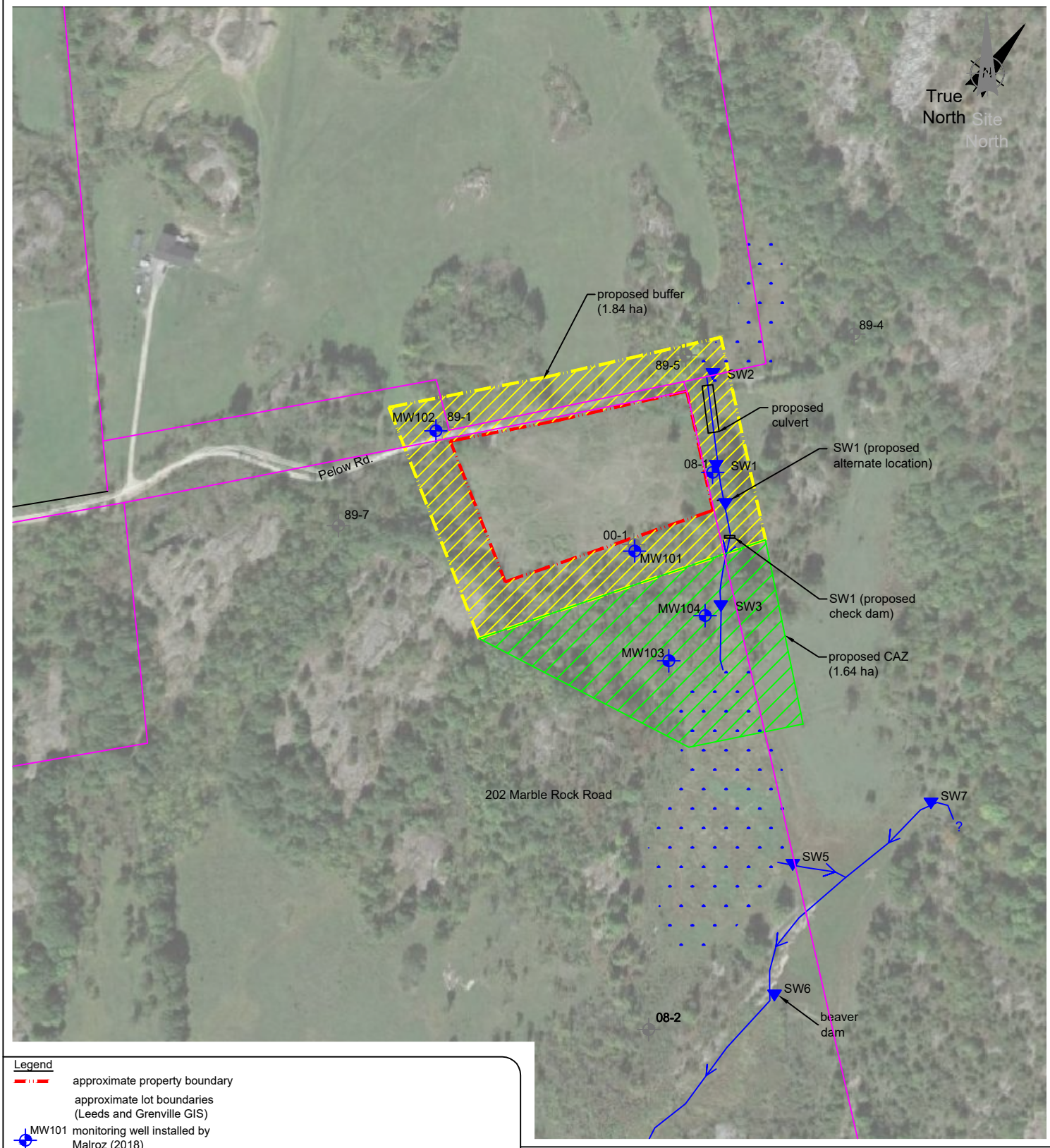
From my perspective the key compliance station is SW6 at the beaver dam which receives water from upstream at SW7 and SW5 which is the outlet from the tributary that the mitigation is being planned on.

Water quality impacts are difficult to interpret because the water quality is seasonally quite variable and limited in frequency. Therefore, the reviewer in his opinion would like to see more frequent sampling especially at SW6.

If you have any questions regarding the above, I would be happy to discuss them with you.

Dana Cruikshank

c: Shawn Trimper
Roberto Sacilotto
File SW LG-LT-03-06 (Leeds LFS)
File SW-07-02-12-02-02 (tributary to Sucker Brook)



Legend

- approximate property boundary
- approximate lot boundaries (Leeds and Grenville GIS)
- MW101 monitoring well installed by Malroz (2018)
- 00-1 monitoring well not located or abandoned
- proposed buffer lands to be purchased
- proposed CAZ to be purchased

Note: figure based on Malroz field observations, Google Earth imagery and data obtained form the Leeds and Grenville online GIS portal.

Rev	Date	Description	By	Chkd
D0	2020/05/22	draft for review	AP	P

Proposed Action Plan

Leeds Landfill
Township of Leeds and Thousand Islands, Ontario

File: 1040-120.00

Approx. Scale (m)
0 100

Figure 1

MALROZ

Appendix F
Site Inspection

Leeds Site Inspection

Date: April 23/20 Time: 13:00
Inspected by: MW/JMP
Weather Conditions: Sunny (10°C)

Inspection Item	condition	notes
Condition of the waste cap (Erosion, repairs needed?)	Good	
Are there seep present. east of landfill mound, north of SW1 orange staining indicative of historic seep	- no flowing seep obs.	- orange staining & sheen along stream bank, extending east
Condition of perimeter fence and gate.	no fence on north side of mound begin east side of gate	
Is the site secure.	no	
Were vermin, vectors, dust or litter present.	litter at front gate (mattress)	

General Comments

Mallory Wright
Signature

Leeds Site Inspection

Date: Nov. 16/20 Time: 14:00

Inspected by: Mallory Wright

Weather Conditions: Cloudy (5°C)

Inspection Item	condition	notes
Condition of the waste cap (Erosion, repairs needed?)	Good	
Are there seep present.	NO	
Condition of perimeter fence and gate.	Still no fence along north side by gate	
Is the site secure.	yes.	
Were vermin, vectors, dust or litter present.	yes	litter present at front gate Old Couch pieces? and lumber. There is also litter on the South side of road away across from muloz.

General Comments

M. Wright

Signature

Appendix G
Laboratory Certificates

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G93070 **REPORT No. B20-10706**

Report To:

Malroz Engineering Inc.
308 Wellington Street, 2nd Floor
Kingston ON K7K 7A8 Canada
Attention: Mallory Wright

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 23-Apr-20
DATE REPORTED: 01-May-20
SAMPLE MATRIX: Surface Water

JOB/PROJECT NO.: 1040-LEEDS
P.O. NUMBER:
WATERWORKS NO.

			Client I.D.		20-W001	20-W002	20-W003	20-W004
			Sample I.D.		B20-10706-1	B20-10706-2	B20-10706-3	B20-10706-4
			Date Collected		23-Apr-20	23-Apr-20	23-Apr-20	23-Apr-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	27-Apr-20/O	33	20	103	88
pH @25°C	pH Units		SM 4500H	27-Apr-20/O	7.19	7.29	7.65	7.69
Conductivity @25°C	µmho/cm	1	SM 2510B	27-Apr-20/O	69	48	232	201
Chloride	mg/L	0.5	SM4110C	29-Apr-20/O	0.6	0.8	2.1	1.8
Nitrite (N)	mg/L	0.05	SM4110C	29-Apr-20/O	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	0.05	SM4110C	29-Apr-20/O	0.08	0.10	0.06	0.07
Sulphate	mg/L	1	SM4110C	29-Apr-20/O	1	2	10	8
BOD(5 day)	mg/L	3	SM 5210B	24-Apr-20/K	< 3	< 3	< 3	< 3
Total Suspended Solids	mg/L	3	SM2540D	24-Apr-20/K	6	5	4	43
o-Phosphate (P)	mg/L	0.002	PE4500-S	27-Apr-20/K	0.007	0.007	0.025	0.014
Phosphorus-Total	mg/L	0.01	E3199A.1	27-Apr-20/K	< 0.01	0.03	0.05	0.09
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	27-Apr-20/K	0.2	0.3	0.4	0.6
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	27-Apr-20/K	< 0.01	0.02	0.01	0.01
Ammonia (N)-unionized	mg/L	0.01	CALC	27-Apr-20/K	< 0.01	< 0.01	< 0.01	< 0.01
Total Dissolved Solids	mg/L	3	SM 2540D	28-Apr-20/O	35	24	118	102
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	27-Apr-20/O	3.8	4.6	7.3	6.8
Phenolics	mg/L	0.001	MOEE 3179	28-Apr-20/K	< 0.001	< 0.001	< 0.001	< 0.001
COD	mg/L	5	SM 5220D	28-Apr-20/O	14	20	21	20
Hardness (as CaCO3)	mg/L	1	SM 3120	29-Apr-20/O	34	24	120	103
Aluminum	mg/L	0.01	SM 3120	28-Apr-20/O	0.02	0.01	0.10	0.08
Arsenic	mg/L	0.0001	EPA 200.8	29-Apr-20/O	< 0.0001	0.0001	0.0002	0.0002
Barium	mg/L	0.001	SM 3120	29-Apr-20/O	0.013	0.007	0.029	0.026
Boron	mg/L	0.005	SM 3120	29-Apr-20/O	< 0.005	0.015	0.047	0.038
Cadmium	mg/L	).000015	EPA 200.8	29-Apr-20/O	< 0.000015	< 0.000015	< 0.000015	0.000029
Calcium	mg/L	0.02	SM 3120	29-Apr-20/O	9.18	7.56	31.3	25.6
Chromium	mg/L	0.001	EPA 200.8	29-Apr-20/O	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0001	EPA 200.8	29-Apr-20/O	< 0.0001	0.0001	0.0001	0.0004

Michelle Dubien
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G93070 **REPORT No. B20-10706**

Report To:

Malroz Engineering Inc.
308 Wellington Street, 2nd Floor
Kingston ON K7K 7A8 Canada
Attention: Mallory Wright

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 23-Apr-20
DATE REPORTED: 01-May-20
SAMPLE MATRIX: Surface Water

JOB/PROJECT NO.: 1040-LEEDS
P.O. NUMBER:
WATERWORKS NO.

			Client I.D.		20-W001	20-W002	20-W003	20-W004
			Sample I.D.		B20-10706-1	B20-10706-2	B20-10706-3	B20-10706-4
			Date Collected		23-Apr-20	23-Apr-20	23-Apr-20	23-Apr-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Copper	mg/L	0.0001	EPA 200.8	29-Apr-20/O	0.0004	0.0004	0.0010	0.0014
Iron	mg/L	0.005	SM 3120	29-Apr-20/O	0.121	0.444	0.341	0.705
Lead	mg/L	0.00002	EPA 200.8	29-Apr-20/O	0.00003	0.00010	0.00016	0.00054
Magnesium	mg/L	0.02	SM 3120	29-Apr-20/O	3.00	1.55	10.8	8.83
Manganese	mg/L	0.001	SM 3120	29-Apr-20/O	0.003	0.043	0.016	0.045
Mercury	mg/L	0.00002	SM 3112 B	29-Apr-20/O	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nickel	mg/L	0.01	SM 3120	29-Apr-20/O	< 0.01	< 0.01	< 0.01	< 0.01
Potassium	mg/L	0.1	SM 3120	29-Apr-20/O	0.3	0.3	1.6	1.4
Silicon	mg/L	0.01	SM 3120	29-Apr-20/O	1.98	1.86	2.31	1.84
Sodium	mg/L	0.2	SM 3120	29-Apr-20/O	2.3	1.5	5.3	4.3
Uranium	mg/L	0.00005	EPA 200.8	29-Apr-20/O	< 0.00005	< 0.00005	0.00028	0.00022
Vanadium	mg/L	0.0001	EPA 200.8	29-Apr-20/O	0.0003	0.0003	0.0005	0.0012
Zinc	mg/L	0.005	SM 3120	29-Apr-20/O	0.006	< 0.005	0.006	0.019

Michelle Dubien
Lab Manager

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Attention: Mallory Wright

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 23-Apr-20
DATE REPORTED: 01-May-20
SAMPLE MATRIX: Surface Water

JOB/PROJECT NO.: 1040-LEEDS
P.O. NUMBER:
WATERWORKS NO.

			Client I.D.		20-W005	20-W009		
			Sample I.D.		B20-10706-5	B20-10706-6		
			Date Collected		23-Apr-20	23-Apr-20		
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	27-Apr-20/O	143	101		
pH @25°C	pH Units		SM 4500H	27-Apr-20/O	7.88	7.58		
Conductivity @25°C	µmho/cm	1	SM 2510B	27-Apr-20/O	311	216		
Chloride	mg/L	0.5	SM4110C	29-Apr-20/O	2.8	1.8		
Nitrite (N)	mg/L	0.05	SM4110C	29-Apr-20/O	< 0.05	< 0.05		
Nitrate (N)	mg/L	0.05	SM4110C	29-Apr-20/O	0.28	0.11		
Sulphate	mg/L	1	SM4110C	29-Apr-20/O	11	5		
BOD(5 day)	mg/L	3	SM 5210B	24-Apr-20/K	< 3	< 3		
Total Suspended Solids	mg/L	3	SM2540D	24-Apr-20/K	6	4		
o-Phosphate (P)	mg/L	0.002	PE4500-S	27-Apr-20/K	0.007	0.014		
Phosphorus-Total	mg/L	0.01	E3199A.1	27-Apr-20/K	0.03	0.01		
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	27-Apr-20/K	0.6	0.6		
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	27-Apr-20/K	0.23	0.35		
Ammonia (N)-unionized	mg/L	0.01	CALC	27-Apr-20/K	< 0.01	< 0.01		
Total Dissolved Solids	mg/L	3	SM 2540D	28-Apr-20/O	160	110		
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	27-Apr-20/O	5.8	5.4		
Phenolics	mg/L	0.001	MOEE 3179	28-Apr-20/K	< 0.001	< 0.001		
COD	mg/L	5	SM 5220D	28-Apr-20/O	18	21		
Hardness (as CaCO3)	mg/L	1	SM 3120	29-Apr-20/O	162	106		
Aluminum	mg/L	0.01	SM 3120	28-Apr-20/O	0.03	0.02		
Arsenic	mg/L	0.0001	EPA 200.8	29-Apr-20/O	0.0001	0.0001		
Barium	mg/L	0.001	SM 3120	29-Apr-20/O	0.044	0.033		
Boron	mg/L	0.005	SM 3120	29-Apr-20/O	0.090	0.054		
Cadmium	mg/L	).000015	EPA 200.8	29-Apr-20/O	< 0.000015	< 0.000015		
Calcium	mg/L	0.02	SM 3120	29-Apr-20/O	40.7	27.8		
Chromium	mg/L	0.001	EPA 200.8	29-Apr-20/O	< 0.001	< 0.001		
Cobalt	mg/L	0.0001	EPA 200.8	29-Apr-20/O	0.0003	0.0002		

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Michelle Dubien
Lab Manager

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Kingston ON K7K 7A8 Canada
Attention: Mallory Wright

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 23-Apr-20
DATE REPORTED: 01-May-20
SAMPLE MATRIX: Surface Water

JOB/PROJECT NO.: 1040-LEEDS
P.O. NUMBER:
WATERWORKS NO.

			Client I.D.		20-W005	20-W009		
			Sample I.D.		B20-10706-5	B20-10706-6		
			Date Collected		23-Apr-20	23-Apr-20		
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Copper	mg/L	0.0001	EPA 200.8	29-Apr-20/O	0.0010	0.0004		
Iron	mg/L	0.005	SM 3120	29-Apr-20/O	0.462	0.700		
Lead	mg/L	0.00002	EPA 200.8	29-Apr-20/O	0.00023	0.00004		
Magnesium	mg/L	0.02	SM 3120	29-Apr-20/O	13.1	8.63		
Manganese	mg/L	0.001	SM 3120	29-Apr-20/O	0.155	0.113		
Mercury	mg/L	0.00002	SM 3112 B	29-Apr-20/O	< 0.00002	< 0.00002		
Nickel	mg/L	0.01	SM 3120	29-Apr-20/O	< 0.01	< 0.01		
Potassium	mg/L	0.1	SM 3120	29-Apr-20/O	2.9	1.9		
Silicon	mg/L	0.01	SM 3120	29-Apr-20/O	3.12	2.71		
Sodium	mg/L	0.2	SM 3120	29-Apr-20/O	6.1	4.1		
Uranium	mg/L	0.00005	EPA 200.8	29-Apr-20/O	0.00026	0.00011		
Vanadium	mg/L	0.0001	EPA 200.8	29-Apr-20/O	0.0006	0.0002		
Zinc	mg/L	0.005	SM 3120	29-Apr-20/O	0.023	0.005		

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Michelle Dubien
Lab Manager

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G93071 **REPORT No. B20-10709**

Report To:

Malroz Engineering Inc.
308 Wellington Street, 2nd Floor
Kingston ON K7K 7A8 Canada
Attention: Mallory Wright

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 23-Apr-20
DATE REPORTED: 01-May-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: 1040-LEEDS
P.O. NUMBER:
WATERWORKS NO.

			Client I.D.		20-W006	20-W007	20-W008	20-W010
			Sample I.D.		B20-10709-1	B20-10709-2	B20-10709-3	B20-10709-4
			Date Collected		23-Apr-20	23-Apr-20	23-Apr-20	23-Apr-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	28-Apr-20/O	212	763	816	215
pH @25°C	pH Units		SM 4500H	28-Apr-20/O	8.03	7.79	7.50	8.01
Conductivity @25°C	µmho/cm	1	SM 2510B	28-Apr-20/O	510	1620	1640	460
Chloride	mg/L	0.5	SM4110C	29-Apr-20/O	4.4	13.4	18.0	2.1
Nitrite (N)	mg/L	0.05	SM4110C	29-Apr-20/O	< 0.05	< 0.05	0.06	< 0.05
Nitrate (N)	mg/L	0.05	SM4110C	29-Apr-20/O	0.06	0.07	0.37	0.09
Sulphate	mg/L	1	SM4110C	29-Apr-20/O	44	137	57	17
BOD(5 day)	mg/L	3	SM 5210B	24-Apr-20/K		< 3	17	< 3
Total Suspended Solids	mg/L	3	SM2540D	28-Apr-20/K		480	600	3900
o-Phosphate (P)	mg/L	0.002	PE4500-S	27-Apr-20/K	7.45	0.071	0.018	0.009
Phosphorus-Total	mg/L	0.01	E3199A.1	27-Apr-20/K	30.2	0.33	0.61	2.96
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	27-Apr-20/K	21.2	0.7	11.7	1.0
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	27-Apr-20/K	0.25	0.02	9.05	0.01
Total Dissolved Solids	mg/L	3	SM 2540D	29-Apr-20/O	264	885	898	238
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	28-Apr-20/O	5.3	16.3	18.6	4.3
Phenolics	mg/L	0.002	MOEE 3179	28-Apr-20/K		< 0.002	< 0.002	< 0.002
COD	mg/L	5	SM 5220D	28-Apr-20/O	1080	38	90	54
Hardness (as CaCO3)	mg/L	1	SM 3120	28-Apr-20/O	263	933	851	267
Aluminum	mg/L	0.01	SM 3120	28-Apr-20/O	0.21	0.11	0.10	0.03
Arsenic	mg/L	0.0001	EPA 200.8	29-Apr-20/O	0.0002	0.0004	0.0006	0.0002
Barium	mg/L	0.001	SM 3120	28-Apr-20/O	0.040	0.064	0.268	0.018
Boron	mg/L	0.005	SM 3120	28-Apr-20/O	0.064	0.605	0.839	0.017
Cadmium	mg/L	).000015	EPA 200.8	29-Apr-20/O	< 0.000015	< 0.000015	0.000024	< 0.000015
Calcium	mg/L	0.02	SM 3120	28-Apr-20/O	58.8	234	219	56.5
Chromium	mg/L	0.001	EPA 200.8	29-Apr-20/O	< 0.001	< 0.001	< 0.001	0.001
Cobalt	mg/L	0.0001	EPA 200.8	29-Apr-20/O	0.0004	0.0005	0.0021	0.0004
Copper	mg/L	0.0001	EPA 200.8	29-Apr-20/O	0.0017	0.0078	0.0014	0.0032

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Michelle Dubien
Lab Manager

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G93071 **REPORT No. B20-10709**

Report To:

Malroz Engineering Inc.
308 Wellington Street, 2nd Floor
Kingston ON K7K 7A8 Canada
Attention: Mallory Wright

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 23-Apr-20
DATE REPORTED: 01-May-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: 1040-LEEDS
P.O. NUMBER:
WATERWORKS NO.

			Client I.D.		20-W006	20-W007	20-W008	20-W010
			Sample I.D.		B20-10709-1	B20-10709-2	B20-10709-3	B20-10709-4
			Date Collected		23-Apr-20	23-Apr-20	23-Apr-20	23-Apr-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Iron	mg/L	0.005	SM 3120	28-Apr-20/O	0.172	< 0.005	18.9	< 0.005
Lead	mg/L	0.00002	EPA 200.8	29-Apr-20/O	0.00016	0.00020	0.00007	0.00038
Magnesium	mg/L	0.02	SM 3120	28-Apr-20/O	28.3	84.7	73.8	16.5
Manganese	mg/L	0.001	SM 3120	28-Apr-20/O	0.095	0.076	2.18	< 0.001
Mercury	mg/L	0.00002	SM 3112 B	28-Apr-20/O	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Potassium	mg/L	0.1	SM 3120	28-Apr-20/O	0.6	1.7	39.3	0.6
Silver	mg/L	0.0001	EPA 200.8	29-Apr-20/O	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	0.2	SM 3120	28-Apr-20/O	12.9	56.9	32.4	12.1
Vanadium	mg/L	0.0001	EPA 200.8	29-Apr-20/O	0.0020	0.0013	0.0005	0.0016
Zinc	mg/L	0.005	SM 3120	28-Apr-20/O	< 0.005	< 0.005	0.076	< 0.005

1. Results unavailable for certain requested parameters due to low sample volume

Michelle Dubien
Lab Manager

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G92640 **REPORT No. B20-36130**

Report To:

Malroz Engineering Inc.
308 Wellington Street, 2nd Floor
Kingston ON K7K 7A8 Canada
Attention: Mallory Wright

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 16-Nov-20
DATE REPORTED: 30-Nov-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: 1040-LEEDS
P.O. NUMBER: 1040
WATERWORKS NO.

			Client I.D.		20-W016	20-W017	20-W019	20-W020
			Sample I.D.		B20-36130-1	B20-36130-2	B20-36130-3	B20-36130-4
			Date Collected		16-Nov-20	16-Nov-20	16-Nov-20	16-Nov-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	18-Nov-20/O	118	710	615	
pH @25°C	pH Units		SM 4500H	18-Nov-20/O	8.09	7.27	7.24	
Conductivity @25°C	µmho/cm	1	SM 2510B	18-Nov-20/O	311	1530	1500	
Chloride	mg/L	0.5	SM4110C	25-Nov-20/O	2.9	11.7	12.0	
Nitrate (N)	mg/L	0.05	SM4110C	25-Nov-20/O	< 0.05	< 0.05	0.94	
Nitrite (N)	mg/L	0.05	SM4110C	25-Nov-20/O	< 0.05	< 0.05	0.10	
Sulphate	mg/L	1	SM4110C	25-Nov-20/O	32	129	193	
BOD(5 day)	mg/L	3	SM 5210B	18-Nov-20/K		< 3	4	
Total Suspended Solids	mg/L	3	SM2540D	17-Nov-20/K		13700	1370	
o-Phosphate (P)	mg/L	0.002	PE4500-S	19-Nov-20/K		0.056	1.54	
Phosphorus-Total	mg/L	0.01	E3199A.1	25-Nov-20/K	14.3	0.13	3.23	
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	25-Nov-20/K	4.8	0.7	5.2	
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	19-Nov-20/K	0.06	0.05	2.54	
Total Dissolved Solids	mg/L	3	SM 2540D	19-Nov-20/O	160	835	818	
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	19-Nov-20/O	5.4	6.6	10.3	2.1
Phenolics	mg/L	0.002	MOEE 3179	25-Nov-20/K		< 0.002	< 0.002	
COD	mg/L	5	SM5220C	18-Nov-20/K	225	37	140	
Hardness (as CaCO3)	mg/L	1	SM 3120	19-Nov-20/O	175	641	856	252
Aluminum	mg/L	0.01	SM 3120	19-Nov-20/O	0.04	0.09	0.11	0.08
Arsenic	mg/L	0.0001	EPA 200.8	30-Nov-20/O	0.0002	0.0006	0.0010	0.0002
Barium	mg/L	0.001	SM 3120	19-Nov-20/O	0.026	0.059	0.256	0.030
Boron	mg/L	0.005	SM 3120	19-Nov-20/O	0.062	0.481	1.36	0.017
Cadmium	mg/L	).000015	EPA 200.8	30-Nov-20/O	< 0.000015	0.000026	0.000468	< 0.000015
Calcium	mg/L	0.02	SM 3120	19-Nov-20/O	39.9	163	218	66.8
Chromium	mg/L	0.001	EPA 200.8	30-Nov-20/O	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0001	EPA 200.8	30-Nov-20/O	< 0.0001	0.0001	0.0025	< 0.0001
Copper	mg/L	0.0001	EPA 200.8	30-Nov-20/O	0.0063	0.0015	0.0035	0.0041

Michelle Dubien
Lab Manager

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

CADUCEON ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G92640 **REPORT No. B20-36130**

Report To:

Malroz Engineering Inc.
308 Wellington Street, 2nd Floor
Kingston ON K7K 7A8 Canada
Attention: Mallory Wright

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 16-Nov-20
DATE REPORTED: 30-Nov-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: 1040-LEEDS
P.O. NUMBER: 1040
WATERWORKS NO.

			Client I.D.		20-W016	20-W017	20-W019	20-W020
			Sample I.D.		B20-36130-1	B20-36130-2	B20-36130-3	B20-36130-4
			Date Collected		16-Nov-20	16-Nov-20	16-Nov-20	16-Nov-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Iron	mg/L	0.005	SM 3120	19-Nov-20/O	0.011	< 0.005	6.62	0.028
Lead	mg/L	0.00002	EPA 200.8	30-Nov-20/O	0.00017	0.00014	0.00009	0.00006
Magnesium	mg/L	0.02	SM 3120	19-Nov-20/O	18.2	56.9	75.6	20.7
Manganese	mg/L	0.001	SM 3120	19-Nov-20/O	0.007	0.213	2.58	0.001
Mercury	mg/L	0.00002	SM 3112 B	19-Nov-20/O		< 0.00002	< 0.00002	
Potassium	mg/L	0.1	SM 3120	19-Nov-20/O	0.4	1.9	36.6	0.5
Silver	mg/L	0.0001	EPA 200.8	30-Nov-20/O	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	0.2	SM 3120	19-Nov-20/O	11.7	51.3	33.6	16.2
Vanadium	mg/L	0.0001	EPA 200.8	30-Nov-20/O	0.0014	0.0010	0.0008	0.0010
Zinc	mg/L	0.005	SM 3120	19-Nov-20/O	< 0.005	< 0.005	0.375	< 0.005

1. Results unavailable for certain requested parameters due to low sample volumes

Michelle Dubien
Lab Manager

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G92641 **REPORT No. B20-36140**

Report To:

Malroz Engineering Inc.
308 Wellington Street, 2nd Floor
Kingston ON K7K 7A8 Canada
Attention: Mallory Wright

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 16-Nov-20
DATE REPORTED: 30-Nov-20
SAMPLE MATRIX: Surface Water

JOB/PROJECT NO.: 1040-LEEDS
P.O. NUMBER: 1040
WATERWORKS NO.

			Client I.D.		20-W011	20-W012	20-W013	20-W014
			Sample I.D.		B20-36140-1	B20-36140-2	B20-36140-3	B20-36140-4
			Date Collected		16-Nov-20	16-Nov-20	16-Nov-20	16-Nov-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	18-Nov-20/O	28	35	103	60
pH @25°C	pH Units		SM 4500H	18-Nov-20/O	6.93	7.42	7.24	7.34
Conductivity @25°C	µmho/cm	1	SM 2510B	18-Nov-20/O	77	82	296	177
Chloride	mg/L	0.5	SM4110C	19-Nov-20/O	1.6	1.1	4.9	3.1
Nitrite (N)	mg/L	0.05	SM4110C	19-Nov-20/O	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	0.05	SM4110C	19-Nov-20/O	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate	mg/L	1	SM4110C	19-Nov-20/O	4	2	33	18
BOD(5 day)	mg/L	3	SM 5210B	18-Nov-20/K	< 3	< 3	< 3	< 3
Total Suspended Solids	mg/L	3	SM2540D	17-Nov-20/K	28	< 3	< 3	9
o-Phosphate (P)	mg/L	0.002	PE4500-S	19-Nov-20/K	0.044	0.010	0.105	0.032
Phosphorus-Total	mg/L	0.01	E3199A.1	25-Nov-20/K	0.09	0.01	0.19	0.10
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	25-Nov-20/K	0.9	0.3	1.4	0.8
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	19-Nov-20/K	0.01	< 0.01	0.02	< 0.01
Ammonia (N)-unionized	mg/L	0.01	CALC	19-Nov-20/K	< 0.01	< 0.01	< 0.01	< 0.01
Total Dissolved Solids	mg/L	3	SM 2540D	19-Nov-20/O	39	41	152	90
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	19-Nov-20/O	11.9	6.2	19.8	11.8
Phenolics	mg/L	0.001	MOEE 3179	26-Nov-20/K	< 0.001	< 0.001	< 0.001	< 0.001
COD	mg/L	5	SM5220C	18-Nov-20/K	48	30	65	42
Hardness (as CaCO3)	mg/L	1	SM 3120	19-Nov-20/O	35	39	146	83
Aluminum	mg/L	0.01	SM 3120	19-Nov-20/O	0.14	0.04	0.04	0.03
Arsenic	mg/L	0.0001	EPA 200.8	26-Nov-20/O	0.0003	0.0001	0.0004	0.0003
Barium	mg/L	0.001	SM 3120	19-Nov-20/O	0.025	0.011	0.045	0.022
Boron	mg/L	0.005	SM 3120	19-Nov-20/O	0.013	0.024	0.065	0.040
Cadmium	mg/L	).000015	EPA 200.8	26-Nov-20/O	0.000067	< 0.000015	0.000082	0.000018
Calcium	mg/L	0.02	SM 3120	19-Nov-20/O	9.25	11.8	37.7	21.6
Chromium	mg/L	0.001	EPA 200.8	26-Nov-20/O	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0001	EPA 200.8	26-Nov-20/O	0.0004	0.0001	0.0008	0.0006

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Michelle Dubien
Lab Manager

CADUCEON ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G92641 **REPORT No. B20-36140**

Report To:

Malroz Engineering Inc.
308 Wellington Street, 2nd Floor
Kingston ON K7K 7A8 Canada
Attention: Mallory Wright

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 16-Nov-20
DATE REPORTED: 30-Nov-20
SAMPLE MATRIX: Surface Water

JOB/PROJECT NO.: 1040-LEEDS
P.O. NUMBER: 1040
WATERWORKS NO.

			Client I.D.		20-W011	20-W012	20-W013	20-W014
			Sample I.D.		B20-36140-1	B20-36140-2	B20-36140-3	B20-36140-4
			Date Collected		16-Nov-20	16-Nov-20	16-Nov-20	16-Nov-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Copper	mg/L	0.0001	EPA 200.8	26-Nov-20/O	0.0029	0.0004	0.0018	0.0012
Iron	mg/L	0.005	SM 3120	19-Nov-20/O	0.905	0.281	1.07	0.799
Lead	mg/L	0.00002	EPA 200.8	26-Nov-20/O	0.00029	0.00008	0.00026	0.00025
Magnesium	mg/L	0.02	SM 3120	19-Nov-20/O	2.95	2.40	12.7	6.98
Manganese	mg/L	0.001	SM 3120	19-Nov-20/O	0.035	0.019	0.237	0.436
Mercury	mg/L	0.00002	SM 3112 B	20-Nov-20/O	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Nickel	mg/L	0.01	SM 3120	19-Nov-20/O	< 0.01	< 0.01	< 0.01	< 0.01
Potassium	mg/L	0.1	SM 3120	19-Nov-20/O	1.6	0.5	4.2	2.5
Silicon	mg/L	0.01	SM 3120	19-Nov-20/O	3.31	2.94	4.48	3.57
Sodium	mg/L	0.2	SM 3120	19-Nov-20/O	1.8	1.2	6.5	3.6
Uranium	mg/L	0.00005	EPA 200.8	26-Nov-20/O	< 0.00005	< 0.00005	0.00013	< 0.00005
Vanadium	mg/L	0.0001	EPA 200.8	26-Nov-20/O	0.0012	0.0003	0.0013	0.0007
Zinc	mg/L	0.005	SM 3120	19-Nov-20/O	0.012	0.010	0.016	0.018

Michelle Dubien
Lab Manager

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G92641 **REPORT No. B20-36140**

Report To:

Malroz Engineering Inc.
308 Wellington Street, 2nd Floor
Kingston ON K7K 7A8 Canada
Attention: Mallory Wright

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 16-Nov-20
DATE REPORTED: 30-Nov-20
SAMPLE MATRIX: Surface Water

JOB/PROJECT NO.: 1040-LEEDS
P.O. NUMBER: 1040
WATERWORKS NO.

			Client I.D.		20-W015	20-W018		
			Sample I.D.		B20-36140-5	B20-36140-6		
			Date Collected		16-Nov-20	16-Nov-20		
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	18-Nov-20/O	46	35		
pH @25°C	pH Units		SM 4500H	18-Nov-20/O	7.49	7.19		
Conductivity @25°C	µmho/cm	1	SM 2510B	18-Nov-20/O	125	99		
Chloride	mg/L	0.5	SM4110C	19-Nov-20/O	2.0	2.0		
Nitrite (N)	mg/L	0.05	SM4110C	19-Nov-20/O	< 0.05	< 0.05		
Nitrate (N)	mg/L	0.05	SM4110C	19-Nov-20/O	< 0.05	< 0.05		
Sulphate	mg/L	1	SM4110C	19-Nov-20/O	8	8		
BOD(5 day)	mg/L	3	SM 5210B	18-Nov-20/K	< 3	< 3		
Total Suspended Solids	mg/L	3	SM2540D	17-Nov-20/K	104	16		
o-Phosphate (P)	mg/L	0.002	PE4500-S	19-Nov-20/K	0.031	0.025		
Phosphorus-Total	mg/L	0.01	E3199A.1	25-Nov-20/K	0.07	0.06		
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	25-Nov-20/K	0.7	0.7		
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	19-Nov-20/K	< 0.01	< 0.01		
Ammonia (N)-unionized	mg/L	0.01	CALC	19-Nov-20/K	< 0.01	< 0.01		
Total Dissolved Solids	mg/L	3	SM 2540D	19-Nov-20/O	63	50		
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	19-Nov-20/O	11.1	11.0		
Phenolics	mg/L	0.001	MOEE 3179	26-Nov-20/K	0.002	0.002		
COD	mg/L	5	SM5220C	18-Nov-20/K	41	43		
Hardness (as CaCO3)	mg/L	1	SM 3120	19-Nov-20/O	61	46		
Aluminum	mg/L	0.01	SM 3120	19-Nov-20/O	0.09	0.11		
Arsenic	mg/L	0.0001	EPA 200.8	26-Nov-20/O	0.0002	0.0002		
Barium	mg/L	0.001	SM 3120	19-Nov-20/O	0.029	0.024		
Boron	mg/L	0.005	SM 3120	19-Nov-20/O	0.034	0.020		
Cadmium	mg/L	0.000015	EPA 200.8	26-Nov-20/O	0.000036	0.000029		
Calcium	mg/L	0.02	SM 3120	19-Nov-20/O	16.3	12.3		
Chromium	mg/L	0.001	EPA 200.8	26-Nov-20/O	0.001	< 0.001		
Cobalt	mg/L	0.0001	EPA 200.8	26-Nov-20/O	0.0004	0.0003		

R.L. = Reporting Limit
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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Michelle Dubien
Lab Manager

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G92641 **REPORT No. B20-36140**

Report To:

Malroz Engineering Inc.
308 Wellington Street, 2nd Floor
Kingston ON K7K 7A8 Canada
Attention: Mallory Wright

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 16-Nov-20
DATE REPORTED: 30-Nov-20
SAMPLE MATRIX: Surface Water

JOB/PROJECT NO.: 1040-LEEDS
P.O. NUMBER: 1040
WATERWORKS NO.

			Client I.D.		20-W015	20-W018		
			Sample I.D.		B20-36140-5	B20-36140-6		
			Date Collected		16-Nov-20	16-Nov-20		
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Copper	mg/L	0.0001	EPA 200.8	26-Nov-20/O	0.0017	0.0016		
Iron	mg/L	0.005	SM 3120	19-Nov-20/O	0.912	0.968		
Lead	mg/L	0.00002	EPA 200.8	26-Nov-20/O	0.00038	0.00027		
Magnesium	mg/L	0.02	SM 3120	19-Nov-20/O	4.82	3.66		
Manganese	mg/L	0.001	SM 3120	19-Nov-20/O	0.102	0.040		
Mercury	mg/L	0.00002	SM 3112 B	20-Nov-20/O	< 0.00002	< 0.00002		
Nickel	mg/L	0.01	SM 3120	19-Nov-20/O	< 0.01	< 0.01		
Potassium	mg/L	0.1	SM 3120	19-Nov-20/O	1.8	1.4		
Silicon	mg/L	0.01	SM 3120	19-Nov-20/O	4.35	3.82		
Sodium	mg/L	0.2	SM 3120	19-Nov-20/O	3.2	2.5		
Uranium	mg/L	0.00005	EPA 200.8	26-Nov-20/O	0.00010	0.00009		
Vanadium	mg/L	0.0001	EPA 200.8	26-Nov-20/O	0.0014	0.0009		
Zinc	mg/L	0.005	SM 3120	19-Nov-20/O	0.011	0.009		

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Michelle Dubien
Lab Manager

Appendix H
Historical Chemistry

Historical Groundwater Chemistry

Monitoring Location	Sample ID (post 2018)	Parameter (units)	General Inorganics													Anions				Metals								
			Alkalinity	N - Ammonia	BOD	COD	DOC	Conductivity umho/cm	Hardness	pH	Phenols	Phosphorus (total)	O - Phosphate	TDS	TSS	N - Total Kjeldahl	Chloride	N - Nitrate	N - Nitrite	Sulphate	Mercury	Aluminum	Arsenic	Barium	Boron	Cadmium	Calcium	Chromium	Cobalt
		ODWS (mg/L)	30-500[OG]				5[AO]		80-100[OG]	6.5-8.5[AO]				500[AO]			250[AO]	10.0[CS]	1.0[CS]	500[AO]	0.001[CS]	0.1[OG]	0.010[CS]	1.0[CS]	5.0[CS]	0.005[CS]		0.05[CS]	
		PWQO (mg/L)	(note 1)							6.5-8.5	0.001	0.02									0.0002	0.075 (note 2)	0.005		0.200	(note 3)		(note 4)	0.0009
		Date																											
89-1		90/Sep/01	118	0.1	1	8	-	1546	701	N/S	0.002	0.18	-	-	-	0.1	422	0.1	0.1	43	-	-	-	-	-	-	185	-	-
		90/Sep/11	98	nd	-	8	-	2020	325	7.15	nd	nd	-	-	-	0.39	564	nd	nd	52	-	-	-	-	-	-	179	-	-
		93/Oct/13	213	0.06	nd	18	-	1120	389	7.46	nd	nd	-	-	-	0.27	182	nd	nd	80	-	-	-	-	-	-	94	-	-
		94/Sep/14	222	0.03	nd	13	-	779	347	7.62	nd	5.07	-	-	-	0.22	89	nd	nd	56	-	-	-	-	-	-	101	-	-
		98/Mar/11	244	-	-	-	-	530	220	7.19	-	-	-	-	-	-	24.5	-	-	50.8	-	-	-	-	-	-	-	-	-
		99/Oct/19	200	-	-	-	3.4	-	390	N/S	-	-	-	-	-	-	22	-	-	58	-	-	-	-	-	-	-	-	-
		01/Apr/12	160	-	-	-	5.5	374	167	7.48	-	-	-	-	-	-	5.9	-	-	38.4	-	-	-	-	-	-	46.5	-	-
		02/Dec/13	134	-	-	-	3.6	345	151	7.87	-	-	-	-	-	-	5.8	-	-	43	-	0.011	nd	0.022	nd	nd	42.2	nd	nd
		Nov-09	200	0.12	<2	57	3.6	390	179	7.73	<0.001	0.78	-	214	-	1.6	2	0.1	<0.1	17	<0.00010	-	<0.0001	<0.0001	<0.02	<0.005	50.2	<0.00002	<0.002
		10/Apr/13	198	<0.05	<2	10	2.8	427	224	7.76	<0.001	0.21	-	235	256	0.52	1.1	<0.1	<0.1	23	<0.00010	0.06	0.0002	0.033	0.009	<0.00002	64	<0.002	0.0026
		11/Apr/11	180	<0.05	<2	48	2.6	398	202	7.84	<0.001	1.47	-	219	1200	2.6	1.3	0.2	<0.1	8	<0.00010	0.37	<0.0005	0.018	<0.005	<0.0001	58.2	<0.001	0.0033
		12/Apr/11	174	<0.01	5	344	2.7	386	175	7.81	<0.001	2.49	-	212	3450	3.63	4.9	0.1	<0.1	18	<0.00010	0.5	0.0001	0.035	0.011	<0.00002	50	<0.002	<0.005
		16/Nov/30	88	0.06	ND (12)	91	5.1	218	81	7.4	ND (0.001)	1.13	-	136	1340	2.8	2	ND (0.1)	ND (0.05)	17	<0.0001	0.151	ND (.001)	0.016	0.024	ND (0.0001)	23	ND (.001)	ND (0.0005)
		17/Aug/17	261	0.1	2	85	5.4	487	273	7.9	<0.001	0.16	-	300	1740	0.5	<1	<0.1	<0.05	10	0.0001	0.004	<0.0001	0.032	0.014	<0.0001	78.5	<0.001	<0.0005
		17/Dec/21	193	0.05	<2	53	4.7	369	117	7.6	<0.001	0.33	-	198	714	1	2	<0.1	<0.05	11	<0.0001	0.003	<0.001	0.025	0.025	<0.0001	30.1	0.002	<0.0005
MW102 (replaced 89-1 in 2018) background well	19-W010 [8]	18/Apr/26	232	0.07	3	48	8.2	458	261	8.26	< 0.001	9.58	-	251	5130	4.7	2.4	< 0.05	< 0.05	19	<0.00002	0.05	0.0004	0.029	0.017	0.000018	70.4	0.002	0.0004
		18/Nov/15	261	0.07	-	50	6.7	524	277	7.88	< 0.002	1.81	-	271	1000	0.5	3.2	0.09	< 0.05	21	-	0.05	<0.001	0.037	0.027	<0.0000015	75.8	<0.001	0.0001
		19/May/02	244	-	-	-	-	510	253	8.12	-	-	-	264	-	-	2.1	< 0.05	< 0.05	18	< 0.00002	0.05	0.0001	0.024	0.014	< 0.000015	68.2	< 0.001	< 0.0001
		19/Oct/08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	20-W010	20/Apr/23	215	0.01	< 3	54	4.3	460	267	8.01	< 0.002	2.96	0.009	238	3900	1	2.1	0.09	< 0.05	17	< 0.00002	0.03	0.0002	0.018	0.017	< 0.000015	56.5	0.001	0.0004
	20-W020[9]	20/Nov/16	-	-	-	-	2.1	-	252	-	-	-	-	-	-	-	-	-	-	-	-	0.08	0.0002	0.03	0.017	< 0.000015	66.8	< 0.001	< 0.0001
89-4		90/Sep/01	-	-	-	3	-	189	102	-	0.002	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	26	-	-
		90/Sep/11	96	nd	-	nd	-	210	95	-	nd	7.62	-	-	-	0.35	nd	nd	nd	7	-	-	-	-	-	-	25	-	-
		93/Oct/13	95	nd	nd	nd	-	198	105	-	nd	8.04	-	-	-	0.02	nd	nd	nd	7	-	-	-	-	-	-	26	-	-
		94/Sep/14	98	nd	7	2	-	215	104	-	nd	7.9	-	-	-	0.52	8	0.28	nd	9	-	-	-	-	-	-	30	-	-
		95/Jun/09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		98/Mar/11	100	-	-	0.7	-	1.86	80.9	-	-	6.8	-	-	-	-	-	-	-	6.3	-	-	-	-	-	-	-	-	-
		99/Oct/19	110	-	-	2.5	1	-	130	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-
		00/Oct/19	90	-	-	0.5	0.8	-	89	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-
		01/Apr/12	126	-	-	1.1	1.7	247	127	-	-	7.87	-	-	-	-	-	-	-	6.2	-	-	-	-	-	-	37.7	-	-
		02/Dec/13	62	-	-	0.6	1.8	136	63	-	-	7.72	-	-	-	-	-	-	-	6.2	-	0.009	nd	0.012	nd	nd	18.6	nd	0.0007
		03/May/11	93	nd	0.9	0.8	2.4	188	92	-	N/A	7.8	-	112	-	0.36	N/A	nd	nd	6.1	-	nd	nd	0.018	0.013	nd	27.7	nd	0.0001
		04/Nov/16	49	0.03	1.4	0.9	2.1	108	45	-	-	7.4	-	70	-	0.13	-	nd	N/A	4.8	-	0.068	nd	0.015	0.011	nd	13.2	nd	nd
		05/Dec/19	84	nd	nd	1	1.1	122	77.3	nd	-	8	-	268	-	nd	-	nd	N/A	7	-	0.021	nd	0.018	nd	nd	23	nd	nd
		06/Oct/20	96	0.09	< 2	N/A	1.3	186	87	-	-	7.9	-	121	-	0.3	1	< 0.1	N/A	6	-	0.006	< 0.001	0.023	< 0.01	N/A	25	< 0.005	N/A
		07/Dec/07	32	<.5	7	4	2.4	94	47	-	-	6.21	-	62	-	8	-	1.4	-	10	-	0.03	<.0005	0.029	0.008	<.0005	13.7	<0.002	-
		08/Jun/02	28	0.17	2	1	2.3	69	28	-	-	6.91	-	38	-	0.5	-	0.2	-	4	-	0.03	0.002	0.01	0.011	<0.00002	8.35	<0.0002	<0.0001
		Apr-09	37	0.12	<2	15	1.3	95	32	6.4	<0.001	0.41	-	52	355	0.4	<1	<0.1	<0.1	5	-	0.12	0.0003	0.008	0.006	<0.00002	9.29	0.0036	0.0108
		11/Apr/11	21	0.39	<2	5	1.2	49	18	7.1	<0.001	1.23	-	27	1330	0.7	0.5	0.2	<0.1	4	-	0.54	<0.0005	0.007	<0.005	<0.0001	5.13	0.003	0.0045
		12/Apr/12	12	0.05	<2	141	1.3	38	14	6.89	<0.001	0.3	-	21	1260	0.85	0.9	0.1	<0.1	3	-	1.49	0.0001	0.032	<0.005	<0.00002	3.87	0.002	<0.005
89-5		90/Sep/01	-	-	-	3	-	423	222	-	0.002	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	64	-	-
		90/Sep/11	146	-	-	nd	-	423	160	7.75	nd	-	-	-	-	nd	1	-	-	-	-	-	-	-	-	-	59	-	-
		93/Oct/13	171	0.04	nd	8	-	510	266	7.84	nd	nd	-	-	-	0.06	5	nd	nd	85	-	-	-	-	-	-	75	-	-
		94/Sep/14	187	nd	2	10	-	540	267	7.83	nd	nd	-	-	-	0.15	7	nd	nd	89	-	-	-	-	-	-	82	-	-
		95/Jun/09	186	0.07	nd	5	-	507	256	7.74	-	0.03	-	-	-	0.25	6	nd	nd	69	-	-	-	-	-	-	76	-	-
		98/Mar/11	184	-	-	-	-	-	230	6.95	-	-	-	-	-	-	6.7	-	-	121	-	-	-	-	-	-	-	-	-
		99/Oct/19	180	-	-	-	0.8	-	290	-	-	-	-	-	-	-	3.5	-	-	94	-	-	-	-	-	-	-	-	-
		00/Oct/19	170	-	-	-	0.6	-	200	-	-	-	-	-	-	-	2	-	-	77	-	-	-	-	-	-	-	-	-
		01/Apr/12	181	-	-	-	1.5	458	233	7.88	-	-	-	-	-	-	1.6	-	-	71	-	-	-	-	-	-	71.3	-	-
		02/Dec/13	167	-	-	-	1.7	478	242	8.01	-	-	-	-	-	-	1.3	-	-	86	-	nd	nd	0.081	0.051	nd	73.7	nd	nd
		03/May/11	157	0.05	nd	N/A	1.4	470	229	7.89	N/A	N/A	-	-	-	0.13	1.5	nd	nd	93.5	-	nd	nd	0.087	0.062	nd	71.4	nd	nd
		04/Nov/16	179	0.06	nd	-	1.4	503	251	8.03	-	-	-	324	-	0.13	2.3	nd	N/A	88.3	-	nd	nd	0.097	0.061	nd	77.1	nd	nd
		04/Nov/16	176	0.07	nd	-	1.7	506	251	7.93	-	-	-	322	-	0.11	2.3	nd	N/A	91.1	-	0.019	nd	0.097	0.059	nd	76.8	nd	nd
		06/Oct/20	203	0.24	2	61	2.4	474	250	-	-	8.1	-	305	-	3	3	0.6	N/A	61	-	0.024	< 0.001	0.11	0.053	< 0.0001	75	< 0.005	< 0.0005
		08/Jun/02	171	<0.05	<2	2	1.7	458	221	7.81	-	-	-	252	-	1.6	-	0.1	-	59	-	0.23	0.002	0.078	0.05	<0.00002	67.3	0.0044	0.0179
		April-09	159	<0.05	<2	<10	1.4	414	226	7.14	<0.001	0.13	-	228	90	0.1	2	0.1	<0.1	53	-	1.47	<0.0005	0.089	<0.005	<0.0001	67.2	<0.001	0.0014
		Nov-09	180	<0.05	<2	17	1.9	435	211	7.72	<0.001	0.05	-	239	13	0.2	2	<0.1	<0.1	52	-	0.17	0.0003	0.063	0.04	<0.00002	63.7	<0.002	0.0002
DUP		Nov-09	168	<0.05	<2	17	1.7	432	212	7.76	<0.001	0.07	-	238	17	0.1	2	<0.1	<0.1	52	-	0.17	0.0003	0.064	0.039	<0.00002	64.1	<0.002	0.0002
		10/Apr/13	175	<0.05	<2	<5	1.3	431	225	8.01	<0.001	0.06	-	237	26	<0.05	1.3	<0.1	<0.1	49	-	0.39	0.0003	0.077	0.05	<0.00002	68.6	<0.002	0.0003
		10/Nov/25	169	0.14	<2	<5	1.4	423	234	8.16	<0.001	0.09	-	233	79	<0.1	2	<0.1	<0.1	46	-	0.97	0.0002	0.089	0.051	<0.00002	70	<0.002	<0.005
		11/Oct/11	172	0.08	<2	<5	1.5	424	345	8.17	<0.001	1.35	-	233	320	0.24	2	<0.1	<0.1	47	-	4.26	0.0005	0.175	0.056	0.00005	99	0.011	-
DUP		11/Oct/11	172	0.06	<2	<5	1.5	423	349	8.19	<0.001	1.23	-	233	242	0.58	2	<0.1	<0.1	47	-	5.15	0.0007	0.186	0.055	0.00011	99.1	0.013	-
		12/Apr/11	174	<0.01	<2	<5	1.3	427	203	8.12	<0.001	0.01	-	235	<2	<0.05	1.3	<0.1	<0.1	45	-	0.02	0.0003	0.067	0.05	<0.00002	62.1	<0.002	<0.005
		Oct-12	172	0.046	<2	18	1.3	422	214	8.1	<0.001	0.07	-	232	-	0.2	1.1	<0.1	<0.1	41	-	0.12	0.0013	0.072	0.039	<0.00002	65.6	<0.002	-
89-7		90/Sep/01	156	0.1	1	49	-	486	259	-	0.002	0.26	-	-	-	0.1	5	0.17	0.1	31	-	-	-	-	-	-	61	-	-
		90/Sep/11	150	-	N/S	60	-	567	243	7.74	nd	-	-	-	-	nd	nd	-	-	N/S	-	-	-	-	-	-	61	-	-
		93/Oct/13	174	nd	nd	72	-	619	308	7.8	nd	nd	-	-	-	0.06	nd	nd	nd	43	-	-	-	-	-	-	72	-	-
		94/Sep/14	164	nd	nd	60	-	556	262	7.82	nd	0.71	-	-	-	0.11	5	0.14	nd	37	-	-	-	-	-	-	67	-	-
		95/Jun/09	175	0.04	2	49	-	540	278	7.89	-	0.05	-	-	-	1.61	18	0.19	nd	44	-	-	-	-	-	-	70	-	-
		98/Mar/11	214	-	-	15.6	-	428	223	7.3	-	-	-	-	-	-	-	-	-	44.7	-	-	-	-	-	-	-	-	-
		99/Oct/19	200	-	-	12	0.6	N/S	530	N/S	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-
		00/Oct/19	260	-	-	12	8	N/S	490	N/S	-	-	-	-	-	-	-	-	-	33	-	-	-	-	-	-	-	-	-

Monitoring Location	Sample ID (post 2018)	Parameter (units)	General Inorganics														Anions													
			Alkalinity	N - Ammonia	BOD	COD	DOC	Conductivity umhos/cm	Hardness	pH	Phenols	Phosphorus (total)	O - Phosphate	TDS	TSS	N - Total Kjeldahl	Chloride	N - Nitrate	N - Nitrite	Sulphate	Mercury	Aluminum	Arsenic	Barium	Boron	Cadmium	Calcium	Chromium	Cobalt
		ODWS (mg/L)	30-500[DG]				5[AO]		80-100[OG]	6.5-8.5[AO]				500[AO]			250[AO]	10.0[CS]	1.0[CS]	500[AO]	0.001[CS]	0.1[DG]	0.010[CS]	1.0[CS]	5.0[CS]	0.005[CS]		0.05[CS]	
		PWQO (mg/L)	(note 1)							6.5-8.5	0.001	0.02									0.0002	0.075 (note 2)	0.005		0.200	(note 3)		(note 4)	0.0009
		Date																												
		01/Apr/12	242	-	-	7.1	1.7	492	255	7.74	-	-	-	-	-	-	-	-	-	33.4	-	-	-	-	-	-	65.7	-	-
		02/Dec/13	258	-	-	11	1.5	547	272	7.97	-	-	-	-	-	-	-	-	-	35.9	-	nd	nd	0.032	0.007	nd	69.8	nd	0.0001
		Nov-09	282	<0.05	<2	85	1.6	600	313	7.26	<0.001	1.51	-	330	3900	0.8	3	0.1	<0.1	35	-	0.07	0.0002	0.035	<0.005	<0.00002	80.3	<0.002	0.0151
		10/Apr/13	263	<0.05	<2	<5	1.3	551	291	7.97	<0.001	0.59	-	303	540	0.31	2.3	<0.1	<0.1	35	-	0.13	0.0001	0.032	0.006	<0.00002	75.8	<0.002	0.0121
		10/Nov/25	258	0.16	5	384	1.5	557	302	8.08	<0.001	3.2	-	306	5340	1.2	2	<0.1	<0.1	36	-	0.17	0.0018	0.039	0.015	<0.00002	77.7	<0.002	<0.005
		11/Apr/11	258	<0.05	<2	5	1.3	553	285	7.99	<0.001	2.6	-	304	3000	0.9	1.2	0.1	<0.1	7	-	0.4	<0.0005	0.024	<0.005	<0.0001	73.8	0.001	0.0051
		11/Oct/11	265	0.07	7	15	1.5	571	317	7.95	<0.001	7.42	-	314	10700	4.51	2	0.2	<0.1	36	-	0.29	0.0002	0.043	0.006	<0.00002	81.9	0.003	-
		12/Apr/11	266	0.13	5	24	2.5	555	276	7.97	<0.001	2.75	-	305	2610	2.89	1.6	0.1	<0.1	31	-	0.12	0.0002	0.032	0.011	<0.00002	71.5	<0.002	<0.005
		13/Jul/18	345	<0.050	<2.0	200	-	660	342	7.57	<0.0010	0.103	-	-	-	0.69	<10	<0.50	<0.50	32	-	-	-	-	-	-	89.1	-	<0.00050
		14/Jun/17	278	0.118	<2.0	25	1.5	541	275	7.88	0.0021	2.93	-	-	-	0.22	<2.0	<0.10	<0.10	29.0	<0.00010	-	-	-	-	-	72.9	-	<0.00050
00-1		00/Oct/19	640	N/S	N/S	68	8.4	N/S	2000	-	N/S	N/S	-	-	-	N/S	N/S	N/S	N/S	N/S	-	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
		01/Apr/12	431	N/S	N/S	22.8	7.1	1040	536	-	N/S	7.85	-	-	-	N/S	N/S	N/S	N/S	165	-	N/S	N/S	N/S	N/S	N/S	136	N/S	N/S
		02/Dec/13	421	N/S	N/S	43.4	6.1	1170	600	-	N/S	7.93	-	-	-	N/S	N/S	N/S	N/S	248	-	nd	nd	0.034	0.384	nd	150	nd	nd
		03/Nov/05	506	0.04	0.8	34.3	9	1170	878	-	N/A	7.85	-	798	-	0.46	N/A	nd	nd	163	-	0.061	nd	0.055	0.507	nd	164	nd	nd
		04/Nov/16	758	0.18	7.7	25.6	22.3	1500	945	-	-	7.78	-	1030	-	3.45	-	0.3	N/A	188	-	0.011	nd	0.065	0.591	nd	nd	nd	0.0002
		05/Dec/19	779	nd	nd	18	7.9	1080	812	-	-	8.1	-	1120	-	3.7	-	nd	N/A	137	-	nd	nd	0.046	0.52	nd	220	nd	0.0006
		06/Oct/20	516	0.16	2	34	8.8	1110	620	-	-	8.2	-	684	-	1.9	18	< 0.1	N/A	142	-	0.007	< 0.001	0.054	0.57	< 0.0001	160	< 0.005	< 0.0005
		08/Jun/02	602	<0.05	<2	13	11.7	1870	782	-	-	7.56	-	1030	-	1	-	0.1	-	354	-	<0.01	0.002	0.1	0.682	<0.00002	170	0.0157	0.0009
		08/Nov/01	724	0.29	2	19	7.9	1650	767	-	-	7.75	-	905	-	1.3	-	0.1	-	262	-	0.21	<0.03	0.054	0.515	<0.005	184	<0.002	-
		Apr-09	763	<0.05	<2	9.1	1.6	1480	939	7.02	<0.001	2.01	-	813	2780	4	13	0.2	<0.1	156	-	18.8	0.0006	0.377	0.45	<0.0001	235	<0.001	0.0014
		Nov-09	600	<0.05	3	185	9.4	1580	870	7.58	<0.001	2.5	-	870	3160	5	19	0.1	<0.1	190	-	0.08	0.0006	0.039	0.493	<0.00002	216	<0.002	0.0094
		10/Apr/13	681	<0.05	<2	41	9.3	1390	777	7.76	<0.001	0.4	-	764	1030	1.11	12.9	<0.1	<0.1	134	-	0.07	0.0006	0.077	0.456	0.00004	193	<0.002	0.0097
		11/Apr/11	671	0.18	5	77	9.9	1460	781	7.68	<0.001	7.1	-	800	9300	10.1	2.4	0.2	<0.1	10	-	0.75	0.0006	0.052	0.437	<0.0001	190	0.001	0.0047
		11/Oct/28	520	0.69	14	201	10.2	1310	-	8.04	-	4.67	-	718	5220	5.88	<1	0.1	<0.1	202	-	-	-	-	-	-	-	-	-
		12/Apr/12	687	<0.01	<2	234	8.9	1420	811	7.59	<0.001	1.2	-	782	1640	1.4	10.9	<0.1	<0.1	130	-	0.19	0.0007	0.047	0.444	<0.00002	205	<0.002	<0.005
DUP		12/Apr/12	694	<0.01	<2	274	9.2	1440	721	7.61	<0.001	2	-	790	1430	2.11	11.7	<0.1	<0.1	134	-	0.1	0.0006	0.052	0.389	<0.00002	187	<0.002	<0.005
		Oct-12	877	0.136	7	107	13.4	1660	899	7.16	-	1.57	-	910	-	0.7	20.5	0.1	<0.1	201	-	0.1	0.001	0.052	0.66	0.00006	217	<0.002	-
		13/Oct/22	580	-	<2.0	146	11.0	1560	847	7.38	0.0018	-	-	-	-	0.70	20.3	<0.10	<0.10	-	-	-	-	-	-	-	223	-	-
		14/Jun/17	857	0.064	<2.0	65	14.3	1480	896	7.81	<0.0010	1.88	-	-	-	0.64	106	0.27	<0.10	76.9	<0.00010	-	-	-	-	-	240	-	0.00173
		14/Oct/15	463	0.098	<2.0	52	15.5	1240	880	7.85	<0.0010	0.673	-	-	-	0.51	18.2	<0.10	<0.10	175	<0.00010	-	-	-	-	-	220	-	<0.0050
		15/May/11	747	0.12	nd	140	14.5	1470	867	7.5	0.004	1.95	-	930	1730	2.7	15	nd	nd	147	nd	nd	nd	0.065	0.639	nd	220	nd	0.0016
		16/Nov/30	573	0.09	4	89	10.2	1320	613	7.7	<0.001	2.73	-	830	2130	1.3	20	<0.1	<0.05	211	<0.0001	0.167	<0.001	0.046	0.481	<0.0001	153	<0.001	0.0009
MW101 (replaced 00-1 in 2018)		18/Apr/26	888	0.08	3	49	19.1	1690	950	7.84	< 0.001	1.12	-	926	1030	0.9	14.1	< 0.05	< 0.05	149	<0.00002	0.11	0.0009	0.057	0.662	0.000079	233	0.005	0.0009
		18/Nov/15	656	0.04	4	33	17.3	1360	822	7.87	-	0.15	-	738	260	0.7	9.7	0.06	< 0.05	140	-	0.10	0.0005	0.06	0.656	0.000059	204	<0.001	0.0004
	19-W006	19/May/02	750	0.06	< 3	67	14.8	1540	893	7.85	< 0.002	1.63	-	840	6000	0.9	8.7	< 0.05	< 0.05	131	< 0.00002	0.10	0.0006	0.046	0.447	0.000018	174	0.001	0.0003
	19-W015	19/Oct/08	714	0.07	< 3	78	17.0	1440	822	7.88	< 0.002	3.67	-	782	1880	1.2	10.0	< 0.05	< 0.05	140	< 0.00002	0.12	0.0012	0.060	0.693	< 0.000029	203	< 0.001	0.0009
	20-W007	20/Apr/23	763	0.02	< 3	38	16.3	1620	933	7.79	< 0.002	0.33	0.071	885	480	0.7	13.4	0.07	< 0.05	137	< 0.00002	0.11	0.0004	0.064	0.605	< 0.000015	234	< 0.001	0.0005
	20-W017	20/Nov/16	710	0.05	<3	37	6.6	1530	641	7.27	< 0.002	0.13	0.056	835	13700	0.7	11.7	< 0.05	< 0.05	129	< 0.00002	0.09	0.0006	0.059	0.481	0.000026	163	< 0.001	0.0001
08-1		08/Nov/01	801	2.68	14	31	12.6	1560	766	-	-	7.32	-	857	-	14	-	0.6	-	76	-	1.89	<0.03	0.292	0.828	<0.005	199	<0.002	-
		April-09	767	2.93	17	917	17.7	1780	817	6.91	<0.001	7.05	-	980	20600	50	33	<0.1	<0.1	86	-	0.08	0.0017	0.341	0.78	<0.00002	202	0.017	0.0179
		Nov-09	796	2.53	<2	270	13	1630	758	6.77	<0.001	4.2	-	894	8200	8.1	29	0.3	0.3	84	-	0.08	0.0014	0.229	0.928	0.00012	190	<0.002	0.0139
		10/Apr/13	927	12.9	<2	65	17.1	1770	878	7.41	<0.001	-	-	974	1720	14.3	30	<0.1	<0.1	54	-	0.08	0.0016	0.339	0.875	0.00002	210	<0.002	0.0161
		10/Nov/25	834	6.6	10	638	14.1	1630	816	7.57	<0.001	9.6	-	897	4450	9.8	29	0.1	<0.1	28	-	0.1	0.0013	0.289	0.767	0.00009	203	<0.002	<0.005
DUP		10/Nov/25	841	6	11	644	13.9	1620	820	7.56	<0.001	4.2	-	893	7640	7	29	0.1	<0.1	29	-	0.1	0.0013	0.274	0.779	0.00009	204	<0.002	0.009
		11/Apr/01	898	13.3	14	68	18.4	1840	800	7.55	<0.001	3.2	-	1010	3960	16.1	2.4	0.2	<0.1	11	-	0.47	0.0008	0.267	0.867	<0.0001	182	0.001	0.0073
DUP		11/Apr/01	899	12.8	13	115	18	1850	882	7.55	<0.001	2.9	-	1010	3740	15.8	1.3	0.1	<0.1	6	-	0.25	0.0007	0.271	0.872	<0.0001	214	<0.001	0.0032
		11/Oct/11	733	2.8	>18	362	11.6	1560	814	7.54	0.009	3.13	-	857	5500	8.56	1	0.2	<0.1	117	-	0.27	0.0017	0.283	1.34	0.00008	195	0.003	-
		12/Apr/12	880	7.18	16	254	14.4	1660	692	7.4	<0.001	1.3	-	910	7540	9.16	26.4	0.5	<0.1	27	-	0.14	0.0011	0.21	0.655	<0.00002	173	<0.002	<0.005
		Oct-12	887	6.68	38	478	14.6	1660	859	7.34	0.003	3.34	-	490	4240	8.6	30	0.6	<0.1	39	-	0.08	0.0024	0.273	0.87	0.00002	204	<0.002	-
		13/Jul/18	936	12.4	3.1	219	-	1730	882	7.09	<0.0010	0.033	-	-	-	12.7	31	<0.50	<0.50	39	-	-	-	-	-	-	221	-	0.00178
DUP		13/Jul/18	932	12.1	2.8	230	-	1720	869	7.18	<0.0010	<0.030	-	-	-	12	29	<0.50	<0.50	38	-	-	-	-	-	-	213	-	0.00163
		13/Oct/22	944	-	<2.0	162	16.1	1730	829	6.93	<0.0010	-	-	-	-	5.32	31.4	0.14	<0.10	-	-	-	-	-	-	-	201	-	-
		14/Jun/17	946	11.6	2.3	120	16.8	1620	843	7.19	0.0010	1.50	-	-	-	12.0	25.0	<0.10	<0.10	51.5	<0.00010	-	-	-	-	-	221	-	0.00315
		14/Oct/15	909	6.63	<2.0	56	16.1	1480	810	7.19	<0.0010	1.23	-	-	-	7.65	26.7	<0.10	<0.10	19.6	<0.00010	-	-	-	-	-	200	-	<0.0050
DUP		14/Oct/15	908	6.61	<2.0	56	17.4	1490	804	7.21	<0.0010	1.78	-	-	-	8.11	26.3	<0.10	<0.10	19.6	<0.00010	-	-	-	-	-	198	-	<0.0050
		15/May/11	774	10.1	33	78	15.7	1420	725	6.6	0.004	0.4	-	928	1420	8.7	23	nd	nd	47	nd	nd	nd	0.279	0.853	nd	189	nd	0.0018
		16/Jun/27	946	6.76	16	123	13.4	1730	857	7.2	0.008	1.04	-	990	1640	7	25	ND (0.1)	ND (0.05)	36	ND (0.0001)	0.001	0.001	0.211	0.793	ND (0.0001)	207	ND (.001)	0.003
		16/Nov/30	804	3.53	25	203	12.9	1630	715	7.4	ND(0.001)	5.16	-	1000	2860	8.4	14	0.5	ND (0.05)	162	ND (0.0001)	0.367	0.001	0.286	0.9	ND (0.0001)	175	0.001	0.0038
		17-Aug-17 (not located)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		17/Dec/21	985	10.5	21	115	17.9	1680	593	7.4	0.004	1.75	-	976	2110	12.3	23	<0.1	<0.05	61	<0.0001	0.002	<0.001	0.298	0.913	0.0001	133	0.008	0.0023
DUP		17/Dec/21	1000	11.2	20	111	20.4	1700	541	7.4	0.004	1.78	-	964	1850	12.6	23	<0.1	<0.05	62	<0.0001	0.002	<0.001	0.289	0.866	0.0001	121	0.007	0.0024
		18/Apr/26	875	9.78	11	79	19.8	1600	900	7.41	< 0.001	1.13	-	875	1250	12.2	16.4	0.08	0.05	83	< 0.02	0.1	0.001	0.291	0.835	0.000062	234	0.01	0.0018
		18/Nov/15	599	1.38	9	80	14.1	1470	795	7.68	< 0.002	1.36	-	801	2600	3.1	14	1.74	0.06	217	< 0.02	0.10	0.0006	0.258	1.28	0.00108	206	<0.001	0.0015
	19-W007	19/May/02	807	7.54	< 3	45	16.0	1550	793	7.64	< 0.002	0.41	-	846	880	8.8	16.4	< 0.05	< 0.05	36	< 0.00002	0.10	0.0007	0.281	0.731	0.000067	204	0.001	0.0016
	19-W016	19/Oct/08	804	7.18	18	295	22.0	1530	874	8.01	< 0.002	15.4	-	835	13400	16.3	20.1	< 0.05	< 0.05	54	-	0.12	0.0010	0.281	0.975	0.000036	216	< 0.001	0.0033
	20-W008	20/Apr/23	816	9.05	17	90	18.6	1640	851	7.50	< 0.002	0.61	0.018	898	600	11.7	18.0	0.37	0.06	57	< 0.00002	0.10	0.0006	0.268	0.839	0.000024	219	< 0.001	0.0021
	20-W019	20/Nov/16	615	2.54	4	140	10.3	1500	856	7.24	< 0.002	3.23	1.54	818	1370	5.2	12.0	0.94	0.1	193	< 0.00002	0.11	0.0010	0.256	1.36	0.000468	218	< 0.001	0.0025
08-2 (well damaged in 2010)		08/Nov/01	306	0.21	2	4	1	584	280	-	-	7.91	-	321	-	6.3	-	0.1	-	22	-	0.15	<0.03	0.078	0.019	<0.005	65.4	<0.002	-
		April-09	303	<0.05	<2	242	1.5	570	3530	7.26	<0.001	4.7	-	313	6300	1.6	3	0.2	<0.1	22	-	116	0.0013	3.56	0.119	<0.0001	885	<0.001	0.0081
		Nov-09	254	0.07	<2	188	1.5	542	267	7.97	<0.001	11.3	-	298	32800	6	2	<0.1	<0.1	20	-	1.39	0.0009	0.106	0.01	<0.00002	59.4	0.003	0.0021
		10/Apr/13	315	<0.05	<2	267	1.2	632	270	8.16	<0.001	10.9	-	348	28500	1.63	2.1	0.2	<0.1	31	-	2.2	0.0017	0.134	0.014	0.00004	61.1	0.003	0.0161
MW103		18/Apr/26	253	0.14	-	577	-	595	266	8.19	< 0.001	18.3	-	309	-	15.3	6.8	0.07	< 0.05	52	< 0.02	0.04	0.0002	0.033	0.039	0.000017	58.2	<0.001	0.0002
		18/Nov/15	135	0.09	-	463	7.6	343	193	7.96	0.002	26.6	-	176	51000	27.8	3	0.08	< 0.05	38	< 0.02	0.03	0.0001	0.027	0.039	<0.000015	43.2	<0.001	0.0002
(installed in 2018)	19-W005	19/May/02	176	0.13	5	2400	7.3	415	211	7.95	< 0.002	55.6	-	215	103000	45.2	2.8	< 0.05	< 0.05	32	< 0.00002	0.04	0.0002	0.031	0.105	< 0.000015	48.2	0.001	0.0003
		19/Oct/08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	20-W006[8]	20/Apr/23	212	0.25	-	1080	5.3	510	263	8.03	-	30.2	7.45	264	-	21.2	4.4	0.06	< 0.05	44	< 0.00002	0.21	0.0002	0.040	0.064	< 0.000015	58.8	< 0.001	0.0004
	20-W016[8]	20/Nov/16	118	0.06	-	225	5.4	311	175	8.09	-	14.3	-	160	-	4.8	2.9	< 0.05	< 0.05	32	-	0.04	0.0002	0.026	0.062	< 0.000015	39.9	< 0.001	< 0.0001
MW104 (installed in 2018)	-	18-Nov-15[9]	314	-	-	-	-	748	-	8.08	-	-	-	391	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	dry	19/May/02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	dry	19/Oct/08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	dry	20/Apr/23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	dry	20/Nov/16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Monitoring Location	Sample ID (post 2018)	Parameter (units)	Metals																							Field Parameters			
			Copper	Iron	Lead	Magnesium	Manganese	Potassium	Silver	Sodium	Strontium	Uranium	Vanadium	Zinc	Nickel	Selenium	Silicon	Antimony	Beryllium	Thallium	Tin	Titanium	Tungsten	Molybdenum	Unionized Ammonia, Calc (field)	Temperature °C (field)	PH (Field)	DO	Conductivity
		ODWS (mg/L)	1[AO]	0.3[AO]	0.010[CS]		0.05[AO]			200[AO]		0.02[CS]		5[OG]				0.006[CS]								15[AO]	6.5-8.5[OG]		
		PWQO (mg/L)	(note 5)	0.3	(note 6)				0.0001			0.005	0.006	0.02	0.025			0.02	(note 7)	0.0003			0.03	0.04			6.5-8.5	(note 9)	
		Date																											
89-1		90/Sep/01	-	0.05	-	58	0.05	2	-	57	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		90/Sep/11	-	nd	-	79	nd	3	-	76	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		93/Oct/13	-	0.13	-	38	nd	2	-	52	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		94/Sep/14	-	0.61	-	23	nd	1	-	36	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		98/Mar/11	-	nd	-	-	0.09	-	-	28.4	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		99/Oct/19	-	7	-	-	0.7	-	-	32	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		01/Apr/12	nd	nd	-	12.3	0.007	nd	-	16.7	-	-	-	nd	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		02/Dec/13	0.0016	nd	0.0005	10.9	nd	0.6	-	14.1	0.165	0.0002	0.0006	0.006	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		Nov-09	0.0128	<0.002	0.099	13	<0.00002	1	nd	9	0.18	<0.00005	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		10/Apr/13	<0.002	0.037	0.00002	15.4	0.007	1.3	<0.00002	7.7	0.229	0.00023	<0.005	0.036	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		11/Apr/11	0.002	0.249	-	13.8	0.009	1.2	-	6.3	0.2	0.0003	<0.005	0.011	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		12/Apr/11	<0.002	0.363	0.00088	12.2	0.009	1	-	5.4	0.187	0.00029	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		16/Nov/30	ND (0.0005)	ND (0.1)	0.0002	5.76	ND (0.005)	0.63	ND (0.0001)	2.69	0.1	ND (0.0001)	0.0005	ND (.0005)			-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		17/Aug/17	<0.0005	<0.1	<0.0001	18.6	0.019	1.48	<0.0001	7.91	0.299	0.0002	0.0008	<0.005	<0.001		5.54	<0.0005	<0.0005	<0.0001	<0.005	<0.005	<0.01	<0.0005	<0.001	-	-	-	-
		17/Dec/21	0.0011	<0.1	<0.0001	10.1	<0.005	0.9	<0.0001	3.47	0.183	0.0002	0.0024	<0.005	0.002		3.00	<0.0005	<0.0005	<0.0001	<0.005	<0.005	<0.01	<0.0005	<0.001	-	-	-	-
MW102 (replaced 89-1 in 2018) background well	19-W010 [8]	18/Apr/26	0.0004	0.032	<0.00002	20.8	0.041	0.6	<0.00002	14.9	0.0007	0.00073	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		18/Nov/15	0.0008	<0.005	0.00007	21.3	0.013	0.7	<0.0001	15	-	0.00083	<0.005	0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		19/May/02	0.0004	0.019	< 0.00002	20.1	< 0.001	0.5	< 0.0001	13.7	-	0.00074	< 0.005	< 0.005	-		-	-	-	-	-	-	-	-	<0.001	7.99	7.25	12.42	0.498
		19/Oct/08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
	20-W010	20/Apr/23	0.0032	< 0.005	0.00038	16.5	< 0.001	0.6	< 0.0001	12.1	-	-	0.0016	< 0.005	-	-	-	-	-	-	-	-	-	-	<0.001	9.49	8.46	7.04	0.600
	20-W020[9]	20/Nov/16	0.0041	0.028	0.00006	20.7	0.001	0.5	< 0.0001	16.2	-	-	0.001	< 0.005	-	-	-	-	-	-	-	-	-	-	-	9.03	7.22	11.91	0.520
89-4		90/Sep/01	-	0.05	-	9	-	1	-	5	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		90/Sep/11	-	nd	-	8	nd	2	-	1	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		93/Oct/13	-	0.99	-	9	0.01	1	-	3	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		94/Sep/14	-	0.26	-	7	nd	1	-	1	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		95/Jun/09	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		98/Mar/11	-	nd	-	-	nd	-	-	nd	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		99/Oct/19	-	2	-	-	0.15	-	-	8.2	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		00/Oct/19	-	0.6	-	-	0.05	-	-	3.2	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		01/Apr/12	nd	nd	-	7.94	0.045	nd	-	3.2	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		02/Dec/13	0.0006	0.14	nd	4.11	0.068	0.6	-	2	0.076	nd	nd	nd	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		03/May/11	0.0006	0.12	nd	5.5	0.044	0.6	-	1.9	0.098	0.0001	0.0008	0.008	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		04/Nov/16	0.0012	0.07	nd	2.96	0.014	0.6	nd	1.4	0.051	nd	0.0007	0.01	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		05/Dec/19	nd	nd	nd	5.4	0.017	0.66	nd	2.6	0.084	nd	0.001	0.01	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		06/Oct/20	0.003	< 0.05	N/A	6	0.012	0.93	0.0002	7.1	N/A	N/A	N/A	0.01	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		07/Dec/07	0.004	0.066	<0.02	3.15	0.008	3.7	nd	2.2	-	-	-	0.055	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		08/Jun/02	<0.002	0.031	0.00044	1.84	0.009	0.5	N/A	1.1	0.037	<0.00005	<0.005	0.025	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		Apr-09	0.0002	0.096	<0.00002	2.21	0.022	0.5	-	1.1	0.035	<0.00005	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		11/Apr/11	<0.002	0.388	-	1.29	0.013	0.6	-	1	0.017	<0.0003	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		12/Apr/12	<0.002	1.1	0.00077	1.17	0.018	0.9	-	0.9	0.021	<0.00005	<0.005	0.02	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
89-5		90/Sep/01	-	0.05	-	15	-	2	-	10	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		90/Sep/11	-	nd	-	12	-	-	-	6	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		93/Oct/13	-	0.31	-	19	0.1	1	-	7	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		94/Sep/14	-	0.03	-	15	0.15	1	-	7	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		95/Jun/09	-	1.27	-	16	0.18	1	-	7	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		98/Mar/11	-	nd	-	-	0.15	-	-	7.82	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		99/Oct/19	-	4.4	-	-	0.25	-	-	8.4	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		00/Oct/19	-	0.6	-	-	0.1	-	-	7	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		01/Apr/12	nd	0.3	-	13.2	0.123	1	-	7.6	-	-	-	nd	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		02/Dec/13	nd	0.3	nd	14.1	0.151	1.3	nd	7.4	1.74	0.001	nd	0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		03/May/11	nd	0.31	0.0006	12.3	0.125	1.1	nd	6.7	1.69	0.0007	nd	nd	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		04/Nov/16	0.0007	0.34	nd	14.2	0.135	1.2	nd	7.6	1.79	0.001	nd	0.006	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		04/Nov/16	nd	0.34	nd	14.2	0.133	1.2	nd	7.2	1.73	0.001	nd	nd	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		06/Oct/20	0.001	0.34	< 0.0005	15	0.066	1.6	< 0.0001	11	11	0.0011	< 0.001	0.008	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		08/Jun/02	<0.002	0.635	<0.00002	12.9	0.174	1.4	-	7.5	1.48	0.00111	<0.005	0.006	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		April-09	<0.0005	2.51	<0.0001	14.2	0.166	1.8	-	6.9	1.43	0.0009	0.008	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		Nov-09	<0.002	0.471	<0.00002	12.5	0.117	1.3	<0.00002	6.2	1.41	0.00063	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
DUP		Nov-09	<0.002	0.472	<0.00002	12.6	0.117	1.3	<0.00002	6.2	1.42	0.00067	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		10/Apr/13	<0.002	0.639	0.00017	12.9	0.133	1.4	-	6.9	1.51	0.00086	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		10/Nov/25	<0.002	1.74	0.00064	14.4	0.164	1.4	<0.00002	6.6	1.47	0.00089	<0.005	0.006	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		11/Oct/11	0.007	8.81	0.0026	23.8	0.432	3.1	-	7.5	1.68	-	-	0.03	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
DUP		11/Oct/11	0.01	10.2	0.00325	24.5	0.446	3.4	-	7.6	1.69	-	-	0.035	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		12/Apr/11	<0.002	0.477	<0.00002	11.5	0.11	1.1	-	6.4	1.45	0.00064	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		Oct-12	<0.002	1.99	0.00005	12.1	0.121	1.2	-	7	1.47	-	-	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
89-7		90/Sep/01	-	0.05	-	26	0.05	1	-	12	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		90/Sep/11	-	nd	-	22	-	-	-	4	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		93/Oct/13	-	0.18	-	31	0.01	nd	-	12	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		94/Sep/14	-	0.12	-	23	0.07	nd	-	5	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		95/Jun/09	-	0.16	-	25	0.01	1	-	12	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		98/Mar/11	-	0.05	-	-	0.22	-	-	18.5	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		99/Oct/19	-	7.2	-	-	0.65	-	-	16	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		00/Oct/19	-	5	-	-	0.7	-	-	14	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-

Monitoring Location	Sample ID (post 2018)	Parameter (units)	Metals																								Field Parameters			
			Copper	Iron	Lead	Magnesium	Manganese	Potassium	Silver	Sodium	Strontium	Uranium	Vanadium	Zinc	Nickel	Selenium	Silicon	Antimony	Beryllium	Thallium	Tin	Titanium	Tungsten	Molybdenum	Unionized Ammonia. Calc (field)	Temperature °C (field)	PH (Field)	DO	Conductivity
		ODWS (mg/L)	1 AO	0.3 AO	0.010 CS		0.05 AO			200 AO		0.02 CS		5 CS				0.006 CS								15 AO	6.5-8.5 OG		
		PWQO (mg/L)	(note 5)	0.3	(note 6)				0.0001			0.005	0.006	0.02	0.025			0.02	(note 7)	0.0003			0.03	0.04			6.5-8.5	(note 9)	
		Date																												
		01/Apr/12	0.006	nd	-	22	0.019	1	-	13.5	-	-	-	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		02/Dec/13	0.0008	nd	0.0005	23.6	0.014	0.6	-	12.8	0.133	0.0004	0.0013	nd	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		Nov-09	<0.002	0.067	<0.00002	27.3	0.024	0.7	nd	10.5	0.148	0.00013	<0.005	nd	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		10/Apr/13	<0.002	0.09	0.00007	24.8	0.021	0.6	<0.00002	9	0.139	0.0001	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		10/Nov/25	<0.002	0.227	0.0002	26.1	0.027	0.7	-	9.3	0.146	0.00014	<0.005	0.008	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		11/Apr/11	<0.002	0.372	-	24.5	0.012	0.7	<0.00002	8.9	0.13	<0.0003	<0.005	0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		11/Oct/11	<0.002	0.348	0.00024	27.3	0.041	1	-	9.6	0.158	-	-	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		12/Apr/11	<0.002	0.103	0.00012	23.6	0.016	0.7	-	7.7	0.137	0.00007	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		13/Jul/18	-	<0.050	-	29.1	0.0017	<1.0	-	11	0.177	<0.0010	0.00221	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		14/Jun/17	-	<0.050	-	22.6	0.0097	<1.0	-	7.80	0.138	<0.0010	0.00079	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
00-1		00/Oct/19	N/S	22	N/S	N/S	6	N/S	-	74	N/S	N/S	N/S	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		01/Apr/12	nd	nd	N/S	47.4	0.026	7	N/S	33.4	N/S	N/S	N/S	N/S	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		02/Dec/13	0.0019	nd	0.0005	54.4	0.008	8	N/S	34.5	0.484	0.0026	0.0022	nd	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		03/Nov/05	0.0021	0.04	nd	59.6	nd	6.2	nd	36.8	0.568	0.0028	0.0085	nd	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		04/Nov/16	0.0059	nd	nd	nd	0.012	5.4	nd	48.2	0.784	0.0034	0.0027	nd	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		05/Dec/19	0.004	0.28	nd	88	0.18	3.4	nd	47	0.65	0.0027	0.002	0.015	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		06/Oct/20	0.005	< 0.05	< 0.0005	55	0.066	7.7	nd	34	0.55	0.002	0.002	0.007	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		08/Jun/02	0.005	0.039	0.00116	86.8	0.152	9	< 0.0001	33.6	1.02	0.00447	<0.005	0.012	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		08/Nov/01	0.011	0.147	<0.02	74.6	0.019	2.8	-	57.9	-	-	-	0.031	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		Apr-09	<0.0005	2.51	<0.0001	85.7	0.166	11.4	-	42.4	0.795	0.0006	0.09	0.079	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		Nov-09	<0.002	0.299	<0.00002	80.3	0.616	1.5	-	41.3	0.556	0.00266	<0.005	0.114	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		10/Apr/13	<0.002	0.063	0.00006	64.7	0.129	8.1	<0.00002	27.5	0.759	0.00204	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		11/Apr/11	0.003	0.716	-	74.8	0.431	5.4	-	29.8	0.747	0.0029	<0.005	0.006	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		11/Oct/28	-	-	-	-	-	-	-	-	-	-	-	0.007	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		12/Apr/12	<0.002	0.131	0.00007	72.5	0.862	2.3	-	44.3	0.584	0.00215	<0.005	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
DUP		12/Apr/12	<0.002	0.049	0.00004	61.6	0.468	5	-	30	0.632	0.00192	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		Oct-12	<0.002	0.046	0.00005	86.8	0.882	1.7	-	66	0.586	-	-	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		13/Oct/22	-	<0.050	-	70.2	-	7.6	-	34.8	-	-	-	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		14/Jun/17	-	0.676	-	71.9	1.38	5.7	-	32.0	0.792	0.0026	0.00478	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		14/Oct/15	-	<0.50	-	80.0	1.68	<10	-	74.7	0.657	<0.010	<0.0050	-	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		15/May/11	nd	nd	nd	76.9	1.78	2.14	nd	62.1	0.728	0.0028	nd	nd	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		16/Nov/30	<0.0005	0.138	<0.0001	56.1	0.67	1.68	<0.0001	38.3	0.531	0.0026	0.0042	<0.0005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
MW101 (replaced 00-1 in 2018)		18/Apr/26	0.0024	0.024	<0.00002	89.3	1.29	2.2	<0.00002	81.8	0.0046	0.00462	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		18/Nov/15	0.0032	0.014	0.00004	75.8	0.29	2.3	<0.0001	89.4	-	0.00437	<0.005	<0.005	-		-	-	-	-	-	-	-	-	<0.001	-	-	-	-
	19-W006	19/May/02	0.0008	< 0.005	0.00010	62.7	0.360	1.5	< 0.0001	54.3	-	0.00287	< 0.005	< 0.005	-		-	-	-	-	-	-	-	-	<0.001	6.45	7.17	10.71	1.05
	19-W015	19/Oct/08	0.0014	0.032	0.00011	76.5	0.400	2.4	< 0.0001	82.4	-	0.00523	< 0.005	< 0.005	-		-	-	-	-	-	-	-	-	<0.001	15.57	5.85	22.29	2.43
	20-W007	20/Apr/23	0.0078	< 0.005	0.00020	84.7	0.076	1.7	< 0.0001	56.9	-	-	0.0013	< 0.005	-	-	-	-	-	-	-	-	-	-	<0.001	8.19	7.47	11.96	1.73
	20-W017	20/Nov/16	0.0015	<0.005	0.00014	56.9	0.213	1.9	< 0.0001	51.3	-	-	0.001	< 0.005	-	-	-	-	-	-	-	-	-	-	<0.001	9.82	[10]	18.21	1.29
08-1		08/Nov/01	0.007	1.32	<0.02	65.1	2.34	33.9	-	57.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		April-09	0.0003	0.073	<0.00002	75.7	1.1	39.1	-	57.1	1.46	0.0006	0.027	0.048	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		Nov-09	<0.002	4.12	<0.00002	68.9	2.12	34.3	-	41	1.2	0.00032	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		10/Apr/13	<0.002	18.8	0.00006	80	1.67	40.1	-	48.8	1.44	0.00035	<0.005	0.19	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		10/Nov/25	<0.002	5.41	0.00006	74.9	2.53	23.4	<0.00002	43.8	1.29	0.00036	<0.005	0.076	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
DUP		10/Nov/25	0.002	5.69	0.00013	75.2	2.59	23.5	-	44.4	1.3	0.00037	<0.005	0.13	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		11/Apr/01	<0.002	14.6	-	84.2	2.25	36.2	<0.00002	50.7	1.57	0.0004	<0.005	0.112	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
DUP		11/Apr/01	<0.002	14.5	-	84.4	2.22	36.5	<0.00002	50.7	1.57	0.0004	<0.005	0.116	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		11/Oct/11	<0.002	4.08	0.00015	79.5	1.96	36.3	-	46.1	1.36	-	-	0.117	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		12/Apr/12	<0.002	10.8	0.0001	63.5	2.07	26.4	-	39.6	1.07	0.00027	<0.005	0.316	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		Oct-12	<0.002	2.43	0.00003	85	3.99	29.9	-	61.9	1.5	-	-	0.025	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		13/Jul/18	-	<0.050	-	80.4	1.88	38	-	49.5	1.42	<0.0010	0.00052	0.032	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
DUP		13/Jul/18	-	<0.050	-	81.7	1.77	39	-	50.6	1.4	<0.0010	0.0006	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		13/Oct/22	-	9.49	-	79.4	-	34	-	54.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		14/Jun/17	-	21.3	-	71.0	2.79	36.1	-	43.0	1.43	<0.0010	<0.00050	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		14/Oct/15	-	21.8	-	75.4	2.32	40	-	43.5	1.57	<0.010	<0.0050	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
DUP		14/Oct/15	-	21.8	-	75.4	2.34	38	-	44.3	1.49	<0.010	<0.0050	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		15/May/11	nd	13.1	0.0001	61.6	2.08	30	nd	32.2	1.39	0.0002	nd	nd	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		16/Jun/27	ND (0.0005)	7.98	ND (0.0001)	82.6	4.35	27.5	ND (0.0001)	44.6	1.5	0.0008	ND (0.0005)	0.016	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		16/Nov/30	0.0009	5.19	0.0003	67.6	3.56	24.6	ND (0.0001)	39.8	1.67	0.0008	0.0025	0.062	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		17-Aug-17 (not located)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		17/Dec/21	0.0006	12.9	<0.0001	63.2	1.67	36.2	<0.0001	29.9	1.61	0.0004	0.0188	0.057	0.032	<0.001	7.15	<0.0005	<0.0005	<0.0001	<0.005	<0.005	<0.01	<0.0005	<0.001	-	-	-	-
DUP		17/Dec/21	0.0007	13.6	<0.0001	58.4	1.42	31.8	<0.0001	26.6	1.45	0.0003	0.0163	0.068	0.035	0.001	6.38	<0.0005	<0.0005	<0.0001	<0.005	<0.005	<0.01	<0.0005	<0.001	-	-	-	-
		18/Apr/26	0.0006	22.1	<0.00002	76.7	1.55	42.8	<0.00002	32.8	0.0003	0.00026	0.006	0.077	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		18/Nov/15	0.0023	2.5	0.00003	68.2	1.33	37.1	<0.0001	36.4	0.0000	0.00041	<0.005	0.56	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
	19-W007	19/May/02	0.0002	19.0	0.00005	68.8	1.92	29.2	< 0.0001	31.9	-	0.00025	< 0.005	0.142	-	-	-	-	-	-	-	-	-	-	0.0094	9.34	6.85	6.92	1.59
	19-W016	19/Oct/08	0.0010	7.90	< 0.00009	81.3	4.12	32.7	< 0.0001	49.1	-	0.00065	< 0.005	0.012	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
	20-W008	20/Apr/23	0.0014	18.9	0.00007	73.8	2.18	39.3	< 0.0001	32.4	-	-	0.0005	0.076	-	-	-	-	-	-	-	-	-	-	0.013	9.70	6.91	1.15	1.74
	20-W019	20/Nov/16	0.0035	6.62	0.00009	75.6	2.58	36.6	< 0.0001	33.6	-	-	0.0008	0.375	-	-	-	-	-	-	-	-	-	-	0.008	10.23	[10]	8.26	1.56
08-2 (well damaged in 2010)		08/Nov/01	0.009	0.121	<0.02	28.3	0.113	2.1	-	31.4	-	-	-	0.039	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		April-09	<0.0005	189	<0.0001	321	5.98	55.9	-	30.2	1.41	0.0022	0.683	0.742	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		Nov-09	0.002	1.13	0.00022	28.8	0.141	2.6	-	12.4	0.37	0.0007	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		10/Apr/13	0.003	1.53	0.00094	28.7	0.108	3	<0.00002	43.8	0.349	0.00661	<0.005	0.007	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
MW103		18/Apr/26	0.0016	<0.005	0.00006	29.4	0.034	1.1	<0.0001	17.1	0.0023	0.00227	0.013	<0.005	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
		18/Nov/15	0.0011	<0.005	0.00006	20.7	0.008	0.4	<0.0001	14.4	-	0.00086	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-
(installed in 2018)	19-W005	19/May/02	0.0006	< 0.005	0.00002	22.1	0.051	0.5	< 0.0001	12.4	-	0.00066	< 0.005	< 0.005	-	-	-	-	-	-	-	-	-	-	<0.001	6.33	7.14	2.71	0.488
		19/Oct/08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	20-W006[8]	20/Apr/23	0.0017	0.172	0.00016	28.3	0.095	0.6	< 0.0001	12.9	-	-	0.0020	< 0.005	-	-	-	-	-	-	-	-	-	-	0.002	6.75	7.82	14.35	0.557
	20-W016[8]	20/Nov/16	0.0063	0.011	0.00017	18.2	0.007	0.4	< 0.0001	11.7	-	-	0.0014	< 0.005	-	-	-	-	-	-	-	-	-	-	0.001	8.38	[10]	11.15	0.382
MW104 (installed in 2018)	-	18-Nov-15[8]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	dry	19/May/02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	dry	19/Oct/08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	dry	20/Apr/23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	dry	20/Nov/16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Input: MW
Checked: JMP

Notes:

1 Alkalinity should not decrease by more than 25% of the natural concentration.

2 Aluminum standard for PWQO is pH dependent (4.5 to 5.5 = 15ug/L, 5.5 to 6.5 = <10% above background, 6.5 to 9.0 = 75 ug/L)

3 Cadmium criteria: 0-100 mg/L Hardness = 0.0001 mg/L, >100 mg/L Hardness = 0.0005 mg/L.

4 Chromium reported as total, published standards are for Chromium VI (0.001 mg/L) and Chromium III (0.0089 mg/L).

5 Copper criteria: if 0-20 mg/L Hardness = 0.001 mg/L; if >20 mg/L Hardness = 0.005 mg/L.

6 Lead criteria: if <30 mg/L Hardness = 0.001 mg/L; if 30 to 80 mg/L Hardness = 0.003 mg/L; if >80 mg/L Hardness = 0.005 mg/L.

7 Beryllium criteria: <75 mg/L Hardness = 0.011 mg/L, >75 mg/L Hardness = 1.1 mg/L

8 Insufficient sample quantity for full parameter analysis

9 DO criteria: 0oC -5oC = ≥7mg/L 5oC-10oC = ≥ 6mg/L 10oC-20oC = ≥5mg/L 20oC-25oC = ≥ 4mg/L

10 pH values not collected due to equipment error

Shaded cells denotes concentration exceeds the 2003 Ontario Drinking Water Quality Standards

AO indicates aesthetic objective OG indicates operational guideline CS indicates chemical standards

PWQO- denotes the Provincial Water Quality Objectives.

"-" denotes not analyzed

"RL" denotes reporting limit

"<" or "ND #" denotes results below reporting limit

"+#" or denotes elevated reprting limit

"MW###" and "## - #" denote groundwater monitoring well

groundwater samples analyzed for metals were field filtered using 0.45 micron filters

Monitoring Location	Sample ID (post 2018)	Parameter		General Inorganics															Anions					Aluminum (total)	Aluminum (dissolved)	Mercury	Arsenic	Barium	Boron	Cadmium
				Alkalinity	N - Ammonia	N - Ammonia(UI)(lab)	BOD	COD	DOC	Conductivity uS/cm	Hardness	pH	Phenols	o-Phosphate (P)	Phosphorus (total)	Phosphorus (dissolved)	TDS	TSS	N - Total Kjeldahl	Chloride	N - Nitrate	N - Nitrite	Sulphate								
		PWQO (mg/L)		(note a)		0.020						6.5-8.5	0.001		0.02									0.075 [c]	0.075 [c]	0.0002	0.005		0.200	(note d)
	Sample Date	Table A: Aquatic Protection Value (mg/L)				0.100						6.0-9.0	0.04[b]							180			100				0.15	2.3	3.550	0.00021
		Table B: Canadian Water Quality Guideline (mg/L)											0.004[b]							128	2.9	0.06							1.5	0.000017
SW1		90-May-05		54	-	-	N/S	19	-	210	80	7.04	nd	-	-	-	-	-	0.41	9	-	-	-	-	-	-	-	-	-	-
		93-May-27		188	-	-	nd	31	-	430	189	7.49	nd		-	-	-	-	1.92	27	-	-	-	-	-	-	-	-	-	-
		93-Jun-30		177	-	-	6	60	-	400	193	7.09	nd		-	-	-	-	2.19	16	-	-	-	-	-	-	-	-	-	-
		93-Oct-13		55	-	-	1	21	-	155	73	7.1	nd	-	-	-	-	-	0.35	5	-	-	-	-	-	-	-	-	-	-
		94-May-17		71	-	-	2	18	-	153	83	7.18	nd		-	-	-	-	0.83	3	-	-	-	-	-	-	-	-	-	-
		94-Nov-30		33	-	-	2	13	-	84	43	7.24	0.006	-	-	-	-	-	0.3	1	-	-	-	-	-	-	-	-	-	-
		95-Dec-05		74	-	-	nd	23	-	164	71	7.24	nd	-	-	-	-	-	0.69	2	-	-	-	-	-	-	-	-	-	-
		98-Mar-11		94	-	-	-	23	-	207	97	7.66	nd	-	-	-	-	-	0.8	4.3	-	-	-	-	-	-	-	-	-	-
		99-Oct-19		25	nd	nd	-	8	-	-	42	-	nd	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-
		01-Nov-14		46	nd	-	nd	8	-	-	71	7.01	nd	-	0.014	-	-	1	0.29	2.3	nd	nd	-	0.094	-	-	nd	0.03	0.035	nd
		01-Apr-12		43	nd	nd	0.6	12	-	119	59	7.31	nd	-	0.022	-	-	nd	0.31	1.4	nd	nd	-	0.445	-	nd	nd	0.024	0.023	nd
		02-May-11		27.7	nd	nd	0.6	20	5.6	122	56	6.89	nd	-	0.045	-	52	2	0.34	2.5	nd	nd	21.5	0.823	-	nd	nd	0.041	0.017	nd
		03-Apr-23		46	<0.03	<0.005	0.7	14	4.8	111	69	7.7	-	-	0.026	-	72	2	0.36	1.8	<0.2	<0.2	7.9	0.506	-	<0.00005	<0.002	0.032	0.018	<0.0001
		03-Jun-30		472	0.55	0.012	1.1	58	19.6	936	510	7.68	nd	-	0.534	-	530	76	1.49	21.7	0.7	<0.2	13.8	12.7	-	<0.00005	<0.002	0.34	0.379	0.0003
		03-May-11		45	nd	nd	nd	20	5.5	114	77	7.14	0.001	-	0.059	-	98	7	0.31	1.8	nd	nd	10.6	2.47	-	nd	nd	0.053	0.017	nd
		5-Nov-03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-May-24		44	nd	nd	nd	-	4	87	56	7.37	-	-	0.05	-	80	10	0.37	nd	nd	-	3.3	0.845	-	-	nd	0.026	0.014	nd
		04-Nov-16		105	nd	nd	0.8	-	6.5	224	103	7.59	-	-	0.055	-	106	26	0.35	2.7	0.2	-	10.1	1.42	-	-	nd	0.051	0.034	nd
		06-May-03		142	0.21	nd	15	240	12.4	275	161	8	nd	-	0.53	-	169	740	1	5	nd	<0.1	10	15	-	nd	0.001	0.280	0.1	0.0003
		06-Sep-21		73	0.11	-	< 2	65	11.9	220	136	7.9	< 0.001	-	0.56	-	157	1,300	3.2	3	0.1	< 0.01	33	12	-	< 0.0001	0.001	0.25	0.058	0.0003
		06-Oct-20		38	0.09	-	< 2	18	7.8	89	41	7.6	< 0.001	-	0.068	-	54	22	0.7	2	< 0.1	N/A	7	1	-	N/A	< 0.001	0.032	0.014	< 0.0001
		07-May-23		128	0.17	-	<2	73	7.9	276	87	7.43	<0.001	-	<0.001	-	198	40	0.6	3.2	0.2	<0.1	8	0.16	-	<0.00003	<0.0005	0.057	0.088	<0.0001
		07-Dec-07		32	<0.05	<0.05	<2	<5	10.2	136	62	6.26	<0.001	-	<0.01	-	90	10	<0.1	2	0.1	<0.1	23	0.53	-	<0.00003	<0.0005	0.039	0.017	<0.005
		07-Jun-01		232	0.2	-	2	24	11.7	509	232	7.75	<0.001	-	0.06	-	280	14	0.9	10	0.4	0.2	17	0.17	-	<0.00003	<0.0005	0.084	0.174	<0.0001
		08-Sep-01		80	<0.05	-	6	108	12.7	173	82	7.03	<0.001	-	0.85	-	95	570	4	2	<0.1	<0.1	7	1.72	-	<0.00002	<0.0005	0.079	0.048	<0.0001
		08-Nov-01		92	<0.05	-	<2	-	5.7	211	92	7.2	<0.001	-	0.15	-	116	66	0.9	2	0.1	-	11	0.41	-	<0.00002	<0.03	0.037	0.036	<0.005
		09-Apr-01		140	0.22	-	<2	<5	6.4	272	129	6.48	<0.001	-	0.11	-	150	20	-	3	0.2	<0.1	9	0.536	-	0.00051	<0.0005	0.073	0.066	<0.0001
		09-Jul-01		-	-	-	-	-	-	-	408	-	-	-	2.8	-	-	-	5	-	-	-	-	3.81	-	0.00009	0.0031	0.329	0.243	<0.0001
		09-Nov-18		84	<0.05	<0.05	<2	26	5.6	201	83	7.18	<0.001	-	0.05	-	111	10	0.4	2	0.2	<0.1	11	0.14	-	0.00006	<0.0005	0.031	0.027	<0.0001
		10-Jun-22		223	0.3	-	3	61	11.2	472	245	7.95	<0.001	-	0.44	-	260	144	1.9	5.1	0.3	<0.1	3	4.36	-	<0.00002	0.0009	0.17	0.189	<0.0001
		10-Aug-16		628	0.96	0.06	7	273	19.5	1220	673	8.23	0.003	-	2.1	-	673	800	7.7	29	0.2	0.2	7	21.6	-	0.00003	0.004	0.58	0.712	0.0005
		10-Nov-25		69	0.01	<0.01	<2	28	6	157	78	7.71	<0.001	-	0.03	-	86	4	0.3	1	0.1	<0.1	5	0.58	-	<0.00002	<0.0005	0.033	0.027	<0.0001
		10-Nov-25	duplicate	69	0.02	<0.01	6	25	5.8	156	77	7.7	<0.001	-	0.02	-	86	3	0.3	1	<0.1	<0.1	5	0.55	-	<0.00002	<0.0005	0.032	0.026	<0.0001
		11-Oct-11		62	<0.01	<0.01	<2	13	6.4	149	77	7.91	0.002	-	0.02	-	82	<2	0.29	2	0.1	<0.1	9	0.11	-	<0.02	0.0009	0.026	-	<0.00002
		12-Apr-12		108	0.01	<0.01	5	13	5.1	232	86	7.68	<0.001	-	0.23	-	128	190	1.23	2.2	0.1	<0.1	4	0.15	-	<0.00002	0.0002	0.028	0.045	<0.00002
		Oct-12		48	0.03	<0.005	7	226	7.9	131	136	7.67	<0.001	-	0.46	-	72	870	1.1	1.5	0.1	<0.1	11	28.4	-	<0.00002	0.0002	0.46	0.033	0.00002
		13-Jul-18		804	-	-	<2.0	103	-	1440	818	7.81	<0.0010	-	0.066	-	-	-	1.28	-	<0.50	<0.50	10	5.16	-	-	-	0.364	0.89	<0.00090
		14-Jun-17		76	<0.050	-	2.0	89	28.7	145	77	7.35	0.0012	-	0.285	-	131	33.0	1.66	<2.0	<0.10	<0.10	<2.0	0.519	-	<0.00010	<0.0010	0.0319	0.021	<0.00090
		15-May-11		278	0.36	0.006	13	73	18.4	528	236	7.5	0.005	-	0.36	0.08	298	200	3.1	5	ND (0.1)	ND (0.05)	6	0.401	-	nd	nd	0.1320	0.202	nd
		15-Nov-02		32	0.02	0.0001	ND (2)	26	8.1	104	38	7.1	ND (0.001)	-	0.03	0.15	48	ND (2)	0.4	1	ND (0.1)	ND (0.05)	14	0.155	-	nd	nd	0.0220	0.016	nd
		16-Nov-30		36	0.02	0.0001	ND (2)	33	6.3	100	33	7.1	ND (0.001)	-	0.04	0.02	60	11	0.2	1	ND (0.1)	ND (0.05)	10	0.121	-	ND (0.0001)	ND (0.001)	0.0210	0.026	ND (0.0001)
	17-W003	17-Aug-17		50	0.03	0.0001	7.0	22	15.7	103	54	6.9	<0.001	-	0.15	0.05	78	43	0.9	<1	0.3	<0.05	<1	0.263	0.021	<0.0001	<0.001	0.0510	<0.01	<0.0001
		17-Dec-21 (dry)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-W009	18-Apr-26		75	0.2	< 0.01	< 2	18	6.2	163	78	7.57	< 0.001	0.01	0.06	-	83	11	0.6	1.3	0.09	< 0.05	5	0.08	-	<0.00002	0.0004	0.027	0.036	0.00002
	18-W014	18-Nov-15		36	0.05	< 0.01	5	31	7.3	98	45	7.22	< 0.002	0.12	0.17	-	50	60	0.9	0.9	< 0.05	< 0.05	9	0.03	-	<0.00002	0.0003	0.035	0.008	0.000057
	19-W008	19-May-02		53	0.04	<0.01	<3	18	9.2	117	78	7.67	0.005	0.072	0.01	-	59	14	0.3	0.7	<0.05	<0.05	3	0.02	-	<0.00002	<0.0001	0.038	0.05	<0.000015
	19-W017	19-Oct-08		120	0.71	0.01	13	103	14.2	268	126	7.55	< 0.001	2.41	55.9	-	137	4500	104	< 0.5	< 0.05	< 0.05	11	4.70	0.03	< 0.00002	0.0024	0.228	0.116	0.000159
	20-W009	20-Apr-23		101	0.35	<0.01	<3	21	5.4	216	106	7.58	<0.001	0.014	0.01	-	110	4	0.6	1.8	0.11	<0.05	5	-	0.02	<0.00002	0.0001	0.033	0.054	<0.000015
	20-W018	20-Nov-16		35	< 0.01	< 0.01	< 3	43	11	99	46	7.19	0.002	0.025	0.06	-	50	16	0.7	2	< 0.05	< 0.05	8	-	0.11	< 0.00002	0.0002	0.024	0.02	0.000029
SW2		93-May-01		50	-	-	3	18	-	97	39	7.3	nd	-	-	-	-	-	0.83	nd	-	-	-	-	-	-	-	-	-	-
		93-Jun-30		110	-	-	2	56	-	212	118	6.97	nd	-	-	-	-	-	1.21	2	-	-	-	-	-	-	-	-	-	-
		93-Oct-13		50	-	-	2	21	-	132	64	7.05	nd	-	-	-	-	-	0.38	nd	-	-	-	-	-	-	-	-	-	-
		94-May-17		54	-	-	1	11	-	102	56	7.1	nd	-	-	-	-	-	0.34	nd	-	-	-	-	-	-	-	-	-	-
		94-Sep-14		58	-	-	6	45	-	139	72	6.53	nd	-	-	-	-	-	1.81	nd	-	-	-	-	-	-	-	-	-	-
		94-Nov-30		37	-	-	nd	15	-	101	231	7.22	nd	-	-	-	-	-	0.31	2	-	-	-	-	-	-	-	-	-	-
		95-Dec-05		55	-	-	nd	20	-	116	55	6.98	nd	-	-	-	-	-	0.56	nd	-	-	-	-	-	-	-	-	-	-
		00-Oct-19		110	nd	nd	nd	30	N/S	210	81	7.3	nd	-	-	-	-	670	0.55	4	0.2	nd	-	0.042	-	nd	nd	0.03	nd	nd
		01-Nov-14		24	nd	-	1	22	-	-	38	6.54	nd	-	0.059	-	-	8	0.42	0.8	nd	nd	-	0.341	-	-	nd	0.035	0.011	0.0001
		01-Apr-12		22	nd	nd	1.4	13	-	65	27	7.06	nd	-	0.029	-	-	nd	0.35	0.6	nd	nd	-	0.437	-	nd	nd	0.02	0.006	nd
		02-May-11		12.6	nd	nd	2.2	31	5.9	70	26	6.57	nd	-	0.121	-	62	75	0.53	1	nd	nd	13.9	0.326	-	nd	nd	0.031	0.007	nd
		02-Dec-13		27	nd	nd	nd	37	5.9	88	43	6.67	nd	-	0.18	-	80	51	1.06	0.6	nd	nd	12.2	2.37	-	nd	nd	0.055	0.005	0.0001
		03-Apr-23		28	<0.03	<0.005	1	14	4	67	35	7.37	N/A	-	0.021	-	46	2	0.35	0.7	<0.2	<0.2	5.4	0.282	-	<0.00005	<0.002	0.019	<0.005	<0.0001
		03-Jun-30		84	0.18	<0.005	nd	45	63	159	94	6.83	nd	-	7.38	-	100	406	3.66	<0.5	0.2	<0.2	<0.5	5.06	-	<0.00005	0.004	0.11	0.01	0.0003
		03-May-11		30	nd	nd	nd	20	5.1	81	36	6.91	nd	-	0.062	-	84	4	0.41	0.9	nd	nd	8	1.48	-	nd	nd	0.036	nd	nd
		04-May-24		30	nd	nd	nd	-	3.9	62	35	7.17	-	-	0.033	-	56	4	0.32	nd	nd	-	2.7	0.686	-	-	nd	0.021	0.007	nd
		04-Aug-18		88	nd	0.04	1.4	-	10.5	169	87	6.73	-	-	0.097	-	108	37	0.76	nd	nd	-	nd	0.404	-	-	nd	0.039	nd	nd
		04-Nov-16		49	nd	nd	0.8	-	5.7	112	54	7.28	-	-	0.034	-	62	10	0.32	nd	nd	-	7.8	0.411	-	-	nd	0.025	nd	nd
		05-May-01		58.7	nd	-	nd	-	6.2	111	86	7.18	-	-	-	-	7070	1	0.19	nd	-	-	1.2	0.415	-	-	nd	0.026	0.03	0.0011
		05-Jul-10		26	nd	nd	2	18	11.3	89	53	7.49	nd	-	0.85	-	128	480	2.3	1	nd	nd	13	7.2	-	nd	nd	0.098	0.013	0.0002
		06-May-03		47	nd	nd	nd	12	5.1	93	46	7.4	nd	-	0.015	-	58	1	0.4	nd	nd	-	3	0.17	-	nd	nd	0.021	nd	nd
		06-Sep-21		2	0.1	< 2	< 2	110	13.2	181	76	5.7	0.001	-	0.66	-	140	410	4.7	2	0.2	< 0.01	45	9.4	-	< 0.0001	0.003	0.19	0.021	0.0005
		06-Oct-20		31	0.11	-	< 2	18	7.4	72	34	7.4	< 0.001	-	0.061	-	51	13	0.7	5	< 0.1	N/A	6	0.94	-	N/A	< 0.001	0.028	< 0.01	< 0.0001
		06-Oct-20		33	0.1	-	< 2	89	7.6	76	34	7.6	< 0.001	-	0.15	-	45	6	0.6	1	< 0.1	N/A	7	0.95	-	N/A	< 0.001	0.028	< 0.01	< 0.0001
		07-May-23		56	<0.05	-	13	49	5.6	121	33	6.89	<0.001	-	0.1	-	80	432	0.8	0.6	0.1	<0.1	3	0.24	-	<0.00003	<0.0005	0.034	0.019	<0.0001
		07-Dec-07		20	<0.05	<0.05	<2	75	9.2	77	32	6.26	<0.001	-	0.07	-	51	6	0.2	<1	<0.1	<0.1	14	0.51	-	0.00006	<0.0005	0.032	0.005	<0.005
		08-Jun-01		59	<0.05	-	5	32	10.8	121	45	7.09	<0.001	-	0.15	-	67	96	1	<1	0.1	<0.1	<1	0.04	-	<0.00003	<0.0005	0.029	0.007	<0.0001
		08-Sep-01		46	<0.05	-	5	41	13.6	90	41	6.29	<0.001	-	0.1	-	50	26	0.9	<1	<0.1	<0.1	2	0.14	-	<0.00002	<0.0005	0.025	0.019	<0.0001
		08-Nov-01		38	<0.05	-	<2	-	5.7	96	40	6.87	<0.001	-	0.04	-	57	10	0.4	1	0.2	-	7	0.42	-	<0.00002	<0.03	0.023	<0.005	<0.005
		09-Apr-01		40	<0.05	-	<2	7	5.4	99	43	6.55	<0.001	-	0.02	-	55	4	-	<1	0.1	<0.1	4	0.332	-	0.00004	<0.0005	0.02	0.006	<0.0001
		09-Apr-01		53	<0.05	-	<2	9	5.4	96	44	6.76	<0.001	-	0.03	-	53	4	-	<1	0.5	<0.1	4	0.312	-	0.00007	<0.0005	0.02	0.007	<0.0001
		09-Jul-01		100	0.08	-	<2	88	15.1	212	118	6.55	<0.001	-	0.76	-	117	150	1.7	<1	0.1	<0.1	27	1.08	-	<0.00002	<0.0005	0.06	0.02	<0.0001
		09-Nov-18		42	<0.05	<0.05	<2	38	5.3	99	42	6.77	<0.001	-	0.31	-	55	132	0.8	1	0.2	<0.1	5	0.46	-	0.00006	<0.0005	0.027	<0.005	<0.0001
		09-Nov-18		40	<0.05	<0.05	<2	69	5.3	100	41	6.73	<0.001	-	0.17	-	55	250	0.7	1	0.2	<0.1	5	0.36	-	0.00007	<0.0005	0.023	<0.005	<0.0001
		10-Jun-22		88	<0.05	-	2	43	11.9	166	91	7.23	<0.001	-	0.39	-	91	32	1	0.6	<0.1	<0.1	<1	0.05	-	<0.00002	<0.0005	0.042	0.006	<0.0001
		10-Jun-22		88	<0.05	-	3	49	11.7	166	91	7.23	<0.001	-	0.26	-	91	28	1	0.6	<0.1	<0.1	<1	0.09	-	<0.00002	0.0007	0.049	0.006	<0.0001
		10-Aug-16		93	0.38	<0.01	4	127	21.6	195	94	7.03	0.006	-	1.06	-	107	130	2.5	1	0.1	<0.1	2	1.87	-	<0.00002	0.0029	0.095	0.028	0.0001
		11-Apr-12		41	<0.05	<0.05	3	19	4.8	93	44	7.62	<0.001	-	0.01	-	51	30	0.4	0.5	0.1	<0.1	3	0.37	-	<0.00002	0.0001	0.019	<0.005	<0.00002
		11-Aug-16		54	0.15	<0.01	>21	21	7.4	130	57	7.39	0.003	-	0.15	-	71	88	1.1	1	0.2	<0.1	6	2.14	-	<0.00002	0.002	0.046	0.021	<0.00002
		13-Oct-22		38	-	-	<2.0	55	7.6	77.2	35	7.22	<0.0010	-	0.053	-	-	-	0.29	-	<0.10	<0.10	2.2	0.196	-	-	-	0.0150	<0.010	<0.000090
		13-Oct-22		35	-	-	<2.0	49	7.6	75.4	35	7.24	<0.0010	-	<0.030	-	-	-	<0.15	-	<0.10	<0.10	2.2	0.204	-	-	-	0.0150	<0.010	<0.000090
		14-Jun-17		57	0.062	0.00034	6.5	159	10.0	112	63	7.18	0.0013	-	1.21	-	81	374	3.31	<2.0	<0.10	<0.10	<2.0	0.315	-	<0.00010	<0.0010	0.0241	<0.010	<0.000090
		14-Jun-17		55	<0.050	<0.00027	4.7	30	9.2	112	66	7.20	<0.0010	-	0.101	-	97	228	0.41	<2.0	<0.10	<0.10	<2.0	0.325	-	<0.00010	<0.0010	0.0485	0.072	<0.000090
		14-Oct-15		53	-	-	<2.0	41	13.4	96.3	51	7.02	<0.0010	-	0.148	-	-	-	0.65	-	<0.10	<0.10	2.1	0.176	-	-	-	0.0272	<0.010	<0.000090
		15-May-11		94	0.04	0.0003	ND (2)	30	12.1	180	88	7.2	0.004	-	0.11	0.02	134	21	0.8	ND (1)	ND (0.1)	ND (0.05)	ND (1)	nd	-	nd	nd	0.0340	0.014	nd
		15-Nov-02		24	0.03	0.0002	ND (2)	24	8.7	76	27	7	0.002	-	0.05	0.02	34	ND (2)	0.5	1	ND (0.1)	ND (0.05)	10	0.156	-	nd	nd	0.0190	nd	nd
		16-Nov-30		25	0.02	0.0001	ND (2)	18	4	77	21	6.7	ND (0.001)	-	0.03	0.02	44	13	0.3	1	ND (0.1)	ND (0.05)	6	0.138	-	ND (0.0001)	ND (0.001)	0.0180	0.037	ND (0.0001)
	17-W004	17-Aug-17		310	0.28	0.004	<40	214	67.8	570	301	7.5	0.005	-	0.23	0.02	344	106	0.9	6	0.3	<0.05	5	0.263	0.021	<0.0001	0.002	0.2420	0.148	<0.0001
	17-W006	17-Dec-21		41	0.03	0.0002	<2	18	5.2	84	25	7.2	<0.001	-	0.05	0.01	52	11	0.4	<1	<0.1	<0.05	3	0.172	0.071	<0.0001	<0.001	0.019	0.013	<0.0001
	18-W001	18-Apr-26		32	0.01	< 0.01	5	21	5.8	67	50	7.37	< 0.001	0.02	0.1	-	34	20	0.6	0.9	< 0.05	< 0.05	< 1	0.120	-	<0.00002	0.001	0.031	<0.005	0.000072
	18-W011	18-Nov-15		24	0.03	< 0.01	6	24	9.7	72	30	7.03	< 0.002	0.03	0.05	-	36	< 3	0.5	0.8	< 0.05	< 0.05	7	0.04	-	<0.00002	0.0002	0.019	<0.005	0.000023
	19-W009	19-May-02		30	0.04	<0.01	<3	25	5	66	58	7.33	<0.001	0.028	0.03	-	33	16	0.4	0.5	<0.05	<0.05	2	0.02	-	<0.00002	0.0001	0.037	0.038	0.000016
	19-W011	19-Oct-08		8	0.09	< 0.01	< 3	48	16.8	53	22	6.46	< 0.001	0.078	0.14	-	27	92	1.2	< 0.5	< 0.05	< 0.05	7	0.28	0.22	< 0.00002	0.0003	0.029	0.007	0.000106
	20-W001	20-Apr-23		33	<0.01	<0.01	<3	14	3.8	69	34	7.19	<0.001	0.007	<0.01	-	35	6	0.2	0.6	0.08	<0.05	1	-	0.02	< 0.00002	<0.0001	0.013	< 0.005	< 0.000015
	20-W011	20-Nov-16		28	0.01	< 0.01	< 3	48	11.9	77	35	6.93	< 0.001	0.044	0.09	-	39	28	0.9	1.6	< 0.05	< 0.05	-	-	0.14	< 0.00002	0.0003	0.025	0.013	0.000067

Monitoring Location	Sample ID (post 2018)	Parameter		General Inorganics														Anions				Metals						
				Alkalinity	N - Ammonia	N - Ammonia(Ui)(lab)	BOD	COD	DOC	Conductivity uS/cm	Hardness	pH	Phenols	o-Phosphate (P)	Phosphorus (total)	Phosphorus (dissolved)	TDS	TSS	N - Total Kjeldahl	Chloride	N - Nitrate	N - Nitrite	Sulphate	Aluminum (total)	Aluminum (dissolved)	Mercury	Arsenic	Barium	Boron	Cadmium
		PWQO (mg/L)		(note a)		0.020						6.5-8.5	0.001		0.02									0.075 [c]	0.075 [c]	0.0002	0.005		0.200	(note d)
		Table A: Aquatic Protection Value (mg/L)	Sample Date			0.100						6.0-9.0	0.04[b]							180			100				0.15	2.3	3.550	0.00021
		Table B: Canadian Water Quality Guideline (mg/L)											0.004[b]							128	2.9	0.06							1.5	0.000017
SW3			93-May-27	216	-	-	nd	26	-	580	258	7.86	nd	-	-	-	-	-	0.77	43	-	-	-	-	-	-	-	-	-	-
			93-Jun-30	215	-	-	1	49	-	463	225	7.6	nd	-	-	-	-	-	1.09	21	-	-	-	-	-	-	-	-	-	-
			93-Oct-13	74	-	-	2	18	-	226	100	7.34	nd	-	-	-	-	-	0.27	13	-	-	-	-	-	-	-	-	-	-
			94-May-17	80	-	-	1	16	-	186	97	7.8	nd	-	-	-	-	-	0.4	5	-	-	-	-	-	-	-	-	-	-
			95-Dec-05	86	-	-	nd	20	-	199	87	7.47	0.003	-	-	-	-	-	0.46	4	-	-	-	-	-	-	-	-	-	-
			98-Mar-11	116	-	-	-	68	-	368	79	7.66	nd	-	-	-	-	-	3.8	6.2	-	-	-	-	-	-	-	-	-	-
			99-Oct-19	85	0.01	nd	-	22	-	-	70	-	nd	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-
			00-Oct-19	160	nd	nd	nd	44	-	350	124	7.5	nd	-	N/S	-	-	60	0.8	11	0.2	nd	-	0.074	-	nd	nd	0.035	0.1	nd
			01-Nov-14	60	nd	N/S	nd	20	-	N/S	90	7.17	nd	-	0.06	-	-	9	0.45	4.5	nd	nd	-	0.836	-	N/S	nd	0.043	0.058	nd
			01-Apr-12	54	nd	nd	0.9	14	-	153	64	7.43	nd	-	0.021	-	-	1	0.41	2.9	nd	nd	-	0.418	-	nd	nd	0.026	0.039	nd
			02-May-11	39	nd	nd	nd	24	6.1	165	65	7.17	nd	-	0.067	-	104	14	0.36	4.8	nd	nd	26.8	1.17	-	nd	nd	0.041	0.032	nd
			03-Apr-23	65	<0.03	<0.005	0.8	15	5.4	159	80	7.83	-	-	0.039	-	98	11	0.33	3.6	<0.2	<0.2	12.4	0.736	-	<0.00005	<0.002	0.039	0.041	<0.0001
			03-May-11	54	nd	nd	nd	23	5.4	137	62	7.42	nd	-	0.058	-	120	45	0.26	3.2	nd	nd	12.8	1.48	-	nd	nd	0.041	0.026	nd
			04-May-24	62	nd	nd	nd	-	4.6	125	65	7.68	-	-	0.049	-	108	7	0.35	1.5	nd	-	5.8	0.828	-	-	nd	0.3	0.032	nd
			04-Nov-16	147	nd	nd	2.5	-	9.2	328	164	7.75	-	-	0.084	-	182	230	0.3	7.5	nd	-	19.1	3.46	-	-	nd	0.09	0.073	nd
			06-May-03	169	nd	nd	nd	21	7	337	171	8.2	nd	-	0.009	-	210	44	0.6	7	nd	-	18	0.18	-	nd	nd	0.054	0.15	nd
			06-Sep-21	94	< 0.05	-	< 2	24	9.7	285	125	8	< 0.001	-	0.037	-	201	22	0.8	7	0.2	< 0.01	42	0.41	-	< 0.0001	< 0.001	0.042	0.11	< 0.0001
			06-Oct-20	47	0.09	-	3	19	7.9	114	53	7.7	< 0.001	-	0.074	-	72	480	0.9	2	< 0.1	N/A	10	1.4	-	N/A	< 0.001	0.037	0.027	< 0.0001
			07-May-01	172	0.17	-	<2	38	9	365	178	7.96	<0.001	-	0.1	-	241	11	1.6	5.4	0.1	<0.1	16	0.08	-	<0.00003	<0.0005	0.054	0.15	<0.0001
			07-Dec-07	56	<0.05	<0.05	<2	<5	10	185	43	6.5	<0.001	-	0.25	-	122	138	1.4	3	0.1	<0.1	26	6.17	-	0.00007	0.0007	0.159	0.043	<0.005
			08-Jun-01	289	<0.05	-	2	11	11.6	648	306	8.16	<0.001	-	0.07	-	356	40	0.9	14	0.2	<0.1	40	0.04	-	<0.00003	0.0009	0.103	0.254	<0.0001
			09-Apr-01	160	0.06	-	<2	<5	6.8	355	159	6.82	<0.001	-	<0.01	-	195	2	-	4	0.2	<0.1	16	0.215	-	0.00003	<0.0005	0.049	0.093	<0.0001
			09-Nov-18	120	<0.05	<0.05	2	98	6.1	236	151	7.38	<0.001	-	0.54	-	158	415	2	4	0.2	<0.1	19	9.9	-	0.00008	0.001	0.262	0.061	0.0007
			09-Nov-18	120	<0.05	<0.05	2	98	6.1	236	151	7.38	<0.001	-	0.54	-	158	415	2	4	0.2	<0.1	19	9.9	-	0.00008	0.001	0.262	0.061	0.0007
			10-Nov-25	82	<0.01	<0.01	<2	30	5.8	186	90	7.86	<0.001	-	0.01	-	102	3	0.3	2	<0.1	<0.1	7	0.53	-	<0.00002	<0.0005	0.032	0.035	<0.0001
			11-Apr-12	98	<0.05	<0.05	<2	9	5.4	227	116	8.06	<0.001	-	0.06	-	125	10	0.7	2.4	0.2	<0.1	10	0.93	-	<0.00002	0.0002	0.056	0.006	<0.00002
			11-Apr-12	98	<0.05	<0.05	<2	10	5.4	231	116	8.08	<0.001	-	0.01	-	127	12	0.3	2.4	0.2	<0.1	10	0.47	-	<0.00002	0.0002	0.035	0.008	0.00002
			8/17/2017 (dry)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			12/21/2017 (dry)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-W006		18-Apr-26	99	0.09	< 0.01	3	21	6.4	223	121	8.01	< 0.001	0.01	0.04	-	114	9	0.4	1.9	0.14	< 0.05	9	0.06	-	<0.00002	0.0009	0.042	0.063	0.000019
	18-W015		18-Nov-15	62	0.05	< 0.01	4	22	7.3	161	76	7.45	< 0.002	0.05	0.25	-	82	18	0.8	1.5	< 0.05	< 0.05	12	0.03	-	<0.00002	0.0002	0.05	0.026	0.000082
	19-W001		19-May-02	71	0.03	< 0.01	< 3	21	6.2	158	100	7.86	< 0.001	0.013	< 0.01	-	80	28	0.3	1.1	< 0.05	< 0.05	5	0.03	-	< 0.00002	0.0001	0.039	0.067	< 0.000015
	dry		19-Oct-08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	20-W005		20-Apr-23	143	0.23	< 0.01	<3	18	5.8	311	162	7.88	< 0.001	0.007	0.03	-	160	6	0.6	2.8	0.28	< 0.05	11	-	0.03	< 0.00002	0.0001	0.044	0.09	< 0.000015
	20-W015		20-Nov-16	46	< 0.01	< 0.01	< 3	41	11.1	125	61	7.49	0.002	0.031	0.07	-	63	104	0.7	2.0	< 0.05	< 0.05	8	-	0.09	< 0.00002	0.0002	0.029	0.034	0.000036
SW4 (background)			03-Apr-23	24	<0.03	<0.005	0.6	9	3.8	57	41	7.39	N/A	-	0.023	-	46	4	0.19	0.5	<0.2	<0.2	5.5	0.945	-	<0.00005	<0.002	0.031	0.005	<0.0001
			03-Nov-05	38	nd	nd	nd	26	6.9	99	46	6.82	nd	-	0.066	-	114	7	0.33	0.9	nd	nd	10.4	2.05	-	nd	nd	0.046	0.005	nd
			04-May-24	35	nd	nd	nd	-	4	72	39	7.04	-	-	0.04	-	74	6	0.28	nd	nd	-	3	1.14	-	-	nd	0.028	0.007	nd
			04-Nov-16	80	0.08	nd	1.8	-	8.2	175	84	7.27	-	-	0.049	-	112	18	0.51	nd	nd	-	9.1	1.49	-	-	nd	0.052	0.006	nd
			06-May-03	93	nd	nd	nd	12	3.6	172	92	7.8	nd	-	0.036	-	103	1	0.3	2	nd	-	6	0.72	-	nd	nd	0.044	nd	nd
			06-Sep-21	< 1	0.08	-	< 2	59	20.9	46	06	5.3	< 0.001	-	0.057	-	39	18	2	2	< 0.1	< 0.01	3	0.59	-	< 0.0001	< 0.001	0.03	< 0.01	0.0005
			06-Oct-20	44	0.12	-	2	32	8	95	49	7.5	0.002	-	0.087	-	68	37	1.3	1	< 0.1	N/A	9	4.2	-	N/A	< 0.001	0.066	0.012	< 0.0001
			07-May-01	104	<0.05	-	2	37	8.3	225	97	7.02	<0.001	-	0.12	-	148	97	1.2	0.7	0.1	<0.1	7	10.9	-	0.00003	0.001	0.135	0.024	<0.0001
			07-Dec-07	44	<0.05	<0.05	<2	<5	8.7	97	36	7.21	<0.001	-	0.71	-	64	68	3	1	0.3	<0.1	18	11.6	-	0.00009	0.0006	0.183	0.009	<0.005
			08-Jun-01	56	<0.05	-	<2	21	6.7	132	63	6.98	<0.001	-	0.05	-	73	2	0.4	1	0.2	<0.1	8	0.41	-	<0.00003	<0.0005	0.035	0.009	<0.0001
			09-Apr-01	93	<0.05	-	<5	4.7	168	78	6.65	<0.001	-	-	0.07	-	92	16	-	1	0.2	<0.1	5	0.86	-	0.00003	<0.0005	0.04	0.008	<0.0001
			09-Nov-18	84	<0.05	<0.05	<2	91	5.1	181	88	6.82	<0.001	-	0.55	-	99	272	1.8	<1	0.2	<0.1	7	2.48	-	0.00008	<0.0005	0.079	<0.005	0.0002
			10-Nov-25	64	0.01	<0.01	6	144	8.6	141	77	7.45	<0.001	-	1.17	-	77	42	4	<1	0.1	<0.1	5	3.97	-	0.00005	<0.0005	0.079	0.007	0.0002
			11-Apr-12	62	<0.05	<0.05	<2	25	5.6	135	72	7.55	<0.001	-	0.02	-	74	4	0.4	0.5	0.2	<0.1	4	1.13	-	<0.00002	0.0002	0.039	<0.005	0.0001
			13-Jul-18	89	-	-	11.0	184	-	180	89	7.02	<0.0010	-	0.043	-	-	-	0.99	-	<0.50	<0.50	<10	0.960	-	-	-	0.0646	<0.010	0.0001

Monitoring Location	Sample ID (post 2018)	Parameter		General Inorganics														Anions											
				Alkalinity	N - Ammonia	N - Ammonia(UV)(lab)	BOD	COD	DOC	Conductivity uS/cm	Hardness	pH	Phenols	o-Phosphate (P)	Phosphorus (total)	Phosphorus (dissolved)	TDS	TSS	N - Total Kjeldahl	Chloride	N - Nitrate	N - Nitrite	Sulphate	Aluminum (total)	Aluminum (dissolved)	Mercury	Arsenic	Barium	Boron	Cadmium
		Sample Date	PWQO (mg/L)	(note a)		0.020						6.5-8.5	0.001		0.02									0.075 [c]	0.075 [c]	0.0002	0.005		0.200	(note d)
			Table A: Aquatic Protection Value (mg/L)			0.100						6.0-9.0	0.04 [b]							180			100				0.15	2.3	3.550	0.00021
			Table B: Canadian Water Quality Guideline (mg/L)										0.004 [b]							128	2.9	0.06							1.5	0.000017
SW5		03-Apr-23		66	0.03	<0.005	6.6	43	12.6	202	93	7.56	N/A	-	0.306	-	118	7	1.24	6.8	<0.2	<0.2	28.4	0.212	-	<0.00005	<0.002	0.037	0.061	<0.0001
		03-Jun-30		126	0.07	<0.005	1.3	46	15.2	280	146	7.1	nd	-	0.091	-	170	16	0.89	3.8	<0.2	<0.2	12.2	0.191	-	<0.00005	<0.002	0.037	0.125	<0.0001
		03-Nov-05		50	nd	nd	0.6	26	6.6	139	59	7.17	nd	-	0.072	-	122	5	0.69	3.9	nd	nd	14.3	1.4	-	nd	nd	0.037	0.027	nd
		04-Aug-18		105	nd	0.08	2.7	-	16.7	210	104	7.01	-	-	0.2	-	152	13	1.27	nd	nd	-	5.1	0.021	-	-	nd	0.032	0.117	nd
		04-Nov-16		83	0.09	nd	1.7	-	18.5	207	97	7.01	-	-	0.862	-	128	390	1.42	4.1	nd	-	13.5	3.79	-	-	nd	0.114	0.04	0.0003
		06-May-03		107	0.09	nd	8	180	18.7	191	119	7.6	nd	-	0.34	-	128	150	1.3	2	nd	-	nd	1.9	-	nd	nd	0.069	0.026	nd
		06-Sep-21		87	0.14	-	4	180	30.6	215	118	7.6	0.001	-	0.45	-	152	96	2.7	3	0.02	0.2	23	0.6	-	< 0.0001	< 0.001	0.053	0.13	0.0001
		06-Oct-20		158	0.11	-	3	28	7.7	289	148	8	< 0.001	-	0.081	-	178	35	0.9	1	< 0.1	N/A	5	1.3	-	N/A	< 0.001	0.06	0.018	< 0.0001
		07-May-01		92	0.1	-	4	78	14.2	189	70	7.13	<0.001	-	0.31	-	125	45	3	1	0.1	<0.1	2	0.3	-	<0.00003	<0.0005	0.055	0.034	<0.0001
		07-Dec-07		40	<0.05	<0.05	<2	11	11.3	151	65	6.22	<0.001	-	0.09	-	100	9	0.6	2	0.3	<0.1	20	1.31	-	<0.00003	<0.0005	0.039	0.02	<0.005
		08-Jun-01		116	<0.05	-	<2	43	15.5	253	121	7.72	<0.001	-	0.08	-	139	18	0.9	3	0.2	<0.1	7	0.03	-	<0.00003	<0.0005	0.027	0.049	<0.0001
		08-Sep-01		132	<0.05	-	<2	51	21.4	240	136	6.45	<0.001	-	0.09	-	132	20	1.3	1	<0.1	<0.1	<1	0.08	-	<0.00002	<0.0005	0.039	0.08	<0.0001
		08-Nov-01		97	<0.05	-	<2	-	8.1	230	101	7.13	<0.001	-	0.04	-	127	2	0.6	4	<0.1	-	14	0.42	-	0.00003	<0.03	0.033	0.051	<0.005
		09-Apr-01		89	<0.05	-	<2	23	7.9	169	76	6.68	<0.001	-	0.02	-	93	2	-	2	0.1	<0.1	8	0.085	-	0.00006	<0.0005	0.019	0.033	<0.0001
		09-Jul-01		88	<0.05	-	<2	40	11	175	89	7.09	<0.001	-	0.02	-	96	16	0.2	1	<0.1	<0.1	<1	<0.01	-	<0.00002	<0.0005	0.016	0.032	<0.0001
		09-Nov-18		52	<0.05	<0.05	5	47	7.5	123	47	6.54	<0.001	-	0.09	-	67	30	0.9	2	<0.1	<0.1	3	0.16	-	0.00006	<0.0005	0.018	0.015	<0.0001
		10-Jun-22		85	<0.05	-	7	34	9.8	163	84	7.26	<0.001	-	0.02	-	90	42	0.9	1	0.1	<0.1	<1	0.02	-	<0.00002	0.0005	0.019	0.036	<0.0001
		10-Aug-16		79	<0.01	<0.01	<2	32	10.1	158	78	7.49	<0.001	-	0.04	-	87	10	0.8	<1	<0.1	<0.1	<1	0.02	-	<0.00002	<0.0005	0.02	0.046	<0.0001
		11-Apr-12		52	<0.05	<0.05	<2	16	4.9	129	58	7.8	<0.001	-	0.05	-	71	8	0.5	1.3	<0.2	<0.1	8	0.13	-	<0.00002	0.0002	0.016	<0.005	<0.00002
		11-Aug-16		84	<0.01	<0.01	<2	18	10.6	172	84	7.75	<0.001	-	0.04	-	95	8	0.9	1	0.2	<0.1	<1	0.04	-	<0.00002	0.0004	0.032	0.046	<0.00002
		11-Oct-28		43	0.07	<0.01	3	16	7.2	99	46	7.84	0.002	-	0.03	-	54	4	0.6	1	0.1	<0.1	3	<0.1	-	0.05	0.0006	0.015	-	<0.00002
		12-Apr-11		69	0.02	<0.01	5	14	5.8	154	67	8.03	<0.001	-	0.04	-	85	3	0.62	1.4	<0.1	<0.1	5	0.1	-	<0.00002	0.0003	0.017	0.032	0.0000
		12-Apr-11		68	0.01	<0.01	3	9	6.1	151	70	8.02	<0.001	-	0.03	-	83	4	0.51	1.4	<0.1	<0.1	5	0.12	-	<0.00002	0.0003	0.017	0.033	<0.00002
		12-Oct-x		80	0.087	<0.005	5	49	9	169	82	7.93	<0.001	-	0.09	-	93	6	0.8	0.6	0.1	<0.1	2	0.03	-	<0.00002	0.0004	0.016	0.032	<0.00002
		12-Oct-01		79	0.035	<0.005	5	55	9.9	166	78	7.98	<0.001	-	0.08	-	91	5	0.7	0.6	0.1	<0.1	2	0.02	-	<0.00002	0.0004	0.015	0.03	<0.00002
		13-Jul-18		204	-	-	8.7	91	-	375	187	7.91	<0.0010	-	0.298	-	-	-	2.02	-	<0.50	<0.50	<10	1.62	-	-	-	0.188	0.122	<0.000090
		13-Oct-22		59	-	-	<2.0	58	11.4	126	58	7.62	0.0017	-	0.094	-	-	-	0.74	-	<0.10	<0.10	3.8	1.20	-	-	-	0.0439	0.011	0.0002
		14-Jun-17		113	<0.050	<0.00034	3.0	58	13.8	218	113	7.59	<0.0010	-	0.0703	-	133	35.2	0.86	<2.0	<0.10	<0.10	<2.0	0.791	-	<0.00010	<0.0010	0.0337	0.034	<0.000090
		14-Oct-15		130	-	-	6.9	43	13.1	210	115	7.90	<0.0010	-	0.055	-	-	-	0.70	-	<0.10	<0.10	<2.0	0.021	-	-	-	0.0276	0.033	<0.000090
		15-May-11		135	0.08	0.003	5	46	18	263	120	7.9	0.003	-	0.24	0.06	182	79	1.4	4	ND (0.1)	ND (0.05)	4	nd	-	nd	nd	0.0210	0.089	nd
		15-Nov-02		31	0.08	0.0004	ND (2)	36	11.4	265	98	6.9	ND (0.001)	-	0.17	0.16	158	ND (2)	1.3	3	0.3	ND (0.05)	86	0.098	-	nd	nd	0.0360	0.104	nd
		16-Jun-27		160	0.17	0.001	8	94	28	306	121	7	0.026	-	1	0.21	230	181	3.9	ND (1)	ND (0.1)	ND (0.05)	2	0.012	-	ND (0.0001)	0.002	0.0310	0.576	ND (0.0001)
		16-Nov-30		45	0.03	0.0002	3	31	8.3	154	55	7.1	ND (0.001)	-	0.05	0.05	88	10	0.4	3	ND (0.1)	ND (0.05)	23	0.131	-	ND (0.0001)	ND (0.001)	0.0250	0.057	ND (0.0001)
17-W001		17-Aug-17		177	0.04	0.001	4	20	18.5	299	158	7.9	0.001	-	0.34	0.07	200	17	1.1	1	0.5	<0.05	2	0.31	<0.001	<0.0001	<0.001	0.238	0.068	0.0001
17-W008		17-Dec-21		139	0.03	0.0006	<2	20	5.4	274	87	7.7	<0.001	-	0.29	0.01	154	48	1.1	3	0.1	<0.05	14	0.190	0.051	<0.0001	<0.001	0.040	0.049	<0.0001
18-W003		18-Apr-26		114	< 0.01	< 0.01	3	25	7.9	258	126	7.93	< 0.001	0.01	0.04	-	132	7	0.4	2.4	< 0.05	< 0.05	15	0.030	-	<0.00002	0.001	0.033	0.061	<0.000015
		11/15/2018 (dry)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19-W004		19-May-02		82	0.05	< 0.01	< 3	29	10.3	187	114	7.67	< 0.001	0.05	0.05	-	95	6	0.5	1.3	< 0.05	< 0.05	7	0.03	-	< 0.00002	0.0002	0.043	0.076	< 0.000015
		10/8/2019 (dry)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20-W003		20-Apr-23		103	0.01	<0.01	<3	21	7.3	232	120	7.65	< 0.001	0.025	0.05	-	118	4	0.4	2.1	0.06	<0.05	10	-	0.10	<0.00002	0.0002	0.029	0.047	< 0.000015
20-W013		20-Nov-16		103	0.02	< 0.01	< 3	65	19.8	296	146	7.24	< 0.001	0.105	0.19	-	152	< 3	1.4	4.9	< 0.05	< 0.05	33	-	0.04	< 0.00002	0.0004	0.045	0.065	0.000082
SW6		03-Apr-23		58	<0.03	<0.005	1.1	17	6.1	164	75	7.75	N/A	-	0.063	-	102	7	0.42	4.7	<0.2	<0.2	19.7	0.401	-	<0.00005	<0.002	0.031	0.044	<0.0001
		03-Jun-30		124	0.04	<0.005	3.5	48	16	258	131	7.48	nd	-	0.217	-	162	35	0.99	2.1	<0.2	<0.2	6.8	0.979	-	0.00011	<0.002	0.047	0.072	<0.0001
		03-Nov-05		55	nd	nd	nd	28	8.3	167	71	6.93	nd	-	0.135	-	128	16	0.59	4.8	nd	nd	23.1	0.97	-	nd	nd	0.033	0.049	nd
		04-May-24		97	nd	nd	1.8	-	12.7	187	113	7.35	-	-	0.096	-	160	9	0.82	2.8	nd	-	7.6	0.206	-	-	nd	0.033	0.06	nd
		04-Aug-18		105	nd	0.08	2.6	-	11	218	109	7.32	-	-	0.179	-	148	25	1.31	nd	nd	-	5.1	0.123	-	-	nd	0.027	0.077	nd
		04-Nov-16		111	0.07	nd	12.2	-	15.2	266	120	7.13	-	-	0.289	-	156	49	0.7	6.4	0.4	-	20.4	2.71	-	-	nd	0.072	0.053	0.0001
		06-May-03		106	nd	nd	nd	28	9.2	222	115	7.9	nd	-	0.062	-	146	3	0.8	3	nd	-	14	0.087	-	nd	nd	0.028	0.063	nd
		06-Sep-21		68	0.09	-	< 2	50	13.8	233	110	7.7	< 0.001	-	0.026	-	176	12	2	3	0.1	< 0.01	43	0.75	-	< 0.0001	< 0.001	0.055	0.097	< 0.0001
		06-Oct-20		49	0.12	-	2	35	9.4	111	53	7.6	< 0.001	-	0.16	-	79	9	1.1	2	< 0.1	N/A	7	2.2	-	N/A	< 0.001	0.046	0.018	< 0.0001
		07-May-01		96	<0.05	-	96	42	11.3	157	85	7.14	<0.001	-	<0.01	-	103	6	1.1	0.7	<0.1	<0.1	4	0.56	-	0.0002	<0.0005	0.039	0.037	<0.0001
		07-Dec-07		48	<0.05	<0.05	<2	19	12	182	41	6.24	<0.001	-	0.13	-	200	36	0.5	3	0.1	<0.1	28	1.61	-	0.00008	<0.0005	0.057	0.041	<0.005
		08-Sep-01		88	-	-	<2	32	13.2	167	85	6.74	<0.001	-	0.05	-	92	4	-	2	<0.1	<0.1	2	0.07	-	<0.00002	<0.0005	0.02	0.035	<0.0001
		08-Nov-01		44	<0.05	-	<2	-	6.3	99	38	7.28	<0.001	-	0.03	-	55	4	0.5	1	<0.1	-	4	0.16	-	0.00005	<0.03	0.011	0.018	<0.005
		09-Apr-01		56	<0.05	-	<2	17	6.3	100	48	6.77	<0.001	-	0.1	-	55	30	-	1	0.2	<0.1	4	0.563	-	0.00006	<0.0005	0.018	0.021	<0.0001
		09-Jul-01		96	<0.05	-	<2	26	9.9	202	99	7.14	<0.001	-	0.08	-	111	12	0.7	1	0.1	<0.1	<1	0.02	-	<0.00002	<0.0005	0.028	0.028	<0.0001
		09-Nov-18		48	<0.05	<0.05	<2	34	5.4	101	42	7.1	<0.001	-	0.04	-	56	10	0.2	1	0.1	<0.1	3	0.16	-	0.00007	<0.0005	0.011	0.012	<0.0001
		10-Jun-22		97	0.1	-	<2	27	9	187	96	7.67	<0.001	-	0.03	-	103	46	0.8	1	0.3	<0.1	1	1.04	-	<0.00002	<0.0005	0.043	0.032	<0.0001
		10-Aug-16		91	0.02	<0.01	<2	36	9.2	184	88	7.41	<0.001	-	0.12	-	101	10	1	<1	0.1	<0.1	1	0.1	-	<0.00002	<0.0005	0.023	0.041	<0.0001
		10-Aug-16		91	<0.01	<0.01	<2	39	9.2	184	89	7.47	<0.001	-	0.15	-	101	18	1.1	<1	0.1	<0.1	1	0.06	-	<0.00002	<0.0005	0.022	0.042	<0.0001
		10-Nov-25		38	<0.01	<0.01	<2	27	5.9	85	40	7.73	<0.001	-	0.02	-	47	4	0.4	1	<0.1	<0.1	3	0.2	-	<0.00002	<0.0005	0.012	0.019	<0.0001
		11-Apr-12		52	<0.05	<0.05	<2	9	4.7	128	62	7.82	<0.001	-	0.02	-	71	6	0.4	1.6	0.2	<0.1	7	0.17	-	<0.00002	0.0003	0.013	<0.005	<0.00002
		11-Aug-16		87	<0.01	<0.01	<2	304	9.5	176	155	7.67	<0.001	-	3.2	-	97	248	7.6	1	0.1	<0.1	<1	16.2	-	<0.00002	0.0005	0.934	0.062	<0.00002
		13-Oct-22		83	-	-	<2.0	51	9.6	163	81	7.77	0.0022	-	0.047	-	-	-	0.67	-	<0.10	<0.10	4.5	0.293	-	-	-	0.0254	0.045	<0.000090
		14-Jun-17		63	<0.050	<0.00052	<2.0	36	10.3	128	67	7.69	<0.0010	-	0.0635	-	86	8.4	0.66	<2.0	<0.10	<0.10	<2.0	0.124	-	<0.00010	<0.0010	0.0183	0.034	<0.000090
		14-Oct-15		60	-	-	<2.0	43	9.1	95.6	51	7.92	<0.0010	-	0.042	-	-	-	0.51	-	<0.10	<0.10	<2.0	0.393	-	-	-	0.0166	0.023	<0.000090
		15-May-11		88	0.05	0.009	5	36	13.1	173	82	8.7	0.003	-	0.07	0.04	134	16	1	2	ND (0.1)	ND (0.05)	2	nd	-	0.0004	nd	0.0140	0.045	nd
		15-May-11		87	0.05	0.009	4	36	13.1	173	79	8.7	0.002	-	0.09	0.03	138	19	1.1	2	ND (0.1)	ND (0.05)	3	nd	-	nd	nd	0.0060	0.047	nd
		15-Nov-02		32	0.04	0.0004	ND (2)	34	9.9	202	78	7.3	ND (0.001)	-	0.1	0.08	108	6	0.6	2	0.6	ND (0.05)	53	0.066	-	nd	nd	0.0300	0.072	nd
		16-Jun-27		66	0.06	0.004	5	68	19.5	134	55	8	0.011	-	0.27	0.12	108	17	1.4	ND (1)	ND (0.1)	ND (0.05)	2	0.074	-	ND (0.0001)	0.002	0.0250	0.047	ND (0.0001)
		16-Nov-30		37	0.02	0.0001	ND (2)	25	7.7	99	38	7.2	ND (0.001)	-	0.03	0.01	64	18	0.4	1	ND (0.1)	ND (0.05)	10	0.064	-	ND (0.0001)	ND (0.001)	0.0180	0.039	ND (0.0001)
17-W002		17-Aug-17		97	0.04	0.0005	5	10	12.8	195	100	7.5	<0.001	-	1.89	0.03	122	13	3.8	1	<0.1	<0.05	<1	0.190	<0.001	<0.0001	<0.001	0.0620	0.038	<0.0001
17-W009		17-Dec-21		41	0.03	0.0004	2	21	7.6	85	23	7.5	<0.001	-	0.03	<0.01	68	<2	0.4	1	<0.1	<0.05	3	0.085	0.05	<0.0001	<0.001	0.0110	0.016	<0.0001
18-W004		18-Apr-26		55	0.01	< 0.01	3	20	7.1	127	74	7.9	< 0.001	< 0.01	0.03	-	64	8	0.4	1.2	< 0.05	< 0.05	6	0.030	-	<0.00002	0.0	0.0260	0.027	<0.000015
18-W013		18-Nov-15		45	0.03	< 0.01	4	20	9	121	53	7.47	< 0.002	0.04	0.04	-	61	< 3	0.6	1.1	< 0.05	< 0.05	9	0.020	-	<0.00002	0.0	0.0150	0.026	<0.000015
19-W003		19-May-02		72	0.06	< 0.01	< 3	25	9.7	164	104	7.72	< 0.001	0.024	0.01	-	83	< 3	0.5	1.2	< 0.05	< 0.05	6	0.02	-	< 0.00002	0.0002	0.038	0.071	< 0.000015
19-W013		19-Oct-08		46	0.08	< 0.01	< 3	20	13.9	113	54	7.15	< 0.001	0.106	0.15	-	57	16	1	< 0.5	< 0.05	< 0.05	4	0.12	0.03	< 0.00002	0.0003	0.023	0.032	< 0.000015
20-W004		20-Apr-23		88	0.01	< 0.01	<3	20	6.8	201	103	7.69	<	0.014	0.09	-	102	43	0.6	1.8	0.07	< 0.05	8	-	0.08	< 0.00002	0.0002	0.026	0.038	0.000029
20-W014		20-Nov-16		60	< 0.01	< 0.01	< 3	42	11.8	177	83	7.34	< 0.001	0.032	0.1	-	90	9	0.8	3.1	< 0.05	< 0.05	18	-	0.03	< 0.00002	0.0003	0.022	0.04	0.000018

Monitoring Location	Sample ID (post 2018)	Parameter		General Inorganics														Anions					Aluminum (total)	Aluminum (dissolved)	Mercury	Arsenic	Barium	Boron	Cadmium
				Alkalinity	N - Ammonia	N - Ammonia(UI)(lab)	BOD	COD	DOC	Conductivity uS/cm	Hardness	pH	Phenols	o-Phosphate (P)	Phosphorus (total)	Phosphorus (dissolved)	TDS	TSS	N - Total Kjeldahl	Chloride	N - Nitrate	N - Nitrite	Sulphate							
		Sample Date	PWQO (mg/L)	(note a)		0.020						6.5-8.5	0.001		0.02									0.075 [c]	0.075 [c]	0.0002	0.005		0.200	(note d)
			Table A: Aquatic Protection Value (mg/L)			0.100						6.0-9.0	0.004[b]							180			100				0.15	2.3	3.550	0.00021
			Table B: Canadian Water Quality Guideline (mg/L)										0.004[b]							128	2.9	0.06							1.5	0.000017
SW7 (background)		13-Oct-22		41	-	-	<2.0	40	8.3	87.0	45	7.57	0.0020	-	0.042	-	-	-	0.47	-	<0.10	<0.10	3.8	0.196	-	-	-	0.0109	0.034	<0.000090
		14-Jun-17		41	<0.050	<0.00061	<2.0	25	7.1	87.4	48	7.73	<0.0010	-	0.108	-	67	18.8	0.52	<2.0	0.21	<0.10	<2.0	1.63	-	<0.00010	<0.0010	0.0320	0.018	<0.000090
		14-Oct-15		35	-	-	<2.0	23	8.9	59.9	32	7.62	<0.0010	-	0.054	-	-	-	0.64	-	<0.10	<0.10	<2.0	0.256	-	-	-	0.0116	0.019	<0.000090
		15-May-11		51	0.05	0.001	2	12	7.2	108	50	7.7	0.002	-	0.02	0.02	78	4	0.6	ND (1)	0.3	ND (0.05)	2	nd	-	nd	nd	0.0060	0.021	nd
		15-Nov-02		40	0.06	0.001	ND (2)	25	7.1	85	35	7.6	0.002	-	0.02	ND (0.01)	33	ND (2)	0.5	ND (1)	ND (0.1)	ND (0.05)	ND (1)	0.032	-	nd	nd	0.0080	0.021	nd
		16-Jun-27		73	0.51	0.008	ND (2)	40	7.3	158	58	7.4	0.006	-	0.16	0.03	108	48	1.3	1	0.5	ND (0.05)	2	0.153	-	ND (0.0001)	ND (0.001)	0.0230	0.034	ND (0.0001)
		16-Nov-30		35	0.02	0.0002	ND (2)	39	7.2	78	30	7.3	ND (0.001)	-	0.02	ND (0.01)	20	25	0.4	ND (1)	ND (0.1)	ND (0.05)	3	0.051	-	ND (0.0001)	ND (0.001)	0.0130	0.031	ND (0.0001)
		17-Aug-17 (dry)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	17-W007	17-Dec-21		32	0.06	0.0005	<2	19	7.9	64	18	7.3	<0.001	-	0.02	<0.01	-	<2	0.4	<1	<0.1	<0.05	2	0.102	0.045	<0.0001	<0.001	0.0100	0.020	<0.0001
	18-W002	18-Apr-26		21	0.04	< 0.01	3	18	4.7	49	21	7.57	< 0.001	0.01	0.04	-	25	8	0.4	01	< 0.05	< 0.05	1	0.050	-	<0.00002	0.001	0.0080	0.012	<0.000015
	18-W012	18-Nov-15		32	0.04	< 0.01	5	25	7.6	68	33	7.61	0.003	-	0.02	-	34	< 3	0.5	< 0.5	< 0.05	< 0.05	< 1	<0.0010	-	<0.00002	0.000	0.0110	0.017	<0.000015
	19-W002	19-May-02		18	0.07	< 0.01	< 3	18	7.3	47	48	7.38	< 0.001	0.015	0.01	-	24	5	0.4	0.7	< 0.05	< 0.05	2	0.01	-	< 0.00002	0.0001	0.028	0.047	< 0.000015
	19-W012	19-Oct-08		44	0.06	< 0.01	< 3	< 5	7.1	89	45	7.57	< 0.001	0.032	0.04	-	45	< 3	0.4	< 0.5	< 0.05	< 0.05	< 1	0.08	0.02	< 0.00002	0.0002	0.009	0.019	< 0.000015
	20-W002	20-Apr-23		20	0.02	< 0.01	< 3	20	4.6	48	24	7.29	< 0.001	0.007	0.03	-	24	5	0.3	0.8	0.1	< 0.05	2	-	0.01	< 0.00002	0.0001	0.007	0.015	< 0.000015
	20-W012	20-Nov-16		35	< 0.01	< 0.01	< 3	30	6.2	82	39	7.42	<0.001	0.010	0.01	-	41	<3	0.3	1.1	< 0.05	< 0.05	2	-	0.11	< 0.00002	0.0001	0.011	0.024	< 0.000015

Monitoring Location	Sample ID (post 2018)	Parameter		Metals																										Field Parameters			
				Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Potassium	Silver	Sodium	Strontium	Vanadium	Zinc	Silicon	Uranium	Antimony	Beryllium	Thallium	Tin	Titanium	Tungsten	Molybdenum	Unionized Ammonia. Calc (field)[j]	Temperature °C (field)	PH (Field)	DO	Conductivity
		PWQO (mg/L)			(note e)		(note f)	0.3	(note g)			0.025		0.0001			0.006	0.02		0.005	0.02	(note h)				0.03	0.04	0.02		6.5-8.5	(note i)	
	Sample Date	Table A: Aquatic Protection Value (mg/L)			0.064		0.0069	1.000	0.002									0.089										0.1		6.0-9.0		
		Table B: Canadian Water Quality Guideline (mg/L)																0.030														
SW1		90-May-05		19	-	-	-	nd	-	8	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		93-May-27		46	-	-	-	0.93	-	18	-	-	-	-	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		93-Jun-30		46	-	-	-	2.68	-	19	-	-	-	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		93-Oct-13		16	-	-	-	0.33	-	8	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		94-May-17		20	-	-	-	0.62	-	8	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		94-Nov-30		9	-	-	-	1.32	-	5	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		95-Dec-05		17	-	-	-	0.33	-	7	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		98-Mar-11		22.7	-	-	-	0.06	-	9.84	-	-	-	-	7.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		99-Oct-19		11	-	-	-	0.4	-	3.6	nd	-	-	-	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		01-Nov-14		18.2	nd	0.0002	0.0009	0.08	nd	6.18	0.006	nd	1.3	nd	4.1	-	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		01-Apr-12		16	nd	0.0002	0.0011	0.39	nd	4.7	0.013	-	1.1	nd	2.8	-	nd	0.053	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		02-May-11		15.2	nd	0.0003	0.0029	0.61	0.0009	4.45	0.018	0.001	1.3	nd	3.3	-	0.0013	0.068	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03-Apr-23		19.3	<0.005	0.0002	0.0013	0.43	<0.0005	5.09	0.02	<0.001	1	<0.0001	2.8	-	0.0009	0.109	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03-Jun-30		120	0.017	0.0108	0.0111	16.4	0.0055	51	2.94	0.016	9.4	<0.0001	36.1	-	0.0215	0.084	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03-May-11		22.7	nd	0.0009	0.0053	2.32	0.0012	5.02	0.067	0.002	1.6	nd	2.6	-	0.002	0.117	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		5-Nov-03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-May-24		15.9	nd	0.0003	0.0012	0.86	nd	3.85	0.031	0.001	0.6	nd	1.8	-	0.0016	0.057	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-Nov-16		26.5	nd	0.0008	0.0015	1.66	0.0006	9.01	0.139	0.002	1.4	nd	4.6	-	0.0025	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-May-03		38	0.026	0.0091	0.015	19	0.0100	16	0.82	0.018	4.9	nd	7.8	-	0.033	0.087	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-Sep-21		33	0.019	0.0078	0.014	17	0.0066	13	0.73	0.015	4.4	< 0.0001	6.2	-	0.026	0.069	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-Oct-20		11	< 0.005	< 0.0005	0.001	1.1	0.0007	3.3	0.02	0.001	1.8	< 0.0001	1.7	-	0.002	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		07-May-23		21	0.003	<0.0005	0.01	0.396	0.0010	8.48	0.088	<0.01	2.1	<0.0001	15.4	-	<0.005	0.031	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		07-Dec-07		16.1	<0.002	<0.005	0.002	0.676	<0.02	5.2	0.044	<0.01	1	<0.005	3	-	<0.005	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		07-Jun-01		57.2	<0.001	0.0014	0.002	0.401	<0.0001	21.7	0.26	<0.01	5	<0.0001	14.8	-	<0.005	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		08-Sep-01		22.2	0.003	<0.0005	0.003	3.78	0.0010	6.48	0.454	<0.01	2.1	<0.0001	3.5	-	0.006	0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		08-Nov-01		20.1	<0.002	<0.005	<0.002	0.482	<0.02	10.1	0.165	<0.01	1.7	<0.005	5.8	-	<0.005	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Apr-01		32.6	<0.001	0.0016	<0.0005	0.915	<0.0001	11.5	0.689	<0.01	2.8	<0.0001	6.2	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Jul-01		-	0.013	0.0046	0.015	67.5	0.0048	33	3.65	<0.01	5.4	<0.0001	21.9	-	0.015	0.071	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Nov-18		20.7	0.06	<0.0005	<0.0005	0.479	0.0053	7.5	0.052	0.05	1.2	<0.0001	3.4	-	<0.005	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Jun-22		57.3	<0.001	0.0051	0.005	7.35	0.0035	24.8	1.42	0.01	5.5	<0.0001	14.3	-	0.009	0.082	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Aug-16		153	0.034	0.0187	0.023	44.5	0.0147	70.6	3.76	0.02	17.8	<0.0001	49.1	-	0.045	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Nov-25		19.9	<0.001	<0.0005	<0.002	0.595	0.0004	6.85	0.043	<0.01	1.3	<0.0001	3.1	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Nov-25	duplicate	19.5	<0.001	<0.0005	<0.002	0.584	0.0004	6.76	0.043	<0.01	1.3	<0.0001	3	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		11-Oct-11		20.1	0.003	-	0.0007	0.203	0.0001	6.47	0.085	<0.01	1.2	-	3.5	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		12-Apr-12		21.6	<0.002	0.0002	0.0006	0.222	<0.0002	7.89	0.093	<0.01	1.6	-	4.1	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Oct-12		30.8	<0.002	<0.0001	0.0013	39.2	0.0001	14.3	2.12	<0.01	6.8	-	3.7	-	-	0.143	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		13-Jul-18		195	-	0.0051	<0.010	8.74	-	80.5	3.70	-	26	-	49.8	-	0.0098	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Jun-17		17.7	0.00117	0.000068	0.0013	2.34	<0.00050	7.92	0.114	0.0015	1.9	<0.00010	4.01	-	-	0.0119	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		15-May-11		58.1	nd	0.00090	nd	4.01	0.0002	22.00	1.290	0.0020	5.7	nd	10.50	0.447	0.0009	0.0070	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		15-Nov-02		09.9	nd	nd	nd	0.38	0.0002	3.20	0.012	nd	1.6	0.0002	2.46	0.066	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		16-Nov-30		08.7	ND (0.001)	ND (0.0005)	0.0011	0.19	0.0002	2.85	0.017	ND (0.001)	0.7	ND (0.0001)	1.86	0.066	0.0006	0.0060	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	17-W003	17-Aug-17		15.1	<0.001	0.0032	0.0032	12	0.095	3.94	0.483	<0.001	0.2	<0.0001	1.58	0.096	0.0015	0.020	1.93	<0.0001	<0.0005	<0.0005	<0.0001	<0.005	<0.005	<0.01	<0.005	-	-	-	-	-
		17-Dec-21 (dry)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-W009	18-Apr-26		20.6000	<0.001	0.0002	<0.0001	0.554	0.0001	6.52	0.081	0.0014	1.7	<0.00002	2.8	0.128	<0.005	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-W014	18-Nov-15		13.1000	0.001	0.0007	0.0075	3.25	0.0009	4.15	0.097	0.0016	1	<0.0001	2.4	0.069	<0.005	0.016	4.99	0.00059	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-W008	19-May-02		21.5	0.001	<0.0001	0.0006	0.268	0.00007	5.94	0.029	0.0006	0.8	<0.0001	3.8	0.137	<0.005	0.013	2.36	0.00006	<0.0001	<0.002	<0.00005	<0.05	0.006	0.05	0.0002	-	-	-	-	-	-
	19-W017	19-Oct-08		33.7	0.006	0.0052	0.0053	50.8	0.00314	10.1	1.06	0.005	3.3	-	4.9	-	0.012	0.054	12.7	0.00029	-	-	0.00005	-	-	< 0.01	-	-	-	-	-	-	-
	20-W009	20-Apr-23		27.8	<0.001	0.0002	0.0004	0.700	0.00004	8.63	0.113	<0.01	1.9	-	4.1	-	0.0002	0.005	2.71	0.00011	-	-	-	-	-	-	-	0.004	6.56	7.89	4.71	0.758
	20-W018	20-Nov-16		12.3	< 0.001	0.0003	0.0016	0.968	0.00027	3.66	0.040	< 0.01	1.4	-	2.5	-	0.0009	0.009	3.82	0.00009	-	-	-	-	-	-	-	<0.001	5.90	[k]	8.72	0.086
SW2		93-May-01		9	-	-	-	0.92	-	4	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		93-Jun-30		29	-	-	-	2.61	-	11	0.68	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		93-Oct-13		14	-	-	-	0.27	-	7	0.03	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		94-May-17		14	-	-	-	0.39	-	5	0.01	-	-	-	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		94-Sep-14		19	-	-	-	0.96	-	6	2.14	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		94-Nov-30		10	-	-	-	0.84	-	50	0.29	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		95-Dec-05		12	-	-	-	0.23	-	6	nd	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		00-Oct-19		20	nd	0.0005	nd	0.8	nd	7.6	0.14	nd	1.7	nd	4.6	-	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		01-Nov-14		9.8	nd	0.0037	0.0014	2.38	0.0007	3.27	0.821	nd	1.1	nd	1.9	-	0.0021	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		01-Apr-12		6.9	nd	0.0002	0.0015	0.55	nd	2.45	0.018	nd	0.8	nd	1.5	-	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		02-May-11		6.7	nd	0.0002	0.0018	0.34	nd	2.31	0.017	nd	1.2	nd	2	-	0.0007	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		02-Dec-13		10.5	0.008	0.0011	0.0196	2.86	0.0021	4.12	0.079	0.002	1.0	0.0001	2.2	-	0.005	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03-Apr-23		8.6	<0.005	0.0002	0.0033	0.33	<0.0005	3.2	0.009	<0.001	0.6	<0.0001	2	-	0.0006	0.028	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03-Jun-30		23.9	0.007	0.0085	0.0054	41.9	0.0051	8.3	1.47	0.005	0.9	<0.0001	2.1	-	0.0174	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03-May-11		9.1	nd	0.0004	0.0261	1.25	0.0006	3.18	0.011	0.001	1	nd	1.6	-	0.0018	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-May-24		9.7	nd	0.0003	0.0011	0.79	nd	2.58	0.028	nd	0.4	nd	1.2	-	0.0011	0.031	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-Aug-18		22.4	nd	0.0033	0.0011	4.33	0.0005	7.59	0.964	0.001	0.3	nd	2	-	0.0017	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-Nov-16		13.9	nd	0.0003	0.0013	0.77	nd	4.57	0.053	nd	0.8	nd	1.9	-	0.0007	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05-May-01		16.1	nd	nd	0.002	0.95	nd	11.1	0.133	nd	0.4	nd	1.9	-	0.001	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05-Jul-10		12	0.012	0.0042	0.008	8	0.0069	5.7	0.26	0.007	3.4	nd	1.7	-	0.014	0.044	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-May-03		12	nd	nd	nd	0.42	nd	3.9	0.035	nd	nd	nd	1.9	-	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-Sep-21		18	0.015	0.01	0.011	33	0.0097	7.5	0.89	0.009	4.1	0.0001	4.7	-	0.022	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-Oct-20		9.3	< 0.005	< 0.0005	0.001	1	< 0.0005	2.7	0.02	< 0.001	1.6	< 0.0001	1.4	-	0.002	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-Oct-20		9.1	< 0.005	< 0.0005	0.001	0.98	< 0.0005	2.7	0.018	< 0.001	1.6	< 0.0001	1.4	-	0.002	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		07-May-23		5.5	<0.002	<0.0005	0.011	0.837	0.0018	4.64	0.054	<0.01	0.7	<0.0001	10.4	-	<0.005	0.059	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		07-Dec-07		8.38	<0.002	<0.005	<0.002	1.26	<0.02	2.71	0.042	<0.01	0.7	<0.005	1.6	-	<0.005	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		08-Jun-01		9.68	0.005	0.0062	0.0017	1.21	<0.0001	4.96	1.18	<0.01	0.2	<0.0001	1.5	-	<0.005	0.016	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		08-Sep-01		11.1	<0.002	<0.0005	<0.002	1.87	<0.0001	3.34	0.171	<0.01	1.6	<0.0001	2	-	<0.005	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		08-Nov-01		8.3	<0.002	<0.005	<0.002	0.758	<0.02	4.62	0.094	<0.01	0.7	<0.005	2.5	-	<0.005	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Apr-01		10.9	<0.001	<0.0005	<0.0005	0.537	<0.0001	3.88	0.025	<0.01	0.6	<0.0001	2	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Apr-01		11	<0.001	<0.0005	<0.0005	0.553	<0.0001	3.93	0.026	<0.01	0.6	0.0001	2	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Jul-01		31.2	0.01	0.0024	0.003	33.5	0.0019	9.62	1.9	<0.01	0.3	<0.0001	1.8	-	0.005	0.042	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Nov-18		10.7	0.002	0.0006	<0.0005	1.9	0.0014	3.71	0.082	<0.01	0.7	<0.0001	0.9	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Nov-18		10.2	<0.002	<0.0005	<0.0005	1.44	0.0001	3.66	0.04	<0.01	0.6	<0.0001	0.8	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Jun-22		24	<0.001	0.0041	<0.002	10.5	<0.0001	7.45	1.06	<0.01	0.1	<0.0001	1.4	-	<0.005	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Jun-22		24.1	<0.001	0.0052	<0.002	11.6	0.0002	7.49	1.16	<0.01	0.1	<0.0001	1.4	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Aug-16		24.5	<0.001	0.0083	0.004	37.4	0.0022	7.86	1.53	<0.01	4.5	<0.0001	4.5	-	0.008	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		11-Apr-12		11.5	0.0004	0.0001	<0.002	0.356	0.0002	3.64	0.012	<0.01	0.6	-	2	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		11-Aug-16		16.2	0.003	0.0004	0.0013	3.57	<0.00002	3.93	0.148	0.02	2.7	-	1.5	-	<0.005	0.016	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		13-Oct-22		9.08	-	<0.00050	<0.0010	0.382	-	3.03	0.0100	-	1.0	-	1.69	-	<0.00050	<0.0030	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		13-Oct-22		9.03	-	<0.00050	<0.0010	0.378	-	2.93	0.0103	-	<1.0	-	1.73	-	<0.00050	<0.0030	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Jun-17		17.2	0.00059	0.00118	<0.0010	7.04	<0.00050	4.88	0.269	<0.0010	<1.0	<0.00010	1.73	-	-	0.0046	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Jun-17		18.1	0.00062	0.00115	0.0018	7.12	<0.00050	5.10	0.249	<0.0010	<1.0	<0.00010	7.73	-	-	0.0229	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Oct-15		13.4	-	0.00304	<0.0010	6.84	-	4.33	0.525	-	2.4	-	3.44	-	0.00091	0.0092	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		15-May-11		23.2	nd	0.00130	nd	7.09	0.0001	7.39	0.299	nd	0.8	nd	2.30	0.136	0.00060	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		15-Nov-02		06.8	nd	nd	nd	0.36	0.0001	2.41	0.009	nd	1.3	nd	2.07	0.043	nd	0.0080	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		16-Nov-30		05.6	00.0	ND (0.0005)	0.0015	0.29	0.0003	1.84	0.010	ND (0.001)	0.5	ND (0.0001)	1.54	0.039	0.00080	0.0080	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	17-W004	17-Aug-17		82	<0.001	0.01130	0.01	56	0.081	24	3.680	0.00	5.3	<0.0001	10	0.589	0.00	0.0	6.09	0.0005	<0.0005	<0.0005	<0.0001	<0.005	<0.005	<0.01	<0.0005	-	-	-	-	-
	17-W006	17-Dec-21		05	0	<0.0005	0.0006	1	0.00040	03	0.038	<0.001	0.5	<0.0001	01	0.056	0.00	0.01	3.85	<0.0001	<0.0005	<0.0005	<0.0001	<0.005	0.009	<0.01	<0.0005	-	-	-	-	-
	18-W001	18-Apr-26		13	0.001	0.00040	0.0068	1	0.00141	04	0.042	0.002	0.7	<0.00002	03	0.09	<0.005	0.04	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-W011	18-Nov-15		09	<0.001	0.00040	0.0009	1	0.00019	03	0.034	0.001	0.8	<0.0001	02	0.044	<0.005	0.01	4.15	0.00059	0.0003	<0.002	<0.00005	<0.05	0.047	<0.01	<0.01	-	-	-	-	-	-
	19-W009	19-May-02		15.8	0.002	0.0002	0.0011	0.500	0.00019	4.54	0.022	0.0007	0.400	<0.0001	3.3	0.102	<0.005	0.017	2.63	<0.00005	0.0001	<0.002	<0.00005	<0.05	0.016	0.04	0.0002	-	-	-	-	-	-
	19-W011	19-Oct-08		6.5	< 0.001	0.0013	0.0013	2.43	0.00062	1.44	0.136	0.0011	0.600	-	2.7	-	< 0.005	0.021	3.55	0.0001	-	-	< 0.00005	-	-	< 0.01	-	-	-	-	-	-	-
	20-W001	20-Apr-23		9.18	<0.001	< 0.0001	0.0004	0.121	0.00003	3.00	0.003	<0.01	0.3	-	2.3	-	0.0003	0.006	1.98	<0.00005	-	-	-	-	-	-	-	<0.001	5.72	8.13	7.67	0.093
	20-W011	20-Nov-16		9.250	< 0.001	0.0004	0.0029	0.905	0.00029	2.95	0.035	< 0.01	1.6	-	1.8	-	0.0012	0.009	3.310	<0.00005	-	-	-	-	-	-	-	<0.001	5.98	[k]	8.27	0.070

Monitoring Location	Sample ID (post 2018)	Parameter		Metals																								Field Parameters			
				Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Potassium	Silver	Sodium	Strontium	Vanadium	Zinc	Silicon	Uranium	Antimony	Beryllium	Thallium	Tin	Titanium	Tungsten	Molybdenum	Unionized Ammonia, Calc (field)[j]	Temperature °C (field)	PH (Field)	DO	Conductivity
		PWQO (mg/L)			(note e)		(note f)	0.3	(note g)			0.025		0.0001			0.006	0.02		0.005	0.02	(note h)				0.03	0.04	0.02		6.5-8.5	(note i)	
	Sample Date	Table A: Aquatic Protection Value (mg/L)			0.064		0.0069	1.000	0.002									0.089										0.1		6.0-9.0		
		Table B: Canadian Water Quality Guideline (mg/L)																0.030														
SW3		93-May-27		62	-	-	-	0.15	-	25	-	-	-	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		93-Jun-30		54	-	-	-	0.16	-	22	0.54	-	-	-	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		93-Oct-13		22	-	-	-	0.13	-	11	0.02	-	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		94-May-17		24	-	-	-	0.21	-	9	0.06	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		95-Dec-05		20	-	-	-	0.14	-	9	nd	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		98-Mar-11		18.8	-	-	-	0.11	-	7.72	nd	-	-	-	6.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		99-Oct-19		17	-	-	-	0.6	-	6.8	0.05	-	-	-	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		00-Oct-19		30	nd	nd	nd	0.2	nd	12	0.16	nd	2.3	nd	9	-	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		01-Nov-14		22.7	nd	0.0006	0.0014	0.97	0.0005	8.15	0.095	0.001	1.7	nd	6.5	-	0.0015	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		01-Apr-12		16.1	nd	0.0002	0.0013	0.36	nd	5.77	0.012	nd	1.2	nd	4.3	-	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		02-May-11		16	nd	0.0005	0.0023	1	0.0009	6.03	0.044	0.001	1.7	nd	4.9	-	0.0018	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03-Apr-23		19.7	<0.005	0.0004	0.0014	0.77	0.0006	7.38	0.077	<0.001	1.4	<0.0001	4.8	-	0.0013	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03-May-11		15.9	nd	0.0005	0.002	1.24	0.0006	5.49	0.027	0.001	1.5	nd	3.7	-	0.0003	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-May-24		16.8	nd	0.0004	0.0013	0.87	0.0006	5.55	0.049	0.001	0.9	nd	3.4	-	0.0015	0.028	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-Nov-16		40.9	nd	0.0018	0.143	3.48	0.0023	15	0.212	0.004	2.3	nd	9.4	-	0.0057	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-May-03		42	nd	nd	0.004	0.15	nd	16	0.01	0.002	3.2	nd	12	-	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-Sep-21		32	< 0.005	< 0.0005	0.002	0.41	< 0.0005	11	0.034	< 0.001	2.9	< 0.0001	9.9	-	< 0.001	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-Oct-20		14	< 0.005	0.0006	0.002	1.4	0.0007	4.4	0.038	0.002	2.1	< 0.0001	2.5	-	0.002	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		07-May-01		45.2	<0.002	<0.0005	0.009	0.177	0.0015	15.7	0.028	<0.01	3.8	<0.0001	20.6	-	<0.005	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		07-Dec-07		10.3	0.009	<0.005	0.014	8.27	<0.02	4.18	0.003	<0.01	1.1	<0.005	4.6	-	0.014	0.077	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		08-Jun-01		74.7	0.002	0.0023	0.0032	1.34	0.0008	28.9	0.244	<0.01	6.3	<0.0001	21.8	-	<0.005	0.018	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Apr-01		39.2	<0.001	<0.0005	<0.0005	0.261	<0.0001	14.8	0.023	<0.01	3.4	<0.0001	8.8	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Nov-18		35.4	0.017	0.0065	0.0064	14.2	0.0087	15.1	2.67	<0.01	3.5	<0.0001	12.4	-	0.022	0.125	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Nov-18		35.4	0.017	0.0065	0.0064	14.2	0.0087	15.1	2.67	<0.01	3.5	<0.0001	12.4	-	0.022	0.125	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Nov-25		22.7	<0.001	<0.0005	<0.002	0.487	0.0003	8.1	0.019	<0.01	1.4	<0.0001	4	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		11-Apr-12		29.9	0.0007	<0.0001	0.003	1.22	0.0007	9.94	0.357	<0.01	2.5	-	5.4	-	<0.005	0.041	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		11-Apr-12		30	0.0007	0.0002	0.003	0.402	0.0003	9.95	0.038	<0.01	2.5	-	5.4	-	<0.005	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		8/17/2017 (dry)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		12/21/2017 (dry)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-W006	18-Apr-26		31.4	<0.001	0.0002	<0.0001	0.428	0.0002	10.3	0.059	0.0019	2.8	<0.00002	5.1	0.209	<0.005	0.022	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-W015	18-Nov-15		20.8	0.002	0.001	0.0087	1.99	0.0013	6.75	0.443	0.002	1.4	<0.0001	3.5	0.112	<0.005	0.024	5.34	0.00067	<0.0001	<0.002	0.00005	<0.05	0.077	0.02	<0.01	-	-	-	-	-
	19-W001	19-May-02		26.8	0.002	0.0001	0.0011	0.255	0.00011	8.00	0.012	0.0008	1.3	< 0.0001	4.6	0.169	< 0.005	0.013	2.63	0.00013	< 0.0001	< 0.002	< 0.00005	< 0.05	0.011	0.09	0.0002	-	-	-	-	-
		dry		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	20-W005	20-Apr-23		40.7	<0.001	0.0003	0.0010	0.462	0.00023	13.1	0.155	<0.01	2.9	-	6.1	-	0.0006	0.023	3.12	0.00026	-	-	-	-	-	-	-	0.002	2.85	7.93	14.52	0.358
	20-W015	20-Nov-16		16.3	0.001	0.0004	0.0017	0.912	0.00038	4.82	0.102	< 0.01	1.8	-	3.2	-	0.0014	0.011	4.35	0.00010	-	-	-	-	-	-	-	<0.001	5.94	[k]	12.38	0.127
SW4 (background)		03-Apr-23		11.3	<0.005	0.0002	0.0014	0.61	<0.0005	3.05	0.011	<0.001	0.5	<0.0001	1.4	-	0.0014	0.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03-Nov-05		11.4	nd	0.0005	0.0034	1.38	0.0008	4.35	0.036	0.002	1.1	nd	1.9	-	0.003	0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-May-24		10.3	nd	0.0003	0.0015	0.74	nd	3.16	0.017	0.001	0.6	nd	1.4	-	0.0017	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-Nov-16		21.6	nd	0.001	0.002	1.47	0.0006	7.34	0.187	0.001	0.6	-	2.4	-	0.0029	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-May-03		23	nd	0.0005	0.003	0.45	0.0010	8.5	0.064	nd	0.59	-	3.3	-	0.002	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-Sep-21		1.8	0.019	0.0012	0.003	0.97	0.0017	0.4	0.06	0.002	< 0.2	-	7	-	< 0.001	0.049	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-Oct-20		12	0.006	0.0013	0.004	3.4	0.0016	4.6	0.086	0.004	2.5	-	1.7	-	0.007	0.018	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		07-May-01		23.7	0.015	0.0067	0.023	5.39	0.0081	9.15	0.495	0.01	2.3	-	8.9	-	0.023	0.113	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		07-Dec-07		4.71	0.013	<0.005	0.012	9.21	<0.02	5.81	0.401	<0.01	0.2	-	1.5	-	0.025	0.071	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		08-Jun-01		16.3	<0.001	0.0009	0.0069	0.246	<0.0001	5.31	0.031	<0.01	0.4	-	2.5	-	<0.005	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Apr-01		19.5	<0.001	0.0006	<0.0005	0.578	<0.0001	7.21	0.019	<0.01	0.6	0.0001	2.9	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Nov-18		22.4	0.031	0.0029	0.0037	2.12	0.0019	7.86	0.412	0.01	0.8	<0.0001	1.8	-	0.007	0.022	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Nov-25		18.8	0.005	0.0014	0.005	3.83	0.0021	7.19	0.296	<0.01	1.2	<0.0001	2.4	-	0.008	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		11-Apr-12		18.7	0.0009	0.0003	0.002	0.717	0.0004	6.16	0.021	<0.01	0.7	-	2.8	-	<0.005	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		13-Jul-18		26.8	-	0.00295	0.0021	6.04	-	5.48	0.791	-	<1.0	-	0.78	-	0.00317	0.0133	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Monitoring Location	Sample ID (post 2018)	Parameter		Metals																								Field Parameters			
				Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Potassium	Silver	Sodium	Strontium	Vanadium	Zinc	Silicon	Uranium	Antimony	Beryllium	Thallium	Tin	Titanium	Tungsten	Molybdenum	Unionized Ammonia. Calc (field)[j]	Temperature °C (field)	PH (Field)	DO	Conductivity
		PWQO (mg/L)			(note e)	0.0009	(note f)	0.3	(note g)			0.025		0.0001			0.006	0.02		0.005	0.02	(note h)				0.03	0.04	0.02		6.5-8.5	(note i)	
		Table A: Aquatic Protection Value (mg/L)			0.064		0.0069	1.000	0.002									0.089										0.1		6.0-9.0		
		Table B: Canadian Water Quality Guideline (mg/L)																0.030														
SW5		03-Apr-23		22.5	<0.005	0.0001	0.0022	0.29	0.0011	8.91	0.022	0.001	1.7	<0.0001	6.8	-	<0.0005	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03-Jun-30		38.2	<0.005	0.0004	0.0016	0.65	nd	12.4	0.159	0.001	0.7	<0.0001	9.2	-	<0.0005	0.042	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03-Nov-05		14.7	nd	0.0004	0.0024	1.13	0.0006	5.52	0.019	0.001	1.9	nd	3.8	-	0.0018	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-Aug-18		26.1	nd	0.0004	0.0006	0.86	nd	9.49	0.175	nd	0.2	nd	5.8	-	nd	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-Nov-16		23.1	0.125	0.0026	0.416	8.58	0.0029	9.58	0.595	0.004	3.9	nd	4.7	-	0.01	0.053	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-May-03		28	0.016	0.0015	0.004	3.4	0.0021	12	0.38	0.002	1.9	0.0001	5.6	-	0.004	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-Sep-21		29	0.14	0.001	0.007	2.9	0.0008	11	0.18	0.002	2.8	< 0.0001	7.1	-	0.002	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-Oct-20		36	< 0.005	0.0006	0.002	1.2	0.0007	14	0.092	0.001	2.5	< 0.0001	5.6	-	0.003	0.013	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		07-May-01		11.6	<0.002	0.0012	0.013	1.7	0.0024	9.97	0.534	<0.01	2.3	<0.0001	11.7	-	<0.005	0.116	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		07-Dec-07		15.8	<0.002	<0.005	<0.002	1.07	<0.02	6.31	0.047	<0.01	1.9	<0.005	3.7	-	<0.005	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		08-Jun-01		29.6	<0.001	0.0013	0.0015	0.635	<0.0001	11.4	0.076	<0.01	1	<0.0001	6.5	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		08-Sep-01		33.7	<0.002	<0.0005	<0.002	1.93	<0.0001	12.6	0.357	<0.01	1.4	<0.0001	5.7	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		08-Nov-01		21.5	<0.002	<0.005	<0.002	0.61	<0.02	11.6	0.151	<0.01	3.4	<0.005	7	-	<0.005	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Apr-01		19.1	<0.001	<0.0005	<0.0005	0.361	<0.0001	6.84	0.019	<0.01	1.5	<0.0001	3.7	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Jul-01		23.5	<0.001	<0.0005	<0.002	1.03	<0.0001	7.3	0.192	<0.01	0.7	<0.0001	2.5	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Nov-18		12.3	0.032	<0.0005	<0.0005	1.49	<0.0001	4.01	0.191	0.02	3	<0.0001	1.6	-	<0.005	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Jun-22		22.6	<0.001	<0.0005	<0.002	0.576	<0.0001	6.65	0.083	<0.01	0.7	<0.0001	2.6	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Aug-16		21.4	<0.001	<0.0005	<0.002	1.36	<0.0001	5.87	0.391	<0.01	0.7	<0.0001	1.5	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		11-Apr-12		15.8	0.0002	<0.0001	<0.002	0.423	0.0001	4.52	0.092	<0.01	1.4	-	2.6	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		11-Aug-16		23.2	<0.002	<0.0001	0.0002	0.752	<0.00002	6.28	0.216	0.03	1.4	-	4	-	<0.005	0.061	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		11-Oct-28		12.6	<0.002	-	0.0005	0.177	0.0001	3.47	0.053	<0.01	1.6	-	1.8	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		12-Apr-11		17.4	<0.002	<0.005	0.0005	0.602	0.0001	5.78	0.13	<0.01	1.3	-	3	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		12-Apr-11		18.1	<0.002	<0.005	0.0004	0.683	0.0001	6.03	0.136	<0.01	1.3	-	3.1	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		12-Oct-x		22	<0.0002	<0.005	0.0004	0.4	0.0000	6.61	0.065	<0.01	1.3	-	2.2	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		12-Oct-01		21	0.003	<0.005	0.0003	0.4	0.0000	6.32	0.063	<0.01	1.2	-	2.1	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		13-Jul-18		43.5	-	0.00108	0.0016	4.11	-	19.0	1.66	-	1.8	-	9.00	-	0.00545	0.0109	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		13-Oct-22		14.3	-	<0.00050	0.0016	0.971	-	5.50	0.0256	-	4.0	-	2.86	-	0.00214	0.0068	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Jun-17		28.9	0.00116	0.00064	<0.0010	1.08	<0.00050	9.97	0.0766	0.0013	1.2	<0.00010	3.44	-	-	0.0041	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Oct-15		29.5	-	<0.00050	<0.0010	0.257	-	9.96	0.0891	-	4.0	-	5.11	-	<0.00050	0.0034	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		15-May-11		29.7	nd	nd	nd	1.720	0.0004	11.10	nd	0.0010	1.4	nd	7.85	0.174	0.0015	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		15-Nov-02		24.9	nd	nd	nd	0.242	0.0001	8.62	0.1150	nd	4.1	nd	5.26	0.142	nd	0.0130	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		16-Jun-27		29.6	00.0	0.0016	0.001	6.800	0.0005	11.40	0.3800	ND (0.001)	0.3	ND (0.0001)	2.77	0.206	0.0014	0.0810	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		16-Nov-30		13.7	ND (0.001)	ND (0.0005)	0.0015	0.282	0.0002	5.07	0.0200	ND (0.001)	1.2	ND (0.0001)	3.89	0.094	0.0009	0.0070	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17-W001	17-Aug-17			40.8	<0.001	0.0017	0.0145	3.20	0.118	13.6	0.984	0.002	0.887	<0.0001	5.78	0.397	0.0014	0.105	4.27	<0.0001	<0.0005	<0.0005	<0.0001	<0.005	<0.005	<0.01	<0.0005	-	-	-	-	-
17-W008	17-Dec-21			17.3	0.001	<0.0005	0.0007	0.626	0.0004	10.5	0.057	0.001	1.82	<0.0001	4.82	0.189	0.0021	0.008	2.18	<0.0001	<0.0005	<0.0005	<0.0001	<0.005	0.01	<0.01	<0.0005	-	-	-	-	-
18-W003	18-Apr-26			31.3	<0.001	<0.0001	<0.0001	0.159	0.0001	11.6	0.011	0.002	2.50	<0.00002	5.10	0.179	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/15/2018 (dry)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19-W004	19-May-02			29.9	< 0.001	0.0002	0.0005	0.535	0.00006	9.61	0.020	0.0007	1.4	< 0.0001	5.6	0.181	< 0.005	0.012	1.44	0.00011	0.0003	< 0.002	< 0.00005	< 0.05	0.005	0.05	0.0002	-	-	-	-	-
	10/8/2019 (dry)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20-W003	20-Apr-23			31.3	<0.001	0.0001	0.0010	0.341	0.00016	10.8	0.016	<0.01	1.6	-	5.3	-	0.0005	0.006	2.31	0.00028	-	-	-	-	-	-	-	-	<0.001	2.20	7.18	7.64	0.259
20-W013	20-Nov-16			37.7	< 0.001	0.0008	0.0018	1.07	0.00026	12.7	0.237	< 0.01	4.2	-	6.5	-	0.0013	0.016	4.48	0.00013	-	-	-	-	-	-	-	-	<0.001	5.47	[k]	6.89	0.300
SW6		03-Apr-23		18	<0.005	0.0002	0.0014	0.32	<0.0005	7.18	0.013	<0.001	1.6	<0.0001	5.7	-	0.0007	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03-Jun-30		32	<0.005	0.0009	0.0013	2.68	0.0008	12.3	0.557	0.002	0.9	<0.0001	8.1	-	0.0015	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03-Nov-05		17.8	nd	0.0003	0.0038	0.78	nd	6.51	0.01	nd	3.2	nd	4.5	-	0.0011	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-May-24		30.4	nd	0.0003	0.0014	0.61	nd	8.97	0.121	nd	2.1	nd	5.5	-	0.0006	0.087	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-Aug-18		27	nd	0.0003	0.0006	0.69	nd	10	0.142	nd	0.2	nd	6.4	-	nd	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04-Nov-16		29.9	0.093	0.001	0.0039	2.98	0.0018	11	0.275	0.002	2	0.0001	6.7	-	nd(0.005)	0.023	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-May-03		28	0.07	nd	0.003	0.4	0.0019	11	0.051	nd	2	0.0001	7.5	-	nd	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-Sep-21		26	< 0.005	0.0005	0.003	1.9	< 0.0005	11	0.049	0.003	4.2	< 0.0001	7	-	< 0.001	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06-Oct-20		13	< 0.005	0.0011	0.002	2.4	0.0012	5	0.095	0.002	3.1	< 0.0001	2.4	-	0.005	0.016	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		07-May-01		21.5	0.002	<0.0005	0.015	1.74	0.0022	7.64	0.058	<0.01	1.6	<0.0001	13	-	<0.005	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		07-Dec-07		9.46	0.002	<0.005	0.013	1.89	<0.02	4.16	0.213	<0.01	2	<0.005	14.2	-	<0.005	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		08-Jun-01		11.5	<0.001	0.003	0.0015	0.644	<0.0001	5.46	1.64	<0.01	0.6	<0.0001	2.4	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		08-Sep-01		24	<0.002	<0.0005	<0.002	1.1	<0.0001	6	0.782	<0.01	1.8	<0.0001	1.7	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		08-Nov-01		8.72	<0.002	<0.005	<0.002	0.498	<0.02	4	0.299	<0.01	1.2	<0.005	1.7	-	<0.005	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Apr-01		13	<0.001	<0.0005	<0.0005	1.72	<0.0001	3.77	0.406	<0.01	0.9	<0.0001	1.8	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Jul-01		26.7	0.003	<0.0005	<0.002	2.15	<0.0001	7.8	3.55	<0.01	1.5	<0.0001	2.7	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		09-Nov-18		11.4	<0.002	<0.0005	<0.0005	0.739	<0.0001	3.29	0.199	<0.01	1	<0.0001	0.5	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Jun-22		25.8	<0.001	0.0008	<0.002	3.41	<0.0001	7.59	2.09	<0.01	0.8	<0.0001	2.7	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Aug-16		24.2	<0.001	<0.0005	<0.002	2.58	<0.0001	6.7	1.09	<0.01	1.2	<0.0001	2	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Aug-16		24.6	<0.001	<0.0005	<0.002	2.45	<0.0001	6.76	1.05	<0.01	1.2	<0.0001	1.9	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10-Nov-25		11.3	<0.001	<0.0005	<0.002	0.629	0.0002	2.95	0.087	<0.01	0.9	<0.0001	1.3	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		11-Apr-12		16.9	0.0003	0.0001	<0.002	0.587	0.0001	4.8	0.227	<0.01	1.4	-	2.8	-	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		11-Aug-16		41.8	0.024	0.0002	0.0003	57.8	<0.00002	12.4	38	0.03	3.6	-	3.5	-	0.045	0.177	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		13-Oct-22		21.3	-	<0.00050	<0.0010	0.653	-	6.85	0.133	-	2.1	-	3.33	-	0.00118	0.0071	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Jun-17		18.2	<0.00050	<0.00050	<0.0010	0.948	<0.00050	5.34	0.380	<0.0010	<1.0	<0.00010	2.22	-	-	0.0046	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Oct-15		13.8	-	<0.00050	<0.0010	0.605	-	4.01	0.0750	-	<1.0	-	1.72	-	0.00109	0.0070	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		15-May-11		22.2	nd	nd	nd	0.856	0.0002	6.40	0.2940	nd	1.05	nd	3.70	0.102	0.00330	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		15-May-11		21.6	nd	0.0005	nd	1.060	0.0003	6.17	nd	nd	0.975	nd	3.65	0.097	0.00400	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		15-Nov-02		20.5	nd	nd	nd	0.340	0.0002	6.53	0.0300	nd	2.97	nd	3.69	0.116	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		16-Jun-27		15.2	ND (0.001)	ND (0.0005)	0.0013	2.260	0.0008	4.18	0.1910	ND (0.001)	1.03	ND (0.0001)	1.82	0.088	0.00470	0.0060	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		16-Nov-30		10.5	ND (0.001)	ND (0.0005)	0.0015	0.374	0.0003	2.97	0.0610	ND (0.001)	0.965	ND (0.0001)	1.79	0.068	ND (0.005)	0.0130	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17-W002	17-Aug-17			28	<0.001	0.001	0.0038	0.888	0.0475	7.31	1.49	<0.001	0.655	<0.0001	2.74	0.187	<0.0005	0.018	2.99	<0.0001	<0.0005	<0.0005	<0.0001	<0.005	<0.005	<0.010	<0.0005	-	-	-	-	-
17-W009	17-Dec-21			5.54	<0.001	<0.0005	<0.0005	0.391	0.0001	2.33	0.009	<0.001	0.771	<0.0001	1.19	0.054	0.0008	0.005	2.18	<0.0001	<0.0005	<0.0005	<0.0001	<0.005	0.006	<0.010	<0.0005	-	-	-	-	-
18-W004	18-Apr-26			19.60	<0.001	00.0	<0.0001	0.341	0.0001	6.11	0.047	0.0008	1.200	<0.00002	3.70	0.116	<0.005	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18-W013	18-Nov-15			14.90	<0.001	00.0	00.0	0.476	0.0001	4.35	0.008	0.0005	1.100	<0.0001	2.30	0.072	<0.005	0.010	2.42	<0.00005	0.0002	<0.002	<0.00005	<0.05	0.011	<0.010	<0.010	-	-	-	-	-
19-W003	19-May-02			27.6	0.002	0.0001	0.0012	0.273	0.00006	8.51	0.036	0.0009	1.2	< 0.0001	5.1	0.169	< 0.005	0.009	1.50	0.00008	< 0.0001	< 0.002	< 0.00005	< 0.05	< 0.005	0.04	0.0003	-	-	-	-	-
19-W013	19-Oct-08			15.2	< 0.001	0.0009	0.0004	2.53	0.00017	3.97	1.48	0.0004	1.5	-	2.3	-	< 0.005	0.009	3.95	< 0.00005	-	-	< 0.00005	-	-	< 0.01	-	-	-	-	-	-	-
20-W004	20-Apr-23			25.6	< 0.001	0.0004	0.0014	0.705	0.00054	8.83	0.045	<0.01	1.4	-	4.3	-	0.0012	0.019	1.84	0.00022	-	-	-	-	-	-	-	-	<0.001	3.38	7.26	2.27	0.229
20-W014	20-Nov-16			21.6	< 0.001	0.0006	0.0012	0.799	0.00025	6.98	-	< 0.01	2.5	-	3.6	-	0.0007	0.018	3.57	<0.00005	-	-	-	-	-	-	-	-	<0.001	6.60	[k]	9.59	0.177

Monitoring Location	Sample ID (post 2018)	Parameter		Metals																								Field Parameters			
				Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Potassium	Silver	Sodium	Strontium	Vanadium	Zinc	Silicon	Uranium	Antimony	Beryllium	Thallium	Tin	Titanium	Tungsten	Molybdenum	Unionized Ammonia. Calc (field)[j]	Temperature °C (field)	PH (Field)	DO	Conductivity
		PWQO (mg/L)			(note e)	0.0009	(note f)	0.3	(note g)			0.025		0.0001			0.006	0.02		0.005	0.02	(note h)				0.03	0.04	0.02		6.5-8.5	(note i)	
	Sample Date	Table A: Aquatic Protection Value (mg/L)			0.064		0.0069	1.000	0.002									0.089										0.1		6.0-9.0		
		Table B: Canadian Water Quality Guideline (mg/L)																0.030														
SW7 (background)		13-Oct-22		13.2	-	<0.00050	<0.0010	0.331	-	2.81	0.0286	-	<1.0	-	1.02	-	<0.00050	<0.0030	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Jun-17		14.0	0.00220	0.00100	0.0016	2.09	0.0009	3.21	0.320	0.0016	<1.0	<0.00010	1.07	-	-	0.0090	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Oct-15		9.28	-	<0.00050	0.0010	0.391	-	2.11	0.0301	-	<1.0	-	0.77	-	<0.00050	<0.0030	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		15-May-11		14.90	nd	nd	nd	0.525	0.0001	3.19	0.0120	nd	0.809	nd	1.54	0.06	0.0006	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		15-Nov-02		10.40	nd	nd	nd	0.309	nd	2.26	0.0200	nd	0.671	nd	0.88	0.052	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		16-Jun-27		16.60	0.00	0.0014	0.0018	3.270	0.0009	4.06	ND (0.005)	0.0020	2.33	ND (0.0001)	1.34	0.088	0.0043	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		16-Nov-30		8.80	ND (0.001)	ND (0.0005)	0.0041	0.500	0.0003	2.00	0.0110	ND (0.001)	0.758	ND (0.0001)	0.904	0.052	ND (0.005)	0.017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		17-Aug-17 (dry)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	17-W007	17-Dec-21		4.64	<0.001	<0.0005	<0.0005	0.531	0.0001	1.59	0.0480	<0.001	0.691	<0.0001	0.925	0.046	0.0008	<0.005	2.23	<0.0001	<0.0005	<0.0005	<0.0001	<0.005	0.006	<0.01	<0.0005	-	-	-	-	-
	18-W002	18-Apr-26		6.13	<0.001	0.0001	<0.0001	0.525	0.0002	1.44	0.0340	0.0005	0.5	<0.00002	0.900	0.028	<0.005	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-W012	18-Nov-15		10.70	<0.001	0.0001	0.0004	0.466	0.0001	2.11	0.0270	0.0003	0.5	<0.0001	1.000	0.047	<0.005	0.009	1.37	<0.00005	0.0003	<0.002	<0.00005	<0.05	0.005	<0.010	<0.010	-	-	-	-	-
	19-W002	19-May-02		14.1	0.002	0.0001	0.0009	0.58	0.00015	3.20	0.046	0.0005	0.5	< 0.0001	2.8	0.084	< 0.005	0.009	1.98	< 0.00005	0.0001	< 0.002	< 0.00005	< 0.05	0.008	0.04	0.0002	-	-	-	-	-
	19-W012	19-Oct-08		13.6	< 0.001	0.0002	0.0003	0.546	0.00007	2.66	0.079	0.0019	0.6	-	1.0	-	< 0.005	0.006	2.61	< 0.00005	-	-	< 0.00005	-	-	< 0.01	-	-	-	-	-	-
	20-W002	20-Apr-23		7.56	< 0.001	0.0001	0.0004	0.444	0.00010	1.55	0.043	<0.01	0.3	-	1.5	-	0.0003	<0.005	1.86	< 0.00005	-	-	-	-	-	-	-	<0.001	4.32	7.21	9.26	0.054
	20-W012	20-Nov-16		11.8	< 0.001	0.0001	0.0004	0.281	0.00008	2.4	0.019	< 0.01	0.5	-	1.2	-	0.0003	0.01	2.94	< 0.00005	-	-	-	-	-	-	-	<0.001	6.22	[k]	11.96	0.080

Notes:
[a] Alkalinity should not be decreased by more than 25% of the natural concentration
[b] Table A and Table B standards apply only to Phenol
[c] Aluminum standard for PWQO is pH dependent
[d] Cadmium criteria: 0-100 mg/L Hardness = 0.0001 mg/L, >100 mg/L Hardness = 0.0005 mg/L
[e] Chromium reported as total, published standards are for chromium VI (0.001 mg/L) an
[f] Copper criteria: 0-20 mg/L Hardness = 0.001 mg/L, >20 mg/L Hardness = 0.005 mg/L
[g] Lead criteria: <30 mg/L Hardness = 0.001 mg/L, 30 to 80 mg/L Hardness = t
[h] Beryllium criteria: <75 mg/L Hardness = 0.011 mg/L, >75 mg/L Hardness = 1.1 mg/L
[i] DO criteria: 0oC -5oC = ≥7mg/L 5oC-10oC = ≥ 6mg/L 10oC-20oC = ≥5mg/L 20oC-25oC = ≥ 4mg/L
[j] Unionized ammonia calculated using field parameters for pH and temperature. When field pH was unavailable, lab pH was used
[k] pH values not collected due to equipment error
Metals are reported as "total" with the exception of Mercury (reported as dissolved)
PWQO- denotes the Provincial Water Quality Objectives.
ND (x) denotes below stated detection limit

Input: MW
Checked: JMP

Appendix I
Site Photographs

1. SW1
April-2020

2. SW2
April-2020

3. SW3
April-2020

4. SW5
April-2020

5. SW6
April-2020

6. SW7
April-2020

7. Well 08-1
Nov-2020

8. Well MW101
April-2020

9. Well MW102
April-2020

10. Well MW103
April-2020

11. Well MW104
April-2020

Appendix J
Borehole Logs

MALROZ
ENGINEERING INCORPORATED

308 Wellington Street
2nd Floor
Kingston, ON K7K 7A8
Canada

613-548-3446
www.malroz.com

PROJECT: **1040 - Leeds Waste Disposal Site**

CLIENT: **Township of Leeds and the Thousand Islands**

BOREHOLE LOG: **BH101**

DRILLING CONTRACTOR: **Strata Drilling Group**

DRILLING EQUIPMENT: **GM100 GT**

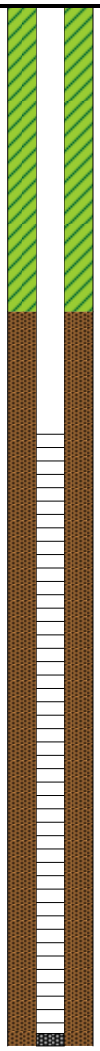
DRILLING METHOD: **Macrocore**

SAMPLING METHOD: **5' Macrocore**

WELL ID: **MW101**
WELL TAG#: **-**
GROUND SURFACE ELEV.: **-**
TOP ELEVATION: **-**

DATUM: **NAD 83 Zone 18**
EASTING: **405507**
NORTHING: **4916167**

LOGGED BY:	INPUT BY:	FIELD INSTRUMENT(S):	DATE DRILLED:	VALIDATED BY:	CHECK:
BC	**ZL**	**RKI Eagle 2 CGI & PID**	**February 5, 2018**	**BC**	



Depth (meters)	Lithology	Description	Type	Moisture	Sample	% REC	Blows/Ft (RQD)
0		**Silty Clay** some sand, brown, soft		Moist	-	100	
1							
2		End of borehole at refusal (2.6 m)					

CGI (% LEL): 0, 50, 100

PID (ppm): 1, 10, 100, 1000

Notes:

Well Construction Details
steel monument casing
50mm schedule 40 PVC
0.25mm slotted screen
1.5m screen
#1 sand

Groundwater Monitoring Details
yet to be monitored
CGI: --
CGI(ME): --
PID: --

depth to water*: --
depth to bottom*: --

* measurements taken from top of piezometer

MW101 installed to replaced 00-1.

THIS BOREHOLE LOG MUST BE READ TOGETHER WITH THE ACCOMPANYING REPORT

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ENGINEERING INCORPORATED

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Kingston, ON K7K 7A8
Canada

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PROJECT: **1040 - Leeds Waste Disposal Site**

CLIENT: **Township of Leeds and the Thousand Islands**

BOREHOLE LOG: **BH102**

DRILLING CONTRACTOR: **Strata Drilling Group**

DRILLING EQUIPMENT: **GM100 GT**

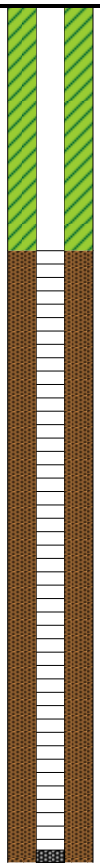
DRILLING METHOD: **Macrocore**

SAMPLING METHOD: **5' Macrocore**

WELL ID: **MW102**
WELL TAG#: **-**
GROUND SURFACE ELEV.: **-**
TOP ELEVATION: **-**

DATUM: **NAD 83 Zone 18**
EASTING: **405371**
NORTHING: **4916244**

LOGGED BY:	INPUT BY:	FIELD INSTRUMENT(S):	DATE DRILLED:	VALIDATED BY:	CHECK:
BC	**ZL**	**RKI Eagle 2 CGI & PID**	**February 5, 2018**	**BC**	



Depth (meters)	Lithology	Description	Type	Moisture	Sample	% REC	Blows/Ft (RQD)
0		**Silty Clay** brown, soft		Moist	-	100	
1							
2		End of borehole at refusal (2.1 m)					

CGI (% LEL): 0 | 50 | 100

PID (ppm): 1 | 10 | 100 | 1000

Notes:

Well Construction Details
steel monument casing
50mm schedule 40 PVC
0.25mm slotted screen
1.2m screen
#1 sand

Groundwater Monitoring Details
yet to be monitored
CGI: --
CGI(ME): --
PID: --

depth to water*: --
depth to bottom*: --

* measurements taken from top of piezometer

MW101 installed to replaced 89-1.

THIS BOREHOLE LOG MUST BE READ TOGETHER WITH THE ACCOMPANYING REPORT

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Canada

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PROJECT:
1040 - Leeds Waste Disposal Site

CLIENT:
Township of Leeds and the Thousand Islands

BOREHOLE LOG:
BH103

DRILLING CONTRACTOR: **Strata Drilling Group**

DRILLING EQUIPMENT: **Pionjar**

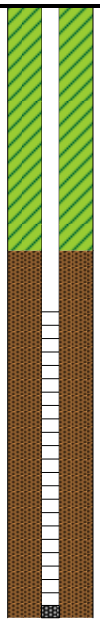
DRILLING METHOD: **Macrocore**

SAMPLING METHOD: **2' Macrocore**

WELL ID: **MW103**
WELL TAG#: **A189989**
GROUND SURFACE ELEV.: **-**
TOP ELEVATION: **-**

DATUM: **NAD 83 Zone 18**
EASTING: **405529**
NORTHING: **4916091**

LOGGED BY:	INPUT BY:	FIELD INSTRUMENT(S):	DATE DRILLED:	VALIDATED BY:	CHECK:
BC	**ZL**	**RKI Eagle 2 CGI & PID**	**February 5, 2018**	**BC**	

Well Construction	Depth (meters)	Lithology	Description	Type	Moisture	Sample	% REC	Blows/Ft (RQD)	CGI (% LEL) 0 50 100	PID (ppm) 1 10 100 1000
	0		**Silty Clay** grey, mottling, soft		Moist	-	100			
	1		increased gravel content at 1.2 m		Wet					
	2		End of borehole at refusal (1.5 m)							

Notes:

Well Construction Details
steel monument casing
32mm schedule 40 PVC
0.25mm slotted screen
0.6m screen
#1 sand

Groundwater Monitoring Details
yet to be monitored
CGI: --
CGI(ME): --
PID: --

depth to water*: --
depth to bottom*: --

* measurements taken from top of piezometer

THIS BOREHOLE LOG MUST BE READ TOGETHER WITH THE ACCOMPANYING REPORT

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Kingston, ON K7K 7A8
Canada

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PROJECT: **1040 - Leeds Waste Disposal Site**

CLIENT: **Township of Leeds and the Thousand Islands**

BOREHOLE LOG: **BH104**

DRILLING CONTRACTOR: **Strata Drilling Group**

DRILLING EQUIPMENT: **Pionjar**

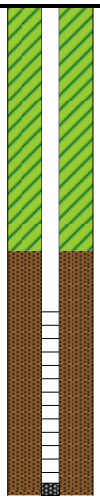
DRILLING METHOD: **Macrocore**

SAMPLING METHOD: **2' Macrocore**

WELL ID: **MW104**
WELL TAG#: **A189974**
GROUND SURFACE ELEV.: **-**
TOP ELEVATION: **-**

DATUM: **NAD 83 Zone 18**
EASTING: **405514**
NORTHING: **4916114**

LOGGED BY:	INPUT BY:	FIELD INSTRUMENT(S):	DATE DRILLED:	VALIDATED BY:	CHECK:
BC	**ZL**	**RKI Eagle 2 CGI & PID**	**February 5, 2018**	**BC**	

Well Construction	Depth (meters)	Lithology	Description	Type	Moisture	Sample	% REC	Blows/Ft (RQD)	CGI (% LEL) 0 50 100	PID (ppm) 1 10 100 1000
	0		**Silty Clay** grey, soft		Wet	-	100			
	1									
			End of borehole at refusal (1.2 m)							
	2									

Notes:

Well Construction Details
steel monument casing
32mm schedule 40 PVC
0.25mm slotted screen
0.5m screen
#1 sand

Groundwater Monitoring Details
yet to be monitored
CGI: --
CGI(ME): --
PID: --

depth to water*: --
depth to bottom*: --

* measurements taken from top of piezometer

THIS BOREHOLE LOG MUST BE READ TOGETHER WITH THE ACCOMPANYING REPORT